Cisco Prime Optical 9.6.3 User Guide

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GLOSSARY

INDEX

Preface

This section explains the objectives and intended audience of this publication and describes the conventions that convey instructions and other information.

Objectives

This guide explains how to use Cisco Prime Optical 9.6.3 to manage Cisco Optical Networking System (ONS) network elements (NEs).

Use this guide to learn about:

- Cisco Prime Optical, an element management system (EMS)
- Prime Optical GateWay, an EMS-to-network management system (NMS) interface architectural component

Audience

The primary audience for this guide includes network operations personnel and system administrators. This guide assumes that you are familiar with the following products and topics:

- Basic internetworking terminology and concepts
- Network topology and protocols
- Microsoft Windows Vista, Windows 2000 Professional, Windows XP Professional, and Windows Server 2003 Terminal Server
- Sun Microsystems Solaris administration
- Oracle database administration
- Telecommunication Management Network (TMN) architecture model

Conventions

This document uses the following conventions:

Item	Convention
Commands and keywords	**boldface** font
Displayed session and system information	`screen` font
Information that the user must enter	**`boldface screen`** font
Variables that the user must supply	*`italic screen`* font
Menu items and button names	**boldface** font
Selecting a menu item	**Option > Network Preferences**

Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

Timesaver Means *the described action saves time*. You can save time by performing the action described in the paragraph.

Tip Means *the following information will help you solve a problem.*

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation* at: http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html.

Subscribe to *What's New in Cisco Product Documentation*, which lists all new and revised Cisco technical documentation, as an RSS feed and deliver content directly to your desktop using a reader application. The RSS feeds are a free service.

Introduction

Cisco Prime Optical (formerly Cisco Transport Manager) is a carrier-class, multitechnology management system that integrates the end-to-end management of traditional transport networks and new carrier packet transport networks. It can help maintain the integrity of existing services, plus deliver interactive, content-based services and high-bandwidth applications.

Cisco Prime Optical manages the entire Cisco optical portfolio, including:

- Metro core
- Metro dense wavelength-division multiplexing (DWDM)
- Metro edge and access products
- New Carrier Packet Transport (CPT) System products

Prime Optical also serves as a foundation for integration into a larger overall Operations Support System (OSS) environment by providing northbound gateway interfaces to higher-layer management systems.

For Cisco network element (NE) documentation, see 1.7.2 Related Cisco NE Documentation, page 1-50.

This chapter contains the following sections:

- 1.1 Overview of Cisco Prime Optical, page 1-1
- 1.2 Prime Optical Integration with Prime Central, page 1-3
- 1.3 What's New in Prime Optical 9.6.3, page 1-4
- 1.4 Key Functionality, page 1-8
- 1.5 Key GUI Components, page 1-9
- 1.6 General Features of Prime Optical, page 1-35
- 1.7 Related Documentation, page 1-48

1.1 Overview of Cisco Prime Optical

This section provides a high-level overview of how Prime Optical fits into the network.

Prime Optical provides advanced capabilities in fault, configuration, performance, and security management across the element and network management layers of the Telecommunication Management Network (TMN) reference architecture.

Prime Optical manages the following optical NEs:

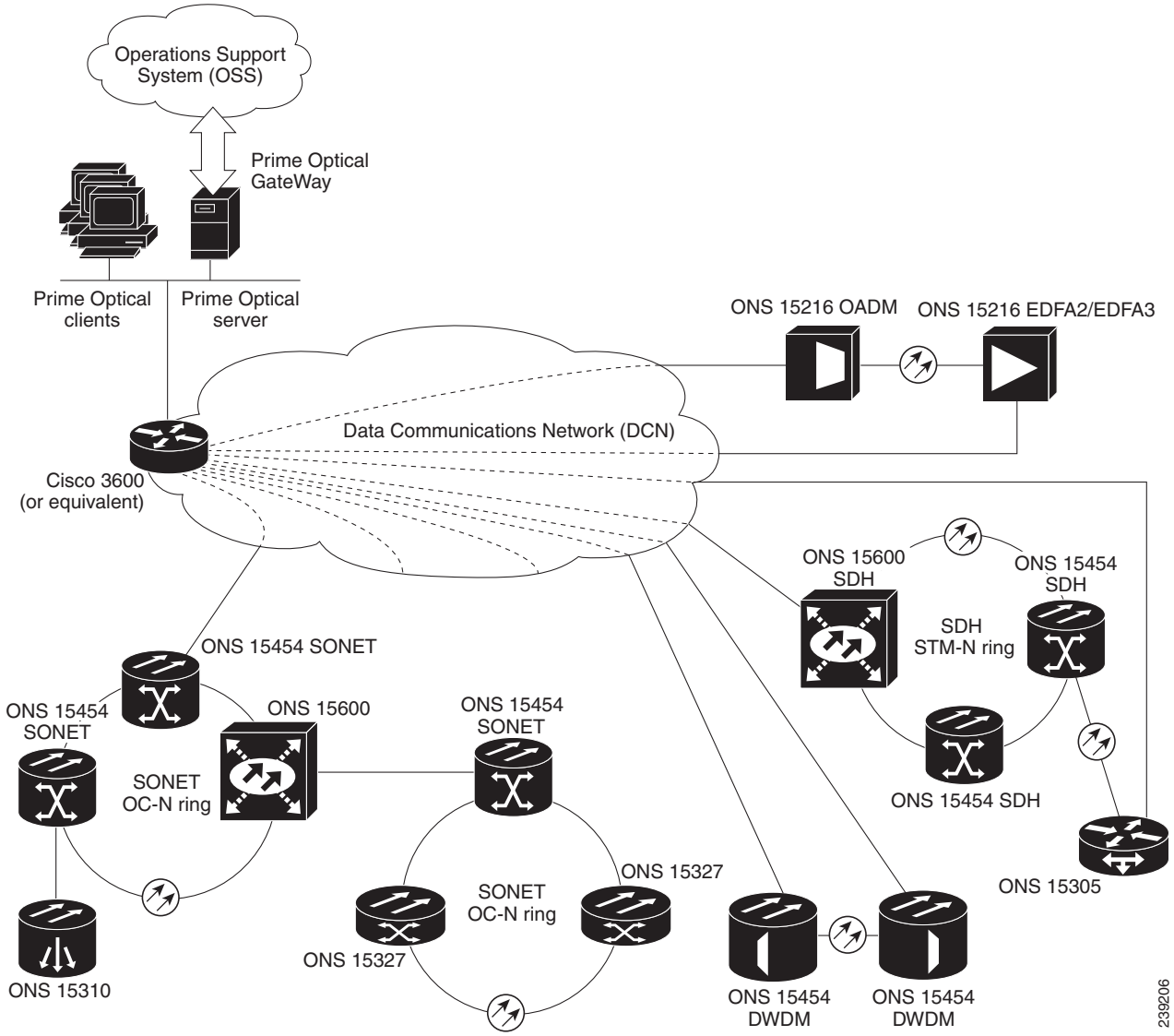
- Cisco Transport Controller (CTC)-based NEs:
  - Cisco ONS 15305 R3.0 and later
  - Cisco ONS 15310 CL
  - Cisco ONS 15310 MA SDH
  - Cisco ONS 15310 MA SONET
  - Cisco ONS 15327
  - Cisco ONS 15454 SDH
  - Cisco ONS 15454 SONET
  - Cisco ONS 15454-M6
  - Cisco ONS 15454-M2
  - Cisco ONS 15600 SDH
  - Cisco ONS 15600 SONET
- Cisco ONS 15216
- Cisco ONS 15305 R2.0.x
- Cisco ONS 15530
- Cisco ONS 15540 ESP and ESPx
- Carrier Packet Transport 200
- Carrier Packet Transport 200 SDH
- Carrier Packet Transport 600
- Carrier Packet Transport 600 SDH
- Unmanaged NEs or nodes from other vendors

Prime Optical GateWay is an architectural component that provides northbound element management system-to-network management system (EMS-to-NMS) interface mediation. Prime Optical GateWay enables service providers to integrate Prime Optical with their OSSs by using open, standard interfaces. Prime Optical offers Simple Network Management Protocol (SNMP) and Common Object Request Broker Architecture (CORBA) interface options.

Note The Prime Optical GateWay/CORBA functionality is sold separately.

Prime Optical provides a comprehensive management solution as illustrated in the following figure.

Figure 1-1 Prime Optical Comprehensive Management Solution



1.2 Prime Optical Integration with Prime Central

Prime Optical can be used as a standalone product or as part of Cisco Prime Central. When it is installed as part of a suite, you can launch Prime Optical from the Prime Central portal. For more information about Prime Central, see the documentation for Cisco Prime Central.

When Prime Optical and Cisco Prime Network are installed as part of the suite, you can view additional device details from Prime Network for Carrier Packet Transport (CPT) NE.

To launch Prime Network from these NEs:

Step 1 From the Domain Explorer, right-click the **CPT NE**.

Step 2 Select **Network > Device Details**. You should now be able to view additional device details using Prime Network.

1.3 What's New in Prime Optical 9.6.3

The following table describes changes and enhancements in Prime Optical 9.6.3.

Table 1-1 New Features in Prime Optical 9.6.3

Feature Update	Description	For More Information, See...
Installation Enhancements		
Installation Procedure	The procedure to install Prime Optical has been streamlined.	Cisco Prime Optical 9.6.3 Installation Guide
Ability to uninstall unsuccessful installations	You can uninstall Prime Optical even if your previous installation was unsuccessful or incomplete. The uninstaller will remove all changes made to the system.	Cisco Prime Optical 9.6.3 Installation Guide
Third-party tools	The following third-party tools have been upgraded for Prime Optical R9.6.3: • Apache 2.2.23 • Java 7	Cisco Prime Optical 9.6.3 Installation Guide
Ability to install Prime Optical on RHEL 6.2	You can install and run the Prime Optical server and client on the Red Hat Linux 6.2, 64-bit operating system.	Cisco Prime Optical 9.6.3 Installation Guide
Ability to install Prime Optical 9.6.3 on your home directory	You can install Prime Optical 9.6.3 on your home directory.	—
Server/Client Platform Enhancements		
Added support for external authentication on TACACS+ servers	Prime Optical 9.6.3 supports external authentication on TACACS+ servers.	Cisco Prime Optical 9.6.3 Basic External Authentication
Optical Enhancements		
Ability to manage the AR_XPE card	The AR_XPE card is an enhanced version of the AR_XP card. New functionality includes the following features: • Support for new ODU0 multiplexing for 1GE and 1GFC payloads. • Support for new ODU0 payload mapping during OCHCC circuit creation. • Addition of RMON thresholds for 10GE and 4GFC payloads. • Bandwidth utilization panel to show ODU0 slices. • Support for new ODUK port mapping.	• C.2.45 Slot Properties—AR_MXP, AR_XP and AR_XPE, page C-588 • 7.2.3.8 Creating a DWDM OCHCC—ONS 15454 MSTP, page 7-72 • Appendix E, "Performance Data"

Table 1-1 New Features in Prime Optical 9.6.3 (continued)

Feature Update	Description	For More Information, See...
Support for 100G_LC_C, 10x10G_LC, and CFP_LC cards	Prime Optical includes the following new functionality for the 100G_LC_C, 10x10G_LC, and CFP_LC cards: • GCC communication channel support. • Payload support for 10x10G_LC. • OTU4 payload support for 100G_LC_C. • Physical PM support on 100G_LC_C. • FAN-OUT and LOW-LATENCY operating mode for 10x10G_LC. • The following protection mechanism for the cards: – Y-Cable protection for 1x100G and 2x40G clients for CFP_LC. – Y-Cable protection for all supported payloads in 10x10G Muxponder and TXP_10G Transponder mode for 10x10G_LC. • Proactive Protection Regen tab for 100G_LC_C card.	• C.2.46 Slot Properties—10x10G_LC, 100G_LC_C, and CFP_LC, page C-621 • 6.5.9 Create, Edit, and Delete GCC, page 6-17
	Supports the operating mode setting. You can perform the following operations: • Create or delete an operating mode. • Add or remove a peer card.	• 6.5.7 Creating Configurations, page 6-14 • 6.5.8 Adding a Peer Card, page 6-17

Table 1-1 New Features in Prime Optical 9.6.3 (continued)

Feature Update	Description	For More Information, See...
GUI and Prime Optical GateWay/CORBA support for 15216-FBGDCU-XXX and 15216-MD-48 modules	Prime Optical provides the following new functionality: • GUI and Prime Optical GateWay/CORBA support for internal patch cord and link management for the 15216-FBGDCU-XXX modules. The passive units are: – 15216-FBGDCU-165-XXX – 15216-FBGDCU-331-XXX – 15216-FBGDCU-496-XXX – 15216-FBGDCU-661-XXX – 15216-FBGDCU-826-XXX – 15216-FBGDCU-992-XXX – 15216-FBGDCU-1157-XXX – 15216-FBGDCU-1322-XXX – 15216-FBGDCU-1653-XXX – 15216-FBGDCU-1983-XXX • Prime Optical GateWay/CORBA support for new card management on 15216-MD-48 modules. The passive units are: – 15216-MD-48-ODD – 15216-MD-48-EVEN – 15216-MD-48-CM	Appendix B, "NE Explorer Information"
New Side Monitoring tab	A new Side Monitoring tab under the Provisioning tab of the node properties pane is shown for the following NEs: • ONS 15454 SONET NE Explorer • ONS 15454 SDH NE Explorer	Appendix B, "NE Explorer Information"
Support for GMPLS restoration	Prime Optical supports the following new functionality for GMPLS circuits: • Ability to provision the Restoration and Revert operations during WSON circuit creation. • Ability to modify the Restoration and Revert operations after WSON circuit creation. • Ability to manage the Restoration and Revert operations on created WSON circuits.	• 7.2.27 Restoration of GMPLS Circuits, page 7-190 • 7.2.3.7 Creating a DWDM OCHNC—ONS 15454 MSTP, page 7-67 • 7.2.3.8 Creating a DWDM OCHCC—ONS 15454 MSTP, page 7-72 • 7.2.3.9 Creating a DWDM OCH Trail Circuit—ONS 15454 MSTP, page 7-76 • 7.2.2 Viewing the Circuit Table, page 7-4

Table 1-1 New Features in Prime Optical 9.6.3 (continued)

Feature Update	Description	For More Information, See...
New WSON tab	A new WSON tab has been added to the **NE Explorer** > **Provisioning** > **DWDM** node properties pane, for ONS15454 NEs to manage alarms that caused GMPLS circuit restoration. You can do the following: • Proceed to affected circuits • Perform alarms acknowledgement	Appendix B, "NE Explorer Information"
Support for multiple deletions in the RMON Thresholds tab	You can perform multiple deletions of the RMON thresholds for the 100G_LC, 10x10G_LC, AR_XP, and AR_MXP cards.	• C.2.46 Slot Properties—10x10G_LC, 100G_LC_C, and CFP_LC, page C-621 • C.2.45 Slot Properties—AR_MXP, AR_XP and AR_XPE, page C-588
Ability to support Ingress Rate Limit to the CVLAN profile	Prime Optical 9.6.3 supports Ingress Rate Limit to the CVLAN profile for the 10GE_XP card.	7.7 Managing SVLAN Profiles, page 7-221
Support for Protection Operations	Prime Optical supports the new Link Maintenance Report, including the following new functionality on the OCHCC, OCHNC, and OCH Trail circuits: • Display the list of protected circuits • Display the active path on the link • Perform protection switch operations	• 7.2.3.8 Creating a DWDM OCHCC—ONS 15454 MSTP, page 7-72 • 7.2.3.9 Creating a DWDM OCH Trail Circuit—ONS 15454 MSTP, page 7-76 • 7.2.3.7 Creating a DWDM OCHNC—ONS 15454 MSTP, page 7-67 • 3.6.8 Viewing the Link Maintenance Report, page 3-46
New Alarm Conditions tab	A new Alarm Conditions tab under the Provisioning tab of the node properties pane is shown for the NEs.	Appendix B, "NE Explorer Information"
CRS-1/3 platform managed as a CRS NE	In Prime Optical 9.6.3, the CRS-1/3 platform is managed as a CRS NE.	Appendix B, "NE Explorer Information"
Ability to search for circuits	You can perform a global or contextual search for circuits in Prime Optical 9.6.3.	• 3.8.7 Searching for Circuits • 7.2.28 Circuit Reports
Ability to highlight circuits	Prime Optical 9.6.3 allows you to highlight NEs, links, and groups that are connected by a particular circuit.	3.8.7 Searching for Circuits
New Circuit Report	The new circuit report allows you to view the source and destination termination points of a circuit.	7.2.28 Circuit Reports
Link Attributes	Prime Optical 9.6.3 allows you to: • View the DWDM side of a link on the network map. • Set the refresh interval for links.	3.8.5 Configuring the Network Map View

Table 1-1 New Features in Prime Optical 9.6.3 (continued)

Feature Update	Description	For More Information, See...
Spans Report	You can view and export data from a dockable Spans report for a circuit.	7.2.28.6 Viewing the Spans Report
New NE Domain table	You can view the new NE domain table and do the following: • Change NE state • Open NE Explorer • Open Domain Explorer • Open Equipment Inventory Table • Set (Robust) PM Collection State	11.2 Domain NE Table
Features Removed		
Tabs in the Logging Properties pane	The following tabs have been removed from **Control Panel** > **Logging Properties** pane: • Logging Properties tab and all of its subtabs: – General tab – SNMP Trap Service Debug tab – Basic Service Debug tab • Net Service Debug tab and NE Service subtab • Debug tab and PM Service subtab	—
Cisco Aggregation Services Router 9000 (ASR 9K) NE	Prime Optical 9.6.3 does not support ASR 9K NE.	

1.4 Key Functionality

Prime Optical provides the following key functionality:

- Integrated IP, SONET, SDH, Ethernet, and DWDM management in a single scalable platform.
- An intuitive Java-based GUI that provides a native “look-and-feel” on both Microsoft Windows and Sun Solaris client platforms.
- User-defined domain explorer network views with “bubble-up” alarm severity propagation and drill-down capabilities to isolate fault conditions and service-delivery impact.
- Geographic network maps and explorer views that reflect the physical layout and configuration of the network.
- Alarm Browser and Alarm Log views that provide a robust listing of all current and historical alarms and events.
- A desktop-resident dashboard that provides alarm status for the Prime Optical user’s entire span of control with quick access to the Domain Explorer and the Alarm Browser.
- Real-time network surveillance with configurable popup alarm and event notifications.
- Real-time shelf views with full alarm and operational status indicators.

- Automated configuration backup with manual restore capabilities, plus remote software download capability across the entire network domain.
- GUI-based NE configuration.
- Integrated A-to-Z circuit provisioning.
- Integrated Layer 2 (L2) topology and service provisioning.
- Extensive performance monitoring (PM) statistics collected across the SONET/SDH, DS-1/E1, DWDM, Ethernet, and Cisco IOS interfaces available for display or export.
- Custom profiles that can be used to grant separate permissions for each Prime Optical operation.
- Comprehensive security management that provides flexible user access.
- Northbound EMS-to-NMS interface mediation through Prime Optical GateWay/CORBA and Prime Optical GateWay/SNMP. Prime Optical GateWay allows service providers to integrate Prime Optical with their OSSs by using open, standard interfaces.
- CORBA fault and inventory integration with Cisco Info Center.
- Extensive, intuitive online help.

1.5 Key GUI Components

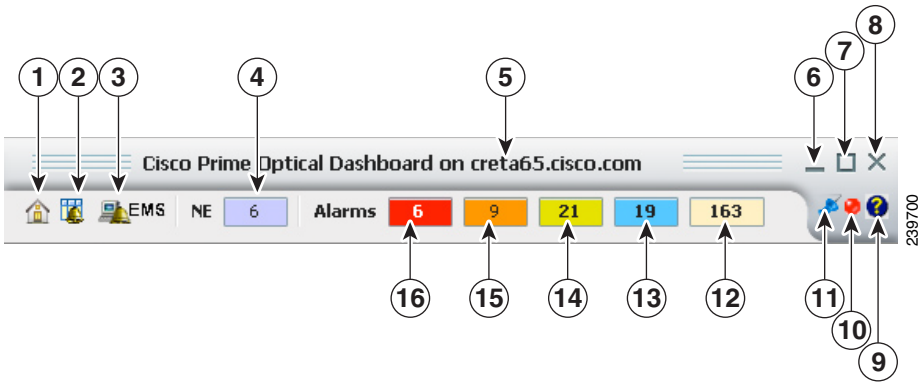
This section describes the following key components in the Prime Optical GUI:

- 1.5.1 Dashboard, page 1-9
- 1.5.2 Domain Explorer, page 1-11
- 1.5.3 Subnetwork Explorer, page 1-24
- 1.5.4 Alarm Browser, page 1-27
- 1.5.5 Alarm Log, page 1-28
- 1.5.6 Network Map, page 1-28
- 1.5.7 NE Explorer, page 1-30
- 1.5.8 Control Panel, page 1-33

1.5.1 Dashboard

The Dashboard shows useful alarm and NE information in one easily accessible location.

Figure 1-2 Prime Optical Dashboard



1	Layers the Domain Explorer window as the top active window. The Domain Explorer is the Prime Optical home window.
2	Opens the Alarm Browser window; this highlights NE-specific critical, major, minor, and warning alarms.
3	Opens the Alarm Browser window, filtered to show all EMS alarms in the domain. This toolbar icon is enabled only if you have read/write permission for the Show EMS Alarms/Events operation.
4	Lists the total number of NEs in the domain. Click the counter to open the Domain NE table, which provides an inventory of NEs within the selected management domain.
5	Displays the server name. If the server name string contains fewer than 16 characters, the entire name is displayed. If the server name is longer than 16 characters, the first 14 characters display, followed by an ellipsis (...). The tooltip displays the full server name, regardless of length, and the IP address.
6	Minimizes all Prime Optical windows, except for the Dashboard window itself.
7	Restores all minimized Prime Optical windows.
8	Closes the Dashboard.
9	Displays online help for the Dashboard.
10	Indicates a change in Prime Optical status, including: • New alarms have occurred on NEs in the domain • New NEs have been added to the domain • Connectivity status has changed When a change in Prime Optical status occurs, the font changes from plain to **bold** in the affected alarm count boxes. Click the Status has Changed tool to acknowledge the status change. The tooltip toggles to No Change in Status and the font returns to plain, which indicates that you acknowledged the status change.
11	If you click the pin icon, the Dashboard window is *pinned down*, meaning that it is not brought to the foreground by default. If you click the pin icon again, the Dashboard window is *pinned up*, meaning that it is brought to the foreground each time an update occurs (alarm counts change, NE count changes, and so on).
12	Lists the number of unacknowledged alarms in the domain. The alarm count includes unacknowledged alarms on NEs and on the EMS. Click the counter to open the Alarm Browser window, filtered to show all unacknowledged alarms.
13	Lists the number of warning alarms in the domain. The alarm count includes warning alarms on NEs and on the EMS. Click the counter to open the Alarm Browser window, filtered to show all warning alarms.

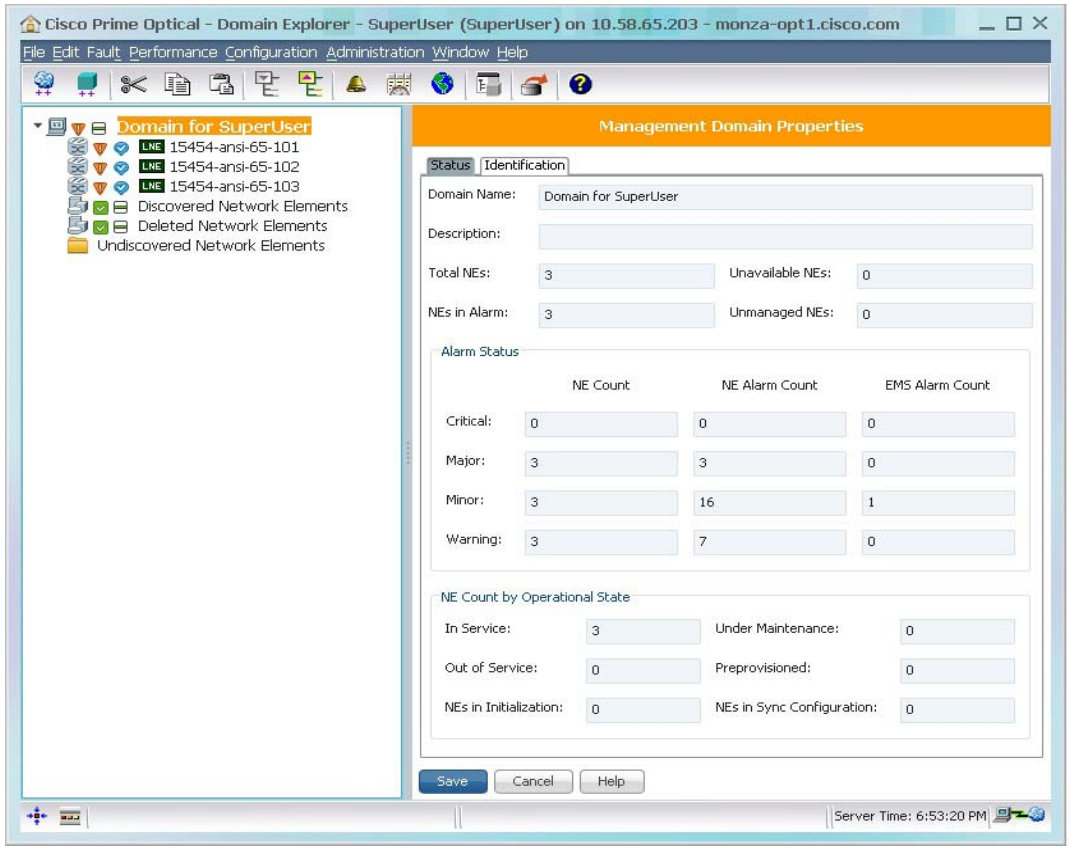
14	Lists the number of minor alarms in the domain. The alarm count includes minor alarms on NEs and on the EMS. Click the counter to open the Alarm Browser window, filtered to show all minor alarms.
15	Lists the number of major alarms in the domain. The alarm count includes major alarms on NEs and on the EMS. Click the counter to open the Alarm Browser window, filtered to show all major alarms.
16	Lists the number of critical alarms in the domain. The alarm count includes critical alarms on NEs and on the EMS. Click the counter to open the Alarm Browser window, filtered to show all critical alarms.

Note A single mouse click is all that is required for Dashboard operations. If you double-click an object, Prime Optical launches two instances of the object. For example, if you double-click the Open Alarm Browser icon, Prime Optical opens two Alarm Browser windows.

1.5.2 Domain Explorer

The Domain Explorer window opens when you log into Prime Optical. The Domain Explorer is the Prime Optical home window and provides a logical view of the network plus alarm, connectivity, and operational status. To log out of Prime Optical, choose **File > Exit** from the Domain Explorer window.

Figure 1-3 Domain Explorer



The Domain Explorer window is divided into two sections: the topology tree and the properties pane. The topology tree on the left side of the window consists of a management domain, groups, and NEs, which are displayed in a hierarchical format. You can drag and drop NEs to reposition them in the topology tree. The properties pane on the right side of the window shows detailed information about the object that is selected in the topology tree.

Tip See Appendix A, "Icons and Menus Displayed in Prime Optical" for an explanation of the Domain Explorer legend and icons.

By default, the Domain Explorer contains the following groups that are visible to SuperUser and NetworkAdmin users only:

- Discovered Network Elements—Contains NEs that have been automatically discovered by the Prime Optical server. Autodiscovered NEs are added to the Discovered Network Elements group by default, and Prime Optical starts managing them automatically. See 3.9 How Do I Discover the Network for Optical Devices?, page 3-63 for more information on Prime Optical's discovery process.
- Deleted Network Elements—Contains NEs that have been deleted. An NE appears in this group only when the last instance of that NE has been deleted.
- Undiscovered Network Elements—Contains basic data about NEs that have been manually discovered but are not currently managed. Undiscovered NEs are connected to NEs that are managed by a network service.

Note
- The Discovered Network Elements, Deleted Network Elements, and Undiscovered Network Elements groups cannot be deleted or renamed.
- The server time is displayed on the lower-right side of the Domain Explorer window. The server name is displayed in the Domain Explorer title bar.

For information about populating the Domain Explorer with new groups, gateway NEs (GNEs), or NEs, see Chapter 3, "Building the Network."

The Domain Explorer has three properties panes: Management Domain Properties, Group Properties, and Network Element Properties.

1.5.2.1 Management Domain Properties

The Management Domain Properties pane displays information about the management domain that is currently selected in the Domain Explorer or Subnetwork Explorer tree. The Prime Optical management domain consists of all the NEs managed by the Prime Optical server where the Prime Optical client connects.

The management domain can also contain groups or subnetworks that give you the flexibility to subdivide the domain you are monitoring. For example, a group or subnetwork can represent all NEs within a geographical location.

To display all first-level nodes under the management domain, click the expand icon next to the management domain name in the topology tree. If any of the groups, subnetworks, or NEs have an alarm condition, an icon representing that condition is displayed next to the management domain name.

The Management Domain Properties pane has two tabs: Status and Identification.

1.5.2.1.1 Status Tab

The following table describes the Status tab fields.

Table 1-2 Field Descriptions for the Status Tab

Field	Description
Domain Name	User-defined name of the management domain.
Description	User-defined description of the management domain.
Total NEs	Total number of NEs within the management domain.
Unavailable NEs	Number of NEs within the management domain that Prime Optical cannot currently connect to.
NEs in Alarm	Total number of NEs within the management domain that have an active alarm.
Unmanaged NEs	Total number of unmanaged NEs within the management domain.
Alarm Status	Total number of NE and EMS alarms by severity. In addition, this field lists how many of the total NEs with active alarms are experiencing a critical, major, minor, or warning alarm. **Note** If the same NE is experiencing more than one type of alarm simultaneously, that NE is counted for each severity level.
NE Count by Operational State	Total number of NEs within the management domain according to operational state: • In Service: The NE is currently deployed and requires monitoring. • Out of Service: The NE has been marked Out of Service and does not require monitoring. • NEs In Initialization: The NE is initializing, and you can do the following: – Open the NE Explorer in display-only mode if the NE has been discovered at least once – Open the Alarm Browser and Alarm Log – Open the PM tables You cannot provision circuits or links. The NE is not listed in the available NEs as the source or destination of a circuit. • Under Maintenance: The NE is temporarily under maintenance but requires monitoring. • Preprovisioned: The NE has been added to the database for provisioning but is not yet in service. • NEs in Sync Configuration: The NE is in Sync Configuration state, and you can do the following: – Provision circuits and links – Open the Alarm Browser and Alarm Log – Open the PM tables You cannot open the NE Explorer, but the discovery process of the NE is prioritized over the other NEs.

1.5.2.1.2 Identification Tab

The following table describes the Identification tab fields.

Table 1-3 Field Descriptions for the Identification Tab

Field	Description
Domain Name	Name of the management domain.
Description	Description of the management domain.
EMS ID	EMS ID.
Server	Name or IP address of the Prime Optical server to which the user is connected.
Vendor Name	Vendor name.
Software Version	Prime Optical release that is running.

Note See Table 1-22 for the descriptions of the actions that you can perform using the buttons at the bottom of the window.

1.5.2.2 Group Properties and Network Partition Properties

The Group Properties pane or Network Partition Properties pane displays information about the group or network partition that is currently selected in the topology tree. The Group Properties pane is part of the Domain Explorer; the Network Partition Properties pane is part of the Subnetwork Explorer.

A group consists of other groups or NEs. Groups give you the flexibility of subdividing the management domain you are monitoring. For example, a group can represent all NEs within a geographical location.

A network partition is a group of subnetworks or a group of NEs that is managed by the same NE service. Different network partitions mean different NE services. For information about NE services, see 4.5.3 Viewing and Modifying NE Service Properties, page 4-67.

Click the expand icon next to a group or network partition in the topology tree to view the objects that are assigned to that group or network partition. The same group or network partition can have multiple instances in the topology tree. The contents of all instances of a group or network partition are always the same. Any changes to one instance of a group or network partition will be reflected in all instances of that group or network partition.

You can add and delete groups or network partitions; however, the option to delete a group or network partition is not available until all objects are removed from the group or network partition. If the group or network partition has multiple instances in the topology tree, you can delete all but the last instance of the group or network partition.

The Group Properties or Network Partition Properties pane has two tabs: Status and Identification.

1.5.2.2.1 Status Tab

The following table describes the Status tab fields.

Table 1-4 Field Descriptions for the Status Tab

Field	Description
Group ID/Network Partition ID	User-defined name of the selected group or network partition.
Description	User-defined description of the selected group or network partition.
Total NEs	Total number of NEs within the selected group or network partition.
Unavailable NEs	Number of NEs within the selected group or network partition that the Prime Optical server cannot currently reach.
NEs in Alarm	Total number of NEs within the selected group or network partition that currently have an active alarm.
Unmanaged NEs	Number of NEs within the selected group or network partition that are currently unmanaged.
Alarm Status	Total number of alarms within the selected group or network partition, by severity. In addition, this field lists how many of the total NE alarms have a critical, major, minor, or warning status. If the same NE experiences more than one type of alarm simultaneously, that NE is included in the count for each severity level.
NE Count by Operational State	Total number of NEs within the selected group or network partition according to operational state. There are four states: • In Service • Under Maintenance • Out of Service • Preprovisioned Also shows the number of NEs within the selected group or network partition that are initializing or synchronizing their configuration.

1.5.2.2.2 Identification Tab

The following table describes the Identification tab fields. Only users with the appropriate user access profile can edit these fields.

Table 1-5 Field Descriptions for the Identification Tab

Field	Description
Group ID/Network Partition ID	Unique user-defined name of the selected group or network partition.
Description	User-defined description of the selected group or network partition.
Location Name (*not applicable to network partitions*)	User-defined geographic location of the selected group.

Note See Table 1-22 for the descriptions of the actions that you can perform using the buttons at the bottom of the window.

1.5.2.3 Network Element Properties

The Network Element Properties pane displays information about the NE that is currently selected in the tree. An NE represents a Cisco ONS 15216, ONS 15305, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15454-M2, ONS 15454-M6, ONS 15530, ONS 15540, ONS 15600 SONET, ONS 15600 SDH, or unmanaged/other vendor node.

The same NE can have multiple instances in the tree. The contents of all instances of the same NE are always the same. Any changes to one NE instance are reflected in all instances of that NE. Regardless of the number of instances an NE has in the tree, you can delete one or all instances of that NE. When the final instance of an NE is deleted, the deleted NE moves to the Deleted Network Elements group.

The Network Element Properties panes for most NEs have the following tabs: Status, Identification, Address, NE Authentication, and TL1 Tunnel. The NE Properties pane for passive NEs has only one tab: Identification.

1.5.2.3.1 Status Tab

The following table describes the fields in the Status tab. Display-only fields have a gray background.

Table 1-6 Field Descriptions for the Status Tab

Field	Description
NE ID	Name of the selected NE.
Description	Information that a user entered to describe the NE.
NE Model	Model of the selected NE.
Alarm Status	Total number of critical, major, minor, and warning alarms currently existing on the selected NE.
Communication State	Current communication state of the selected NE. Communication states can be one of the following: • Available • Unavailable • Not Applicable • Initialization Failed
Operational State	Current operational state of the selected NE. You can change the operational state.

Table 1-6 Field Descriptions for the Status Tab (continued)

Field	Description
PM Collection (*not applicable to the ONS 15216*)	15 Min/1 Day: Check the **15 Min** check box to enable 15-minute PM data collection. Check the **1 Day** check box to enable 1-day PM data collection. By default, PM data collection is disabled for both 15-minute and 1-day options.
	15 Min Robust/1 Day Robust: If the 15 Min check box is checked and the NE supports robust PM collection, you can check the **15 Min Robust** check box to enable robust PM collection. If the 1 Day check box is checked and the NE supports robust PM collection, you can check the **1 Day Robust** check box to enable robust PM collection. Robust PM collection is performed according to the selected PM collection state when the NE or server is available. **Note** You cannot collect robust PM data until at least one 15-minute or one 1-day interval has been collected in normal operation. Robust PM data collection applies only to CTC-based NEs[1] and to the ONS 15305, ONS 15530[2], ONS 15540 ESP[3], and ONS 15540 ESPx[2] NEs. Robust PM data collection is not supported for the ONS 15216.
Audit Trail State (*applicable to CTC-based NEs*)	Whether the audit trail collection is enabled or disabled. You can change the setting. Audit trail collection is disabled by default. **Note** The CTC-based ONS 15305 R3.0 does not support audit trails.

1. For CTC-based NEs, you can collect up to 8 hours of 15-minute robust PM data and up to the previous day's 1-day robust PM data.
2. For ONS 15530 and ONS 15540 ESPx NEs, you can collect up to 24 hours (96 previous missed intervals) of 15-minute robust PM data and up to the previous day's 1-day robust PM data.
3. For ONS 15540 ESP NEs, you can collect up to 24 hours (96 previous missed intervals) of 15-minute robust PM data.

1.5.2.3.2 Identification Tab

The following table describes the fields in the Identification tab. Display-only fields have a gray background. Fields displayed vary by NE type.

Table 1-7 Field Descriptions for the Identification Tab

Field	Description
NE ID	Name of the selected NE.
Alias	Alias name of the selected NE.
Description	Information that a user entered to describe the NE.
NE Model	Model of the selected NE.
NE Type	Type of NE.
Vendor Name	Vendor name.
Software Version	Software version that is running on the NE.

Table 1-7 Field Descriptions for the Identification Tab (continued)

Field	Description
Version Name	String name tag that identifies the NE and the associated software version. The version name that is displayed is dependent on the software version. If the software version is: • Unsupported—The value displayed is "**Unsupported**." • Supported: – Version manually added—The value displayed is the version name used by Prime Optical to manage the NE. This value is available in the Supported NE table that is specific to the custom version name. – Version not manually added—The value displayed is the version name as available in the NE Supported table. For more information see, Table 4-13.
Location Name	Geographic location of the selected NE.

1.5.2.3.3 Address Tab

The following table describes the fields in the Address tab.

Table 1-8 Field Descriptions for the Address Tab

Field	Description
NE ID	Name of the selected NE.
Description	Information a user entered to describe the NE.
NE Model	Model of the selected NE.
Active IP Address	IP address of the GNE. If the node is a GNE or LAN-connected network element (LNE), the active IP address is the IP address that Prime Optical is currently using to connect to the NE. GNEs have an IPv6 active IP address only if Prime Optical connects to them using an IPv6 protocol. All end network elements (ENEs) have an IPv6 active IP address if their GNE is connected to Prime Optical with IPv6. This information is calculated on a theoretical projection, which does not necessarily equate to a real network situation. For tunnel NEs (TNEs)—NEs reachable through a TL1 connection—this field displays the IP address of the non-Cisco GNE. Prime Optical can connect to a TNE that belongs to an Open System Interconnection (OSI) network behind a non-Cisco GNE.
NE IPv4 Address	IPv4 address of the NE. Prime Optical tries to connect to the NE using an IPv4 address. If the IPv4 address is unreachable, Prime Optical tries to connect to the NE using its IPv6 address, if configured and reachable. **Note** The NE IPv4 Address field is dimmed when the NE is in service. If the node is a TNE, this field displays the IP address of the TNE in the network that connects the TNE with its ENEs. You cannot edit the NE IP address for TNEs, even if the TNE is marked as Out of Service.

Table 1-8 Field Descriptions for the Address Tab (continued)

Field	Description
NE IPv6 Address	IPv6 address of the NE. If the IPv6 address is unreachable, Prime Optical tries to connect to the NE using its IPv4 address. **Note** If IPv6 is not configured on the NE, the IP address 0:0:0:0:0:0:0:0 is shown. The NE IPv6 Address field is dimmed when the NE is in service.
SNMP Community String (*not available for all NEs*)	Community string name used in SNMP messages. You must provide the community string name to give the user SNMP read access to the device. **Note** This field is displayed only for ENE devices. This field is unavailable or not displayed if it does not apply to the selected NE. For ONS 155xx NEs, you specify the community string in the SNMP Community String table (**Administration > Community String Table**). The ONS 15216 EDFA2 uses the community string "private." Automatic addition of an entry in the SNMP Trap Destination table requires read/write access (RWA).
GNE ID	*Display only.* ID for the GNE. **Note** The GNE/ENE association is determined automatically by the Prime Optical server. If an ENE references a GNE and that GNE is reconfigured to no longer proxy for the ENE, the GNE ID for that ENE is left blank.
Subnetwork ID	Subnetwork ID for the selected NE.
Network Partition ID	Network partition ID for the selected NE. **Note** SONET and SDH NEs cannot be added to the same network partition.

1.5.2.3.4 NE Authentication Tab

The NE Authentication tab allows you to specify usernames and passwords for the Prime Optical server and command-line interface (CLI) connections to the selected NE. The following table describes the fields in the NE Authentication tab. Fields shown depend on the type of NE selected; the field is unavailable or not displayed if it does not apply to the selected NE.

Table 1-9 Field Descriptions for the NE Authentication Tab

Field	Description
Server - SNMP Connection	
SNMP Protocol	Specify the SNMP protocol from the drop-down list. Values are: • Default—When selected, Prime Optical uses the global defaults set in the Control Panel > Security Properties pane for SNMPv3. • SNMPv1/v2—Select this option to use SNMP version 1 or version 2. • SNMPv3—Select this option to use SNMP version 3.
Username	Username of a Prime Optical user enabled for SNMPv3 communication. When you add the NE, use the wizard to set parameters for the SNMPv3 user.
Authentication Protocol	Choose the authentication protocol to use for authenticating the user. Values are None, MD5 (the default), or SHA.

Table 1-9 Field Descriptions for the NE Authentication Tab (continued)

Field	Description
Authentication Password	Enter the password that the OSS client uses to log into the Prime Optical server. The password must contain: • From 1 to 12 characters • At least one special character other than an apostrophe (') • At least two letters (A-Z, a-z), including at least one uppercase letter • At least one number (0-9) **Note** Regardless of the actual length of the password, the Password and Confirm Password fields display only a fixed-length string of 15 asterisks (*).
Confirm Authentication Password	Re-enter the password to confirm it.
Privacy Protocol	Specify the protocol to use for communicating the value of the SHA or DES fields. Select the privacy protocol for the NBI user. You can choose one of the following: • NONE—No privacy protocol for the user. • DES—Use Data Encryption Standard (DES) for encryption.
Privacy Password	Enter the password used to decrypt the message payload. Use this password if the Prime Optical user encryption mode for communication is NONE or DES.
Confirm Privacy Password	Re-enter the privacy password to confirm it.
Server - NE Connection[1]	
Username	Username that the Prime Optical server uses to connect to NEs.
Password	Password to use for Prime Optical server-to-NE connections.
Confirm Password	Re-enter the password to confirm it.
CLI Connection[2]	
Username	Username to use for CLI-to-NE connections.
Password	Password to use for CLI-to-NE connections.
Confirm Password	Re-enter the password to confirm it.

1. This field applies to NEs that have a TL1 interface and are provisioned through TL1 (for example, the ONS 15216 EDFA2, EDFA3, and OADM).
2. This field applies to NEs that have a CLI and are provisioned through CLI.

1.5.2.3.5 TL1 Tunnel Tab

The TL1 Tunnel tab is available only for TNEs (NEs reachable through a TL1 connection) and allows you to specify TNE settings. Prime Optical can connect to a TNE that belongs to an OSI network behind a non-Cisco GNE. The following NE models support TL1 tunnels: ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, and ONS 15454 SDH.

The following table describes the fields in the TL1 Tunnel tab. All fields are dimmed (with a gray background) when the TL1 tunnel is open, and when the NE is marked as In Service or Under Maintenance.

Table 1-10 Field Descriptions for the TL1 Tunnel Tab

Field	Description
TL1 Encoding Mode	TL1 encoding mode: • LV + Base64 Payload—(Default) If selected, TL1 port 3081 is used. • LV + Binary Payload—If selected, TL1 port 3081 is used. • Raw—If selected, TL1 port 3082 is used.
Port	Port number used to support the TL1 tunnel.
GNE Connection Area	
GNE Login Required	• If checked, a GNE login is attempted whenever the TL1 tunnel is opened. The login uses the specified GNE TID, username, and password. • If unchecked, the GNE TID, Username, Password, and Confirm Password fields are dimmed (but their contents are not cleared); no login is attempted to the GNE.
GNE TID	Value that must be entered if a GNE login is required.
Username	Username that the Prime Optical server uses to connect to TNEs.
Password	Password to use for Prime Optical server-to-TNE connections.
Confirm Password	Re-enter the password to confirm it.
Gateway TL1 Port	Port that the TL1 gateway uses to connect to the non-Cisco GNE. The port depends on the type of NE that is being used as the non-Cisco GNE. You can edit the port number.

Note Regardless of the actual length of the password, the Password and Confirm Password fields display only a fixed-length string of 15 asterisks (*).

Note See Table 1-22 for the descriptions of the actions that you can perform using the buttons at the bottom of the window.

1.5.2.4 Undiscovered Network Elements

The Undiscovered Network Elements pane displays information about NEs that are not yet managed by a network service. These NEs are discovered using Manual discovery mode. You can get details for undiscovered NEs through the managed NEs to which they are connected. Details are limited by the type of links that exist between the NEs.

Table 1-11 Field Descriptions for the Undiscovered Network Elements Pane

Field	Description
Discovery State Area	

Discovery State	Displays the current state of the undiscovered NEs. Values are:
	• Idle—No discovery has been initiated on the NEs.
	• In progress—The discovery is in progress. The values within parentheses indicate the start date and time of the discovery process.
	• Completed—The discovery process is complete. The values within parentheses indicate the date and time of the completion of the discovery process.
	• Partially completed—The discovery process is incomplete for some NEs.
	• Canceled—The discovery operation has been canceled.
	• Failed—The discovery operation failed.
	To initiate a new discovery session, click the **Start Discovery** button. The Select Network Partitions dialog box opens. The dialog box displays the available network partitions, the number of NEs present, and the threshold. Select one or more network partitions from the list. You must have at least one network partition (in manual mode) to be able to start the discovery process. To launch the Select Network Partitions dialog box, you need at least two network partitions, both in manual mode. You will receive the following message if you do not have at least two partitions:
	`There are no network partitions available to run the discovery.`
	The Start Discovery button is disabled if a discovery session is already in progress. The following message is displayed if the another discovery, initiated through a different session, is in progress:
	`Another discovery is running. Try again later.`
	To add the undiscovered NEs to a specific network partition, click **Add Undiscovered Network Elements**. The Add Undiscovered NEs wizard opens. You can also add undiscovered NEs by doing one of the following:
	• Right-click **Undiscovered Network Elements** in the left pane; then, click **Add Undiscovered Network Elements**.
	• Choose **Administration > Add Undiscovered NEs**.

Discovery Overview Area	
SONET NEs	Displays the number of SONET NEs that are unmanaged.
SDH NEs	Displays the number of SDH NEs that are unmanaged.
Undefined NEs	If Prime Optical has only the IP address of the discovered NE, it cannot classify the NE as SONET or SDH. In such cases, the NE is marked as Undefined. This display-only field shows the number of undefined NEs that are unmanaged.

1.5.2.5 Add Undiscovered NEs Wizard

The Add Undiscovered NEs wizard allows you to add the manually discovered NEs to network partitions. Using the wizard, you can filter NEs based on various parameters and add them to the network partition. The wizard is divided into three sections: a pane displaying the undiscovered NEs, the Selected NEs pane, and a pane with the details of an NE selected in the undiscovered NEs pane.

Undiscovered NEs Pane

The right pane displays the list of undiscovered NEs, along with the following details:

- IP address
- NE model
- NE role

To view the details of an NE, select the NE. The details are displayed in the table.

Note IPv6 Connection Type is available only if IPv6 connectivity is present between Prime Optical and the NE. Otherwise, the connection type is marked as Unknown.

Selected NEs Pane

The Selected NEs pane displays the undiscovered NEs that have been selected to be added to a network partition. To add NEs to the list, click the right arrow (**>**). To move the NEs back to the undiscovered NEs pane, click the left arrow (**<**).

Filtering NEs

You can filter the displayed NEs by choosing one of the following options from the toolbar:

- IP Address—Click the filter icon to specify an IP address. The Undiscovered NE Filter dialog box opens. Enter an IP address or an asterisk (*) as a wildcard; then, click **Apply**. The filter changes to green when IP address filtering begins. Alternatively, choose **File > Filter** and enter the IP address.
- IP Version—Select IPv4 or IPv6.
- NE Model—Select an NE model. The NE model is unknown if you filtered by IP address only. The following message appears if you try to add an NE of an unknown model type to the Selected NEs list:

  ```
  Make sure that the selected entries refer to the same model type.
  ```

- Family Type—Select a family from the available list. The family type NE model is unknown if you filtered by IP address only.

The following message appears if you try to change a filtering parameter when nodes are present in the Selected NEs list:

```
This will clear the current selection. Click OK to apply the change. Click Cancel to
retain the selection.
```

The status bar at the bottom of the window shows the number of NEs currently displayed out of the total available NEs.

You can also do the following:

- Export Data—The Export dialog box allows you to export data as comma-separated values (CSVs) or tab-separated values (TSVs). To export data, choose **File > Export**. For more information, see 1.6.7 Exporting Data, page 1-41.

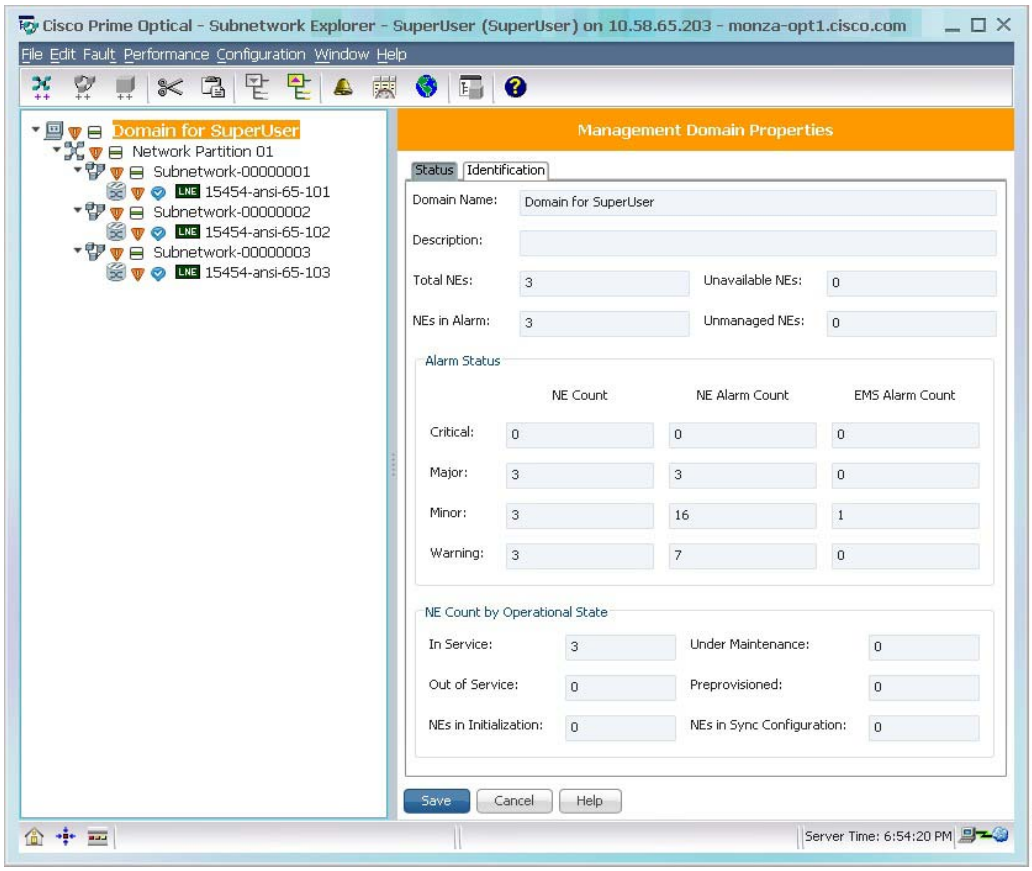
- Create HTML Report—Allows you to generate an HTML report based on the data in the table. Choose **File > HTML Report**. You can generate a report for selected rows or for all rows. After you make your selection, the browser window appears with the HTML report. Use your browser's Print option to print the HTML report.
- Debug Problems—Gives you information to investigate, diagnose, and fix a problem. For more information, see 9.6.4 Setting Debug Options, page 9-36.

To add the selected NEs to a network partition, click **Next**. The Add Network Elements window appears, showing that the selected NEs have been added to the Added NEs list. For more information, see 3.5.2 Adding NEs, page 3-13. To remove the NE that you do not want to be added, select the NE and click **Remove**.

1.5.3 Subnetwork Explorer

The Subnetwork Explorer window displays a hierarchical view of all the network partitions, subnetworks, and NEs currently being monitored by Prime Optical. The alarm status is also indicated.

Figure 1-4 Subnetwork Explorer



The Subnetwork Explorer window is divided into two sections: the explorer tree and the properties pane. The explorer tree consists of a management domain, network partitions, subnetworks, and NEs, which are displayed in a hierarchical format. You can drag and drop NEs to reposition them in the tree. The properties pane on the right side of the window shows detailed information about the object that is selected in the tree.

The Subnetwork Explorer allows you to:

- View the alarm, connectivity, and operational status of network partitions, subnetworks, and NEs
- Add network partitions
- Modify network partition properties
- Delete empty network partitions
- Add subnetworks and associate the new subnetwork to new or existing network partitions
- Add NEs to a subnetwork and associate the new NEs with the network partitions of that subnetwork

The Subnetwork Explorer has two modes: automatic and manual. In automatic mode, all topologically connected NEs are grouped automatically into subnetworks. You cannot associate NEs to subnetworks in this mode. In manual mode, you can associate NEs to subnetworks. To change the subnetwork mode, choose **Administration > Control Panel > UI Properties** and check or uncheck the **Automatically Group NEs in Subnetworks** check box.

In the transition period during which this option is being changed, any current operations (such as dropping an NE in a subnetwork) are completed.

The server time is displayed on the lower right side of the Subnetwork Explorer window. The server name is displayed in the window's title bar.

The Subnetwork Explorer has four properties panes: Management Domain Properties, Network Partition Properties, Subnetwork Properties, and Network Element Properties.

1.5.3.1 Management Domain Properties

See 1.5.2.1 Management Domain Properties, page 1-12.

1.5.3.2 Network Partition Properties

See 1.5.2.2 Group Properties and Network Partition Properties, page 1-14.

1.5.3.3 Subnetwork Properties

The Subnetwork Properties pane displays information about the subnetwork that is currently selected in the explorer tree. Click the expand icon next to a subnetwork in the tree to view the NEs that have been assigned to that subnetwork.

The Subnetwork Properties pane has two tabs: Status and Identification.

1.5.3.3.1 Status Tab

The following table describes the Status tab fields.

Table 1-12 Field Descriptions for the Status Tab

Field	Description
Subnetwork ID	User-defined or default name of the selected subnetwork.
Description	User-defined description of the selected subnetwork.
Total NEs	Total number of NEs within the selected subnetwork.
Unavailable NEs	Number of NEs within the selected subnetwork that the Prime Optical server cannot currently reach.
NEs in Alarm	Total number of NEs within the selected subnetwork that are currently experiencing an alarm.
Unmanaged NEs	Number of NEs within the selected subnetwork that are currently unmanaged.
Alarm Status	Total number of alarms within the selected subnetwork, by severity. In addition, this field lists the number of alarmed NEs that are experiencing a critical, major, minor, or warning alarm. If the same NE experiences more than one type of alarm simultaneously, that NE is included in the count for each severity level.
NE Count by Operational State	Total number of NEs within the selected subnetwork according to operational state. There are four states: • In Service • Under Maintenance • Out of Service • Preprovisioned Also shows the number of NEs within the selected subnetwork that are initializing or synchronizing their configuration.

1.5.3.3.2 Identification Tab

The following table describes the fields in the Identification tab.

Note Only users with the appropriate user access profile can edit these fields.

Table 1-13 Field Descriptions for the Identification Tab

Field	Description
Subnetwork ID	Unique user-defined name of the selected subnetwork.
Description	User-defined description of the selected subnetwork.
Subnetwork Type	Subnetwork type (SONET, SDH, Other, or Unknown).
Subnetwork Topology	Type of topology to which the selected subnetwork belongs.
Network Partition ID	Network partition ID to which the subnetwork belongs.

Note See Table 1-22 for the descriptions of the actions that you can perform using the buttons at the bottom of the window.

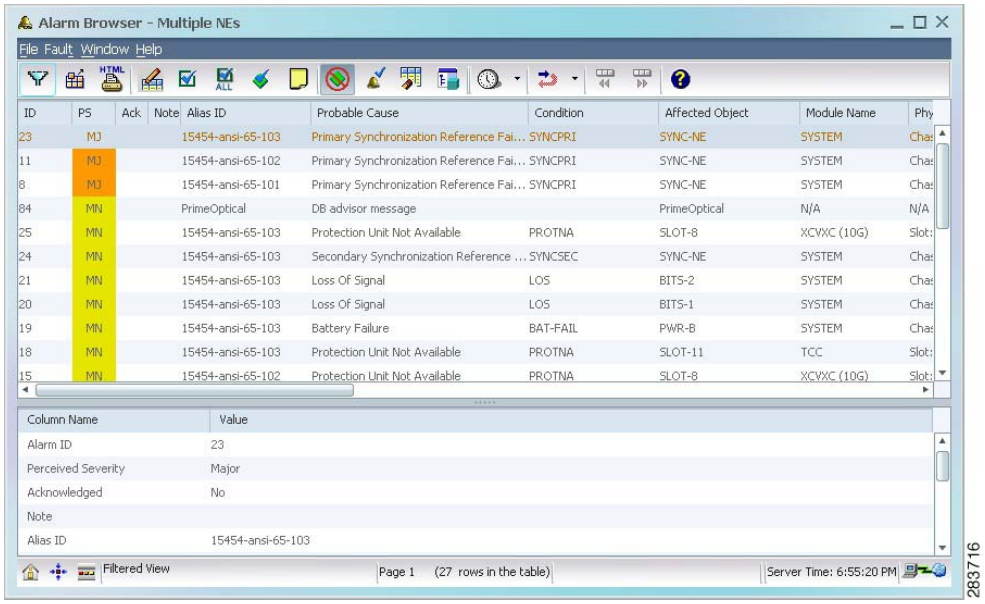
1.5.3.4 Network Element Properties

See 1.5.2.3 Network Element Properties, page 1-16.

1.5.4 Alarm Browser

The Alarm Browser displays standing alarms and conditions in the managed domain that are assigned a severity level of critical, major, minor, or warning. It also shows cleared alarms that are not acknowledged.

Figure 1-5 Alarm Browser



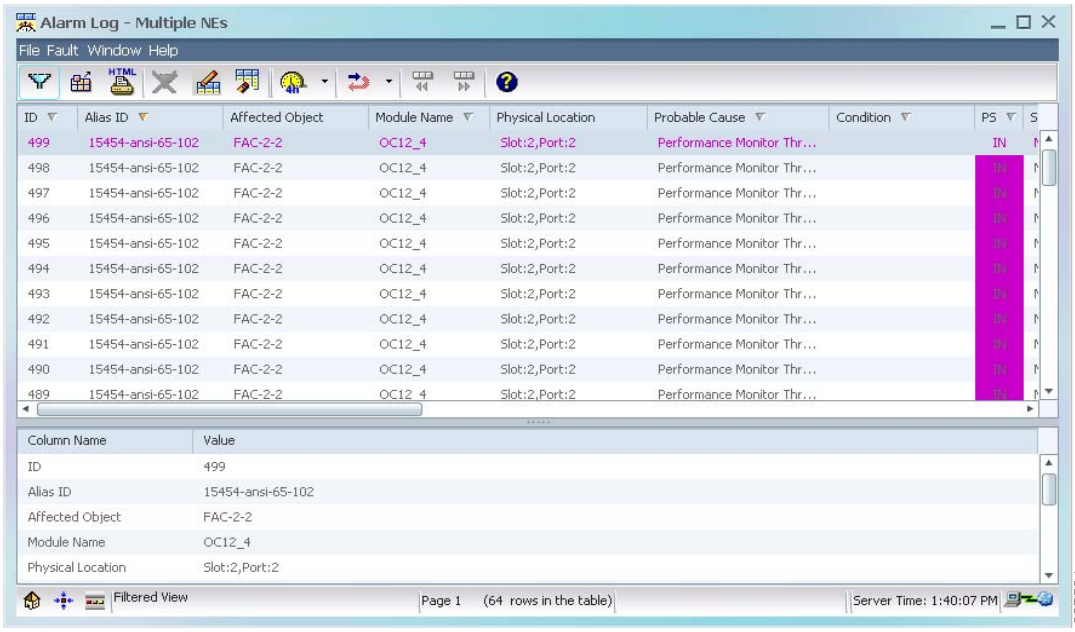
Tip For detailed information about the Alarm Browser, see Chapter 9, "Managing Faults."

Note Refer to the appropriate NE documentation for a list of alarms supported on each NE. See 1.7.2 Related Cisco NE Documentation.

1.5.5 Alarm Log

The Alarm Log window contains alarms that have transitioned from the Alarm Browser. Cleared alarms are transitioned when you acknowledge them or when automatic acknowledgment has been enabled (in the Control Panel > UI Properties pane). In addition, the Alarm Log shows a history of cleared and acknowledged alarms and all transient conditions (also known as events or autonomous nonalarmed messages), as well as threshold crossing alerts (TCAs).

Figure 1-6 Alarm Log

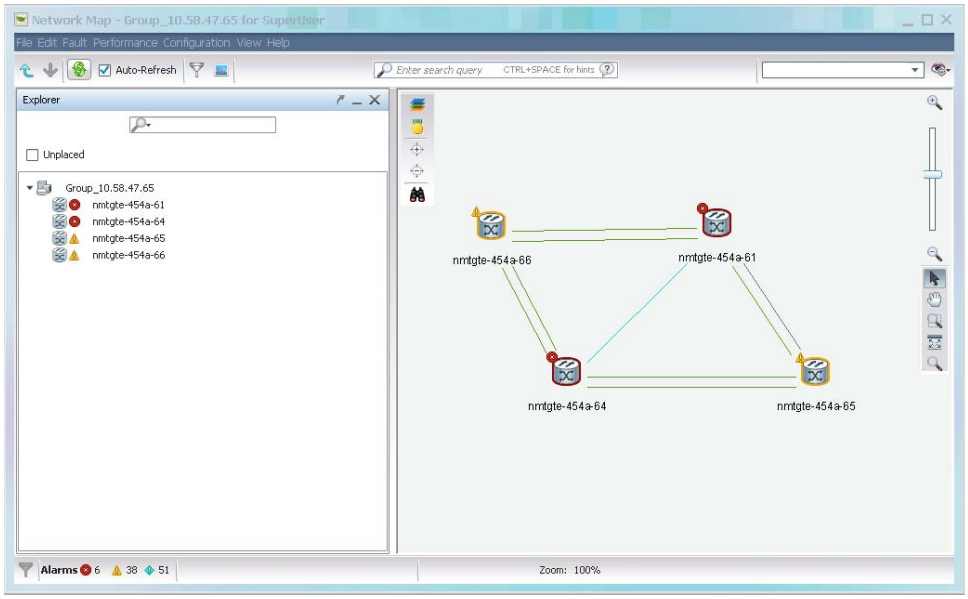


Tip For detailed information about the Alarm Log, see Chapter 9, "Managing Faults."

1.5.6 Network Map

The Network Map window allows you to graphically display how the network is partitioned.

The Network Map is organized into a multilevel hierarchy that corresponds to the structure of the Domain Explorer tree. The Network Map hierarchy consists of management domains, groups, and NEs, which are displayed graphically.



Note See Appendix A, "Icons and Menus Displayed in Prime Optical" for an explanation of the Network Map icons.

When you launch the Network Map from the Prime Optical domain, it displays a map with individual groups, NEs, and link icons. The network map has four main components: a center pane displaying the map image, Explorer pane, Properties pane, and Overview pane. From the Explorer pane, you can perform a search for NEs based on certain parameters. Prime Optical also allows you to filter network maps by NEs, groups, or links. For details, see 3.8 How Do I Use Network Maps?, page 3-55.

Clicking the **Open Parent Map tool** returns you to the parent map. Clicking the **Open Child Map tool** opens the child map for the selected NE.When you launch the Network Map from a particular group in the Domain Explorer, the Network Map opens with the contents of the group displayed.

Note Double-clicking a group on the map opens the child map. Double-clicking a node on the map opens the NE Explorer.

After you zoom in on a region on the map, the pan tool at the right side of the screen allows you to pan the view to a different region. All groups are shown on a single map, and the zoom level and pan position determine which groups are visible at any time. You can open multiple map windows to compare different views.

All groups, NEs, links, and labels are zoomed when you zoom in or zoom out. Prime Optical allows you to save the zoom level and framing of the map.

With the Auto-Refresh check box selected in the Network Map window, a refreshed map is automatically displayed when:

- A node is deleted
- The alarm counts change
- The node connectivity state changes
- The node admin state changes

- The node name changes
- The node data properties change
- The discovery state changes
- The link is modified

When the Auto-Refresh check box is unchecked, a notification bar appears at the top of the network map window stating that attributes of elements in the map have changed, and you can click the Refresh tool to reload the map.

You can export a Network Map as an image in PNG format using the Export tool in the Network Map window.

You can also search for circuits from the Network Map. For details, see 3.8 How Do I Use Network Maps?, page 3-55.

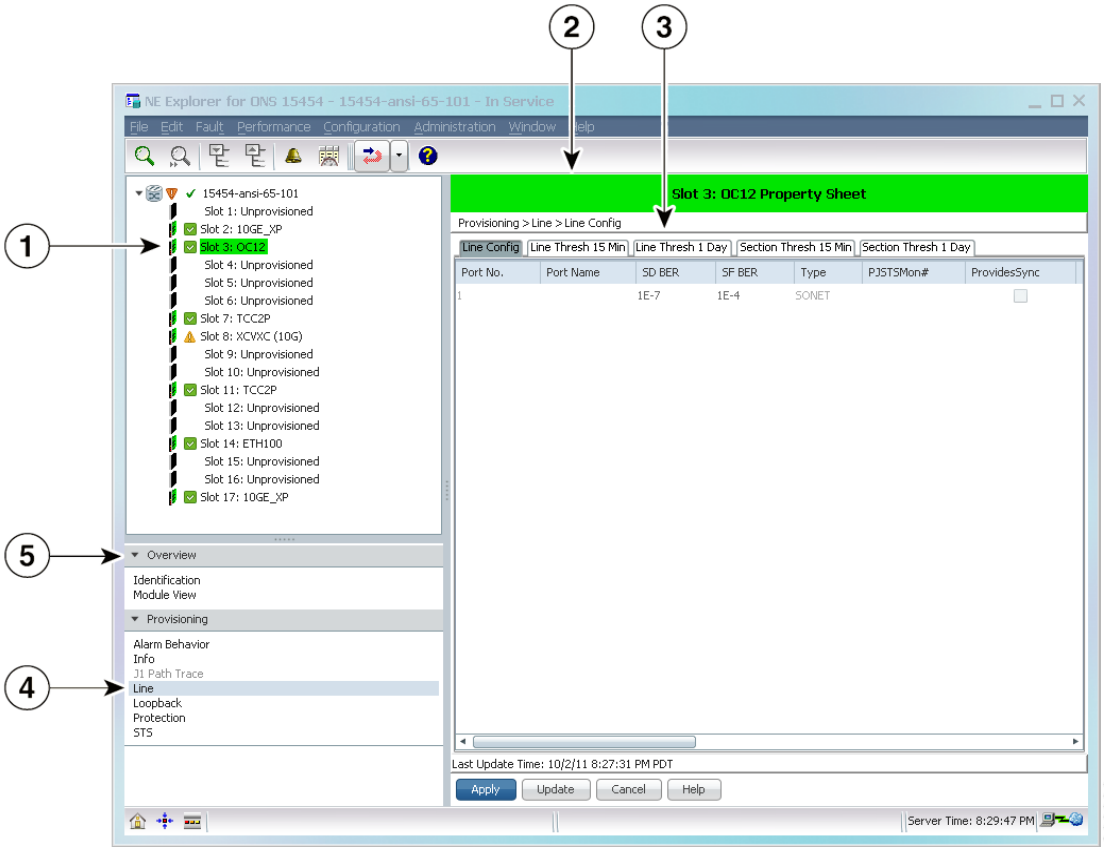
1.5.7 NE Explorer

The NE Explorer window shows service and equipment provisioning information about the selected NE. The configuration information is retrieved through the CLI, CORBA, SNMP, and TL1. The actual protocol used depends on the NE type.

Use one of the following methods to open the NE Explorer:

- Select an NE; then, choose **Configuration > NE Explorer** in the Domain Explorer or Subnetwork Explorer.
- Double-click an NE icon in the Domain Explorer tree, Subnetwork Explorer tree, or Network Map.
- In the Domain Explorer tree, Subnetwork Explorer tree, or Network Map, right-click an NE icon and choose **NE Explorer** from the shortcut menu.
- Click the **Open NE Explorer** tool in the Domain Explorer, Subnetwork Explorer, or Network Map toolbar.
- In the Alarm Browser, choose **Fault > Locate Alarm/Event** (or click the **Locate Alarm/Event Through NE Explorer** tool).
- Double-click a row in the Alarm Browser.

Figure 1-7 NE Explorer



Number	Element Name	Description
1	NE Explorer Tree	Lists all installed cards for a selected management domain.
2	Properties Pane	Displays detailed property information.
3	Tab	Groups related information within the properties pane. **Note** If many tabs are displayed in the properties pane, select the arrow or Show List icons to view all available tabs.
4	Node or Slot Properties	Displays information about the selected object property in the properties pane.
5	Drawer	Groups node and slot properties that have related attributes. • Overview Drawer—Contains a list of informational properties. • Provisioning Drawer—Contains a list of configurable properties.

To display all the slots under the node, click the expand icon (+) next to the node in the topology tree. To view properties, select the node or slot and click the down arrow next to the Overview and Provisioning drawers. Unavailable properties are dimmed.

When you change the data in the property sheet and try to navigate to a different node or slot property without saving, the following message appears.

```
Property sheet has been changed. Do you really want to discard changes?
```

The following table lists the NEs supported in Prime Optical and describes the NE Explorer for each NE. Not all NEs have an associated NE Explorer.

Table 1-14 NE Explorer and Node Property Information

NE	Description	See
Unmanaged NE/Other Vendor Node	The node properties pane for the Unmanaged NE/Other Vendor Node displays information about unmanaged NEs or nodes from other vendors.	B.18 Unmanaged NE/Other Vendor Node Properties Pane, page B-474
ONS 15216	For the ONS 15216, the NE Explorer consists of a properties pane that displays information about the NE. ONS 15216 NEs are grouped as active NEs or passive NEs.	B.1 ONS 15216 NE Explorer, page B-1
ONS 15305 (CEC-based)	The NE Explorer is not available for the ONS 15305. Equivalent functionality is provided by launching Cisco Edge Craft (CEC) from Prime Optical. CEC is the local craft application used to manage ONS 15305 NEs. From the Domain Explorer, choose **Configuration > ONS 15305 > Launch Cisco Edge Craft**.	B.2 ONS 15305, page B-25
ONS 15305 (CTC-based)	For the CTC-based ONS 15305, the NE Explorer consists of a tree on the left side of the window and a properties pane on the right. The tree displays all interfaces for the selected NE, including card name, slot number, and number of alarms present on the card. It also displays unprovisioned or unequipped slots. The properties pane displays detailed information about the entity that is selected in the tree view.	B.3 ONS 15305 CTC NE Explorer, page B-26
ONS 15310 CL	For the ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH, the NE Explorer consists of a tree on the left side of the window and a properties pane on the right. The tree displays all interfaces for the selected NE, including card name, slot number, and number of alarms present on the card. It also displays unprovisioned or unequipped slots. The properties pane displays detailed information about the entity that is selected in the tree view.	B.4 ONS 15310 CL NE Explorer, page B-32
ONS 15310 MA SONET		B.5 ONS 15310 MA SONET NE Explorer, page B-59
ONS 15310 MA SDH		B.6 ONS 15310 MA SDH NE Explorer, page B-89
ONS 15327	For the ONS 15327, the NE Explorer consists of a tree on the left side of the window and a properties pane on the right. The tree displays all interfaces for the selected NE, including card name, slot number, and number of alarms present on the card. It also displays unprovisioned or unequipped slots. The properties pane displays detailed information about the entity that is selected in the tree view.	B.7 ONS 15327 NE Explorer, page B-120
ONS 15454 SONET	For the ONS 15454 SONET and ONS 15454 SDH, the NE Explorer consists of a tree on the left side of the window and a properties pane on the right. The tree displays all interfaces for the selected NE, including card name, slot number, and number of alarms present on the card. It also displays unprovisioned or unequipped slots. The properties pane displays detailed information about the entity that is selected in the tree view.	B.9 ONS 15454 SONET NE Explorer, page B-188
ONS 15454 SDH		B.10 ONS 15454 SDH NE Explorer, page B-232
ONS 15454-M6		B.11 ONS 15454-M6 NE Explorer, page B-280
ONS 15454-M2		B.12 ONS 15454-M2 NE Explorer, page B-319

Table 1-14 NE Explorer and Node Property Information (continued)

NE	Description	See
ONS 15600 SONET	For the ONS 15600 SONET and ONS 15600 SDH, the NE Explorer consists of a tree on the left side of the window and a properties pane on the right. The tree displays all interfaces for the selected NE, including card name, slot number, and number of alarms present on the card. It also displays unprovisioned or unequipped slots. The properties pane displays detailed information about the entity that is selected in the tree view.	B.13 ONS 15600 SONET NE Explorer, page B-356
ONS 15600 SDH		B.14 ONS 15600 SDH NE Explorer, page B-384

Usage Notes:

- When you click the Create button in an NE Explorer tab and use the Create dialog box to add information, the information is committed directly on the NE. You do not have to click the Apply button at the bottom of the properties pane.

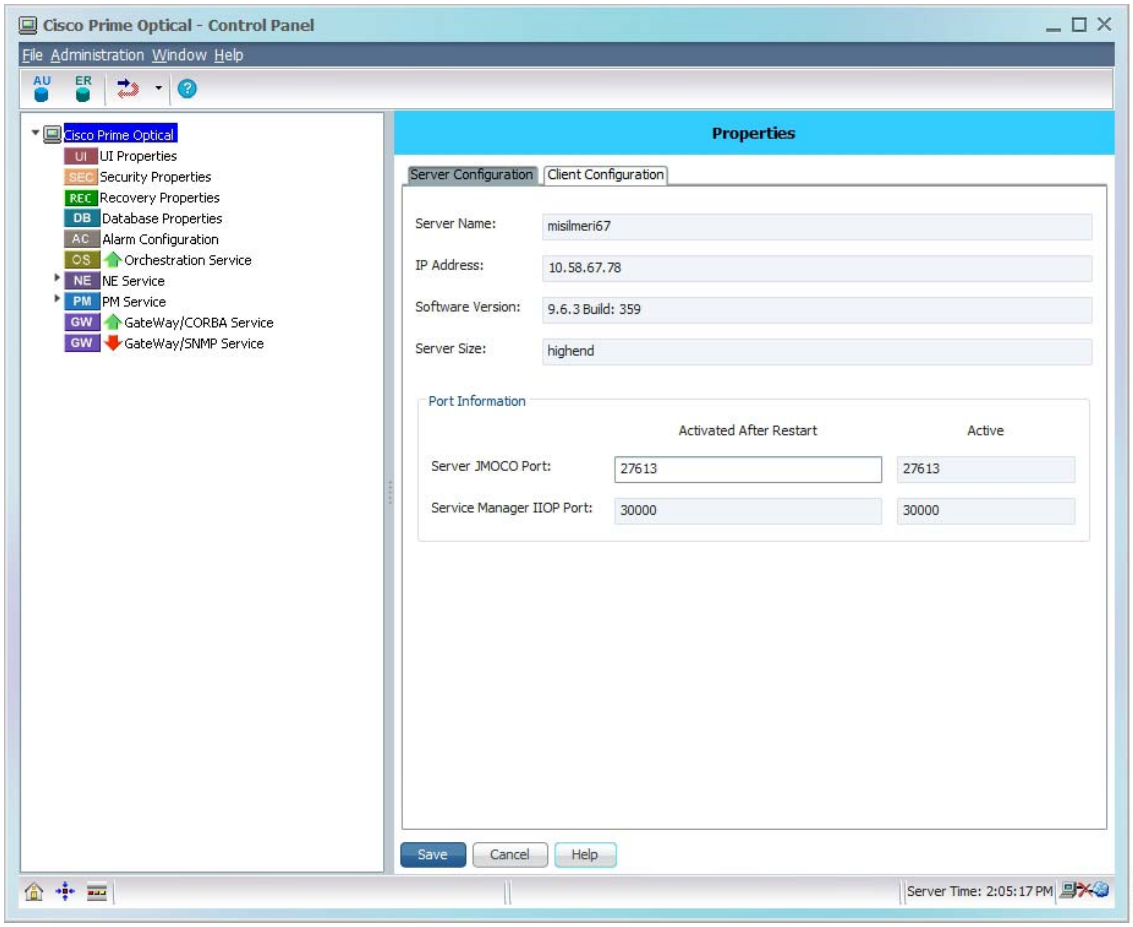
  Also, if you use the Create button to commit information on the NE, any changes to the value governed by the Apply button will be lost if they have not already been applied. For example, if you check the Allow SNMP Set check box on the SNMP tab, then create a trap destination host before clicking the Apply button, the check box will revert back to unchecked after the create operation is completed and the screen refreshes with the new trap destination in the table.
- You must click the Update button to retrieve the latest NE defaults, alarm profile, and VLAN list.
- See Table 1-22 for descriptions of actions that you can perform using the buttons at the bottom of the window.
- If nothing has been configured on the selected NE, the NE Explorer properties pane appears blank and system defaults apply.

1.5.8 Control Panel

The Control Panel allows you to view and modify certain client and server configuration parameters. Certain modifications take effect immediately and change the active server configuration. Other changes take effect when the server is restarted.

The left side of the window displays the tree, which contains the different Prime Optical functions and services. The right side of the window displays the properties pane that corresponds to the selected client or server component.

Figure 1-8 Control Panel



Click the expand icon next to the Prime Optical functions and services in the tree structure to display the services contained within. For example, expand NE Service to display the individual services.

The following table describes the panes in the Control Panel.

Table 1-15 Panes in the Control Panel

Pane	Description	For More Information, See
Prime Optical Properties	View the current server and client configuration.	Table 4-44 on page 4-95
UI Properties	Configure application-specific parameters.	Table 4-23 on page 4-57
Security Properties	Configure Prime Optical security parameters and specify usernames and passwords for NEs.	Table 8-10 on page 8-30
Recovery Properties	View a list of servers that clients will log into if access to the primary server is disrupted and view a list of critical services that the server monitors.	Table 9-10 on page 9-27
Database Properties	View database and backup configuration, pruning time periods, and information that the server uses to log into the Oracle database.	Table 4-1 on page 4-2
Alarm Configuration	View threshold and nonthreshold EMS alarm parameters.	Table 9-8 on page 9-19

Table 1-15 Panes in the Control Panel (continued)

Pane	Description	For More Information, See
Orchestration Service	View status of the discovery service and configure properties for discovery of undiscovered NEs.	Table 3-21 on page 3-66
NE Service	Select an NE type and view and update server configuration, which includes port information, timing parameters, and NE backup parameters. You can also stop or start an individual network service instance.	Table 4-27 on page 4-68
PM Service	Select an NE type and view and modify performance-related settings for that NE. You can also stop or start an individual PM service instance.	Table 10-1 on page 10-4
GateWay/CORBA Service	Stop, start, or configure parameters for the Prime Optical GateWay/CORBA service.	Table 12-5 on page 12-13
GateWay/SNMP Service	Stop, start, or configure parameters for the Prime Optical GateWay/SNMP service.	Table 12-1 on page 12-6

1.6 General Features of Prime Optical

This section describes some of the general Prime Optical features.

Note Prime Optical users are subject to user privileges. Depending on your user profile, you might not see certain windows or have access to certain functions. For more information about user privileges, see 8.3.2 User Privilege Profiles, page 8-3.

1.6.1 Window Views

All Prime Optical window views have a menu bar, toolbar, and status bar as described in the following table.

Table 1-16 Prime Optical Window Views

Item	Icon	Description
Menu bar	—	Some of the window menus are context-sensitive. All windows have a Window menu and a Help menu.
Toolbar	—	Each window has a toolbar with context-sensitive tools. All windows have a Help tool.
		For a detailed description of a particular window, click the **Help** tool (or choose **Help > Current Window**) to launch the online help.

Table 1-16 Prime Optical Window Views (continued)

Item	Icon	Description
Status bar	All windows have a status bar (located in the lower-left of the window) that reports the server time and contains the following icons:	
		Click the **Return to Domain Explorer** status bar icon to return to the Domain Explorer window. (The Domain Explorer window itself does not have this status bar icon.)
		Click the **Open Dashboard** status bar icon to open the Dashboard.
		Click the **Reset to Default Window Size** status bar icon to reset the window to its default size.
		This NE connectivity icon indicates that Prime Optical is currently connected to all NEs.
		This NE connectivity icon indicates that Prime Optical has lost connectivity to one or more NEs.

Note When you switch to a different program and then return to Prime Optical, the Prime Optical dialog boxes might be hidden behind another Prime Optical window or dialog box. The Prime Optical client might appear frozen because the hidden dialog box requires user action. On a Windows workstation, press **Alt-Tab** to display all running processes. Continue to press **Tab** (while keeping **Alt** depressed) to select the icon for the Java process. This will position the Prime Optical dialog box as the top active window. On a Solaris workstation, minimize the open windows until the Prime Optical dialog box is visible.

1.6.2 Table Views

All Prime Optical table views share common characteristics, as described in the following table.

Table 1-17 Prime Optical Table Views

Item	Tool	Description
Page Back and Page Forward		Some tables return large numbers of rows. To support large tables, Prime Optical provides a paging feature. If more than 1000 rows of data are returned, data is grouped in pages of up to 1000 rows. You can page forward and page back to view the entire set of data. • Page Back—Moves the table backward by one page. • Page Forward—Moves the table forward by one page.
Split-Pane View	—	Table views have two panes: a top pane and a bottom pane. The top pane displays the rows in the table. The bottom pane displays a detailed description of the selected row in the top pane. The bottom pane improves the readability of row attributes that might be truncated in the top pane. You can resize these panes by dragging the splitter bar up or down. **Note** The resized panes will return to their default sizes the next time you open the table.
Rearrange and Resize Columns	—	To rearrange columns in any table, select and drag the column title. To resize columns, drag the column separator line to the left or the right. **Note** The rearranged or resized columns will return to their default positions and sizes the next time you open the table.

Table 1-17 Prime Optical Table Views (continued)

Item	Tool	Description
Customize View		You can customize the way tables are displayed by selecting the columns to be displayed, and the order in which to display them. Prime Optical allows you to save your customized table view so that the next time you open the table, it is displayed in the same manner in which it was saved. See 1.6.9 Customizing Table Views, page 1-43 for more information.
Sort	—	You can sort columns using the up or down arrows. The up arrow represents ascending order; the down arrow represents descending order. The orange-colored arrow identifies the column that is the primary key in the current sort. To sort the data, simply click the column title. **Note** You can only sort one column at a time.
Group	—	You can group items in a column that have the same value using the square icons located in the column title. To group column items, simply click the column title. The color of the square icon turns orange, indicating that the column is grouped. **Note** You can only group one column at a time.
Filter	 	Click the **Filter** tool to filter the data according to criteria that you select, and then display the results in a table. Some tables have a time-based Filter tool that allows you to filter data for the past 4 hours, past 8 hours, past 12 hours, past day, or past week. **Note** Clicking Refresh Data resets the time-based filter. The filter retrieves data for the specified interval, beginning when the Refresh Data tool is clicked. For example, if the specified interval is Past Hour and Refresh Data is clicked at 3:02 p.m., the filter retrieves data that occurred between 2:02 p.m. and 3:02 p.m. If the specified interval is From Now Onward at 8:00 p.m., data is retrieved beginning at 8:00 p.m. and the time is reset only after From Now Onward is clicked again.
Export		Click the **Export Data to File** tool to export the tabular data to a file. **Note** You can export only data that the current table tool has cached (which might be larger than what is visible if there is a vertical scroll bar on the view), and not the entire data set available in the database.
HTML Report		Click the **Generate HTML Report** tool to generate an HTML report based on the data in the table. You can generate a report for selected rows or for all rows in the current page. A maximum of 1000 rows per page can be exported. After making your selection, click **OK**; the browser window appears with the HTML report. The report is saved automatically on the client system. (The default directory is C:\Cisco\TransportManagerClient*version-number*\reports or /opt/CiscoTransportManagerClient*version-number*/reports.) Use your browser's Print option to print the report.

1.6.3 Tree Views

All Prime Optical tree views share common characteristics, as described in the following table.

Table 1-18 Prime Optical Tree Views

Item	Tool	Description
Split-Pane View	—	Tree views have two panes: a left pane and a right pane. The left pane represents the topology tree; the right pane shows the properties of the entity selected in the tree.
Expand		Click the **Expand** tool (or choose **Edit > Expand**) to expand the selected tree node.
Collapse		Click the **Collapse** tool (or choose **Edit > Collapse**) to collapse the selected tree node.
Right-Click Options	—	Every selectable object has right-click options. Right-click a selectable object to view a shortcut menu that allows you to access more detailed information about the object.

1.6.4 Launching Context-Sensitive Information

Many Prime Optical views have a specific selection context, meaning that the same window will have a different look depending on where it was launched.

For example, if you launch the Alarm Browser from the management domain node, the browser shows all NE and EMS alarms (if you have permission to see EMS alarms). If you launch the Alarm Browser from a subnetwork, group, or NE node, the browser shows only NE alarms. If you launch the Alarm Browser from the Dashboard, the browser shows all NE alarms for the Prime Optical domain.

As another example, for circuit creation, the context of the launch point determines the choice of nodes that can be selected as source and destination nodes.

1.6.5 Finding Data

Prime Optical has a Find feature that you can use to locate specific data.

1.6.5.1 Finding Data in the Domain Explorer

In the Domain Explorer, you can use the Find dialog box to search for circuits, L2 topologies, NEs, or groups.

Step 1 In the Domain Explorer window, choose **Edit > Find**. The Find dialog box opens.

Step 2 From the Object Type drop-down list, choose one of the following options:

- SONET Circuits
- SDH Circuits
- L2 Topologies

- Network Element/Group
- Metro DWDM Circuits

Note The Metro DWDM Circuits option applies only to ONS 15530 and ONS 15540 NEs. For other NE types—such as the ONS 15454—the Metro DWDM Circuits option returns no results. To filter circuits on ONS 15454 NEs, use the Circuit table filter. See 7.2.19 Filtering the Circuit Table, page 7-157.

Step 3 To search for SONET, SDH, or metro DWDM circuits, specify the following information in the Object Properties area, in any combination:

- Circuit name
- Circuit alias (not applicable to metro DWDM circuits)
- Description
- Customer ID (not applicable to metro DWDM circuits)
- Service ID (not applicable to metro DWDM circuits)
- NE ID
- Circuit type
- Circuit size
- Number of VLANs (not applicable to metro DWDM circuits)

Tip In the Circuit Name, Description, Customer ID, Service ID, and NE ID fields, you can enter a percentage character (%) as a wildcard. You can search for a partial string inserted between percentage characters, such as *%CMP%*.

Step 4 To search for a particular L2 topology and view the results in the Layer 2 Topology table, specify the following information in the Object Properties area:

- Topology name
- NE ID
- NE type—Choose All, SONET, or SDH.
- Topology type—Choose All, Point to Point, Resilient Packet Ring, or 802.17 Resilient Packet Ring.

Tip In the L2 Topology Name and NE ID fields, you can enter an asterisk (*) as a wildcard.

Step 5 To search for a particular NE or group, enter the following information in the Object Properties area:

- NE or group name
- Alias
- IP address (in IPv4 or IPv6 format)
- Description

Tip To make the search noncase-sensitive, check the **Ignore Case** check box. The search always starts from the root node and returns to the root node after reaching the last node.

Tip In the Name, IP Address, and Description fields, you can enter a percentage character (%) as a wildcard. You can search for a partial string inserted between percentage characters. For example, in the IP Address field, you can enter ***%1.2%*** to search for all IP addresses that contain *1.2* as octets. If you do not enter wildcard characters, the search returns only exact matches.

Step 6 Click **OK**.

Step 7 To search for the next instance of the specified search object, choose **Edit > Find Next** in the Domain Explorer window.

1.6.5.2 Finding Data in the NE Explorer

In the NE Explorer window, you can use the Find dialog box to search for a particular node or card by specifying the node or card name.

Step 1 In the Domain Explorer window, select an NE node and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the NE Explorer window, choose **Edit > Find** (or click the **Find** tool). The Find dialog box opens.

Step 3 In the Find text field, enter the search text. The drop-down list displays a list of the search text you entered; your most recent entry appears at the top of the list.

Tip To make the search case-sensitive, check the **Match Case** check box. The search always starts from the root node and returns to the root node after reaching the last node.

Step 4 Click **OK**.

Note The Match Case check box setting is not saved. When you initiate a search, the case sensitivity of the search depends on the current setting in the Match Case check box. If you select a previously specified search string from the drop-down list, the search does not remember the Match Case check box setting that you specified in the previous search string.

Step 5 To search for the next instance of the specified search object, choose **Edit > Find Next** (or click the **Find Next** tool) in the NE Explorer window.

1.6.5.3 Finding NEs or Groups in the Network Map

In the Network Map window, you can use the Find on Map dialog box to search for a particular NE or group. The Find on Map dialog box allows you to search for an NE or group by providing the full or partial identifier of the NE or group. The Find on Map dialog box searches for a matching NE or group in the map and, if one is found, selects it automatically.

For a group, the identifier is always the name. For an NE, the identifier is the name or the alias, depending on which of the two attributes is currently displayed in the map.

Step 1 In the Domain Explorer window, choose **File > Network Map**.

Step 2 In the Network Map window, choose **Edit > Find**. The Find on Map dialog box opens.

Step 3 In the Name text field, enter the search text.

Tip You can enter a percentage character (%) as a wildcard. You can search for a partial string inserted between percentage characters, such as *%CMP%*.

Step 4 Click **OK**. The first NE or group matching the name is selected in the map.

Step 5 Choose **Find Next** in the Find on Map dialog box to search for the next instance of the specified search object.

Step 6 Click **Close** to close the Find on Map dialog box.

Tip After closing the Find on Map dialog box, you can find the next instance of the specified search object by choosing **Edit > Find Next** in the Network Map window.

1.6.6 Filtering Data

Filter dialog boxes filter user-specified data. Many tables have Filter dialog boxes that enable you to filter data in different ways and display the results in a table. If the filter supports wildcards, you can enter a percentage character (%) as a wildcard character to support broader searches.

1.6.7 Exporting Data

Most tables support an export function to export the table contents to a flat file. The Export dialog box allows you to export data as comma-separated values (CSVs) or tab-separated values (TSVs), which are formats commonly used to import data into spreadsheet and database applications for further analysis and manipulation. You can also select a user-specified character as a separator.

To open the Export dialog box, click the **Export Data to File** tool (or choose **File > Export**) in a table. The following table describes the fields in the Export dialog box. After making your selections, click **OK**.

Table 1-19 Field Descriptions for the Export Dialog Box

Field	Description
Field Separator	
Comma separated	If selected, the data is exported as comma-separated values.
Tab separated	If selected, the data is exported as tab-separated values.
Other	If selected, the data is exported with the separator that you specify in the Other text field. **Note** If you specify a character as a separator and your data contains the same character, the character in the data is automatically enclosed in double quotes. This allows the spreadsheet or database application to understand that the character is part of your data. Regardless of whether you select Comma separated, Tab separated, or Other, Prime Optical automatically encloses text in double quotes if it has a separator.
Export	
Selected row(s)	If selected, only the selected rows in the current page are exported.
All rows in current page	If selected, all rows in the current page are exported.
Entire table	If selected, exports the entire contents of the selected table to a text file. A progress bar tracks the export progress. The entire-table export writes the data to a user-specified text file and retains the user-selected table customizations. For example, if you customized the table to make a column invisible, that column does not appear in the exported file. In the User Preferences dialog box, you can enable or disable the ability to export the entire Alarm Browser or Alarm Log. (You cannot enable or disable the ability to export the entire contents of the selected PM or inventory table.) **Note** To enable you to export all data in the Alarm Browser or Alarm Log, the window cannot be in automatic refresh mode. (This restriction does not apply to PM or inventory tables; you can export all data in the selected PM or inventory table when automatic refresh mode is enabled.)
Export Data to File	
Export Data to File	By default, exported data is stored in the C:\Cisco\TransportManagerClient*version-number*\exports or /opt/CiscoTransportManagerClient*version-number*/exports directory under the name that you provide in the Export Data to File text box. Click **Browse** to change the file location.

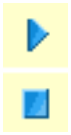
1.6.8 Exporting Alarms and Events

In addition to exporting directly from the Alarm Browser or the Alarm Log, Prime Optical provides an Event Export Manager window (**Fault > Event Export Manager**) that allows you to export alarms and events, as they occur, to the file of your choice. You can also set various parameters to refine the export. You can choose to export events continuously or to export a specific number of events:

- To export events continuously, click the **Start Export** tool. The Event Export Manager exports events continuously until you click the **Stop Export** tool, or until the current Prime Optical session ends, whichever occurs first.

- To export a specific number of events, check the **Stop export when** check box, enter a number of records, and click the **Start Export** tool. The export will stop after logging the specified number of events.

Figure 1-9 Start and Stop Export Tools



The following table describes the fields in the Event Export Manager window.

Table 1-20 Field Descriptions for the Event Export Manager

Field	Description
Network Elements	Allows you to export alarms (NE alarms and Prime Optical-specific EMS alarms) and events for selected NEs. Choose from the list of available NEs and add them to the Selected list. If you have the appropriate user permission and you want to export EMS alarms and events, check the **Export Prime Optical EMS Alarms/Events** check box.
Severity	Allows you to export events that have a severity of Critical, Major, Minor, Warning, Indeterminate, and/or Cleared.
Export To	Allows you to export the file to a given destination. Click **Browse** to browse for a particular destination. You can also overwrite or append the file.
Export Options	Allows you to specify the field separator type. Types include Comma, Tab, Semicolon, or Other, an option you use to specify a different separator. You can also check the **Stop export when** check box and enter a number of records to instruct the Event Export Manager to stop exporting after logging the specified number of records.

1.6.9 Customizing Table Views

Most tables support a customized view function that allows you to select the columns to be displayed, and the order in which to display them. Prime Optical allows you to save your customized table view so that the next time you open the table, it is displayed in the same manner in which it was saved.

Step 1 Open the table to customize.

Step 2 Click the **Customize View** tool (or choose **File > Customize View**) to open the Customize View dialog box. The following table provides descriptions.

Step 3 Make your customizations as required.

Step 4 Click **Apply** to apply your customizations. The changes are applied to the table but are not saved.

Note When you apply any changes, an asterisk (*) appears after the table name. The asterisk indicates that you have made changes but have not saved them.

Step 5 Choose **File > Save Customized View** to save your customizations. The asterisk disappears from after the table name.

After you save the custom view:

- Changes are applied immediately to the table you are working on.
- Changes are not applied to other instances of the same table that are currently open. Tables must be closed and then reopened for the changes to take effect.
- Changes are displayed when the same user launches a new instance of the table; this applies to all Prime Optical sessions for that user.

Table 1-21 Field Descriptions for the Customize View Dialog Box

Field	Description
Show/Hide Selection	
Add >	Select a column to display and click **Add** to move the column to the list of displayed columns.
< Remove	Select a column to hide and click **Remove** to move the column to the list of hidden columns.
Up/Down	Select a column from the list of columns to be displayed (at the right side). Click **Up** to reposition the selected column one place at a time to the left of the table, or click **Down** to reposition the selected column one place at a time to the right of the table. **Tip** The column displayed at the top of the list will be displayed as the left-most column.
Apply	Click **Apply** to apply your customizations to the current session.
Cancel	Click **Cancel** to close the Customize View dialog box without applying any changes.
Help	Click **Help** to launch the online help.

1.6.10 Refreshing Data

Many windows have a Refresh Data toolbar icon that refreshes all data being displayed by Prime Optical. There are two versions of the Refresh Data tools, and both refresh data from either the server or the database:

- The Refresh Data tool shown in the top figure flashes when updates are available. This tool has two modes: manual refresh and autorefresh.
- The Refresh Data tool shown in the bottom figure does not notify you that updates are available. You must click the tool to retrieve updated data.

Figure 1-10 Refresh Data Tool

Note Clicking **Refresh Data** in the Domain Explorer window refreshes all data for the entire Prime Optical client and closes all open windows (except the Domain Explorer window). Depending on the number of NEs in your network, you might experience a delay while the data refreshes. After the Domain Explorer refreshes, the status bar shows "Refresh Data Complete."

Note
- It takes longer to refresh data from the NE than from the server.
- When a chassis contains cards that have many interfaces (such as the DS1_E1_56, DS3_EC3_48, or DS3XM_12 cards), it might take 4 minutes or longer for the NE Explorer to refresh data from the NE.

1.6.11 Pruning the Database

Prime Optical automatically prunes various categories of data that tend to accumulate over time and would otherwise exhaust the available disk space. You can configure the following categories of data for automatic pruning:

- PM data
- FM data
- Audit log data
- Error log data
- NE audit trail data
- Self-monitor data
- Job monitor data

The following options are provided to control the pruning for each category of data:

- Enable/disable
- Retention period (1 to 1000 days)
- Time of day at which to perform the pruning

1.6.12 Using Mnemonics

All menus and menu options have a uniquely assigned mnemonic to support keyboard access to menu items in addition to access through the mouse. The underlined letter within a menu item indicates the mnemonic keystroke. For example, to exit the Prime Optical application, enter **Alt+f** (for the File menu); then, enter **x** (Exit).

1.6.13 Using the Online Help

The online help provides a detailed explanation of each Prime Optical GUI window and dialog box.

To view the online help for any window, you have two options:

- Choose **Help > Current Window**
- Click the **Help** tool

Figure 1-11 Help Tool

To view the online help for any dialog box, click the **Help** button within the dialog box.

Tip Use your browser's Print option to print the selected page.

1.6.14 Using the Pin Tool

The Dashboard has a pin tool. When you click it, the window is *pinned down*, meaning that it is not brought to the foreground by default. If you click the pin tool again, the Dashboard window is *pinned up*, meaning that it is brought to the foreground each time an update occurs (alarm counts change, NE count changes, and so on).

1.6.15 Viewing System Details

To view the system details, complete the following steps:

Step 1 In the Prime Optical Home page, place your cursor near the View System Details option available at the top right.

Step 2 Click the icon *next to* View System Details. The following system details appear:

- Host
- Version
- Oracle RDBMS Version
- System Name
- Operating System
- Total Memory Size
- Total Swap Space Size
- Architecture

1.6.16 Viewing Licensing (NE Audit) Information

Prime Optical allows you to view Licensing (NE Audit) information such as version summary and details grouped by device type, number of devices, and so on. Users with the appropriate role can generate, view, and export reports.

To view and export NE Audit information, complete the following steps:

Step 1 In the Prime Optical Home page, choose **Administration > Summary**.

The device software version summary and the device type count report information are displayed.

- Software Version—Version of the software that is running on the selected device.
- Device Type—Type of the device.
- Total—Number of NEs of a specific software version.
- Number of Devices—Number of devices.
- Sum of Shelves—Total number of shelves.

Step 2 In the Prime Optical Home page, choose **Administration > All Devices**

The list of all devices is displayed with the following fields:

- Device Name—Name of the device.
- IP Address—IP address of the device.
- Device Type—Type of the device.
- Software Version—Software version of the device type.
- Operational State—Operational state of an NE. The operational states are:
  - Preprovisioned
  - Under Maintenance
  - In Service
  - Out of Service
  - In Service–Initializing
  - In Service–Synch Configuration
- Multishelf—Specifies whether the device belongs to a multishelf node.
- Shelves—Device shelf number.
- Vendor Name—Device vendor name.

Step 3 To export the report in CSV format, click the **Excel** icon; to export the report in PDF format, click the **PDF** icon.

1.6.17 Action Buttons

The following table describes the actions that you can perform using the buttons at the bottom of Prime Optical windows and dialog boxes.

Table 1-22 Action Buttons

Button	Description
Add >	Click to select one or more available options; then, click **Add >** to add the selected option(s) to the list of selected options. **Note** Hold down the Shift key to select more than one option sequentially, or hold down the Ctrl key to select more than one option nonsequentially.
Apply	Commits any changes to user-defined fields to the Prime Optical database and applies the changes to the NE.
Back	Returns to the previous screen. (In the first screen, Back is not available.)
Cancel	Replaces any changes to user-defined fields with the previous values. If the current window is a wizard, the wizard closes when you click the Cancel button.
Close	Closes the window.
Finish	Creates the service and closes the wizard.
Help	Launches the online help for the window.
Maximize	Click the Maximize button to expand the window. After you expand the window, the Maximize button changes to a Reset Size button.
Next	Temporarily saves the current information and displays the next screen. (In the last screen, Next is replaced by Finish.)
OK	Commits the selections made in the window and closes the window.
< Remove	Click to select one or more options; then, click **< Remove** to remove the selected option(s) and return them to the Available list. **Note** Hold down the Shift key to select more than one option sequentially, or hold down the Ctrl key to select more than one option nonsequentially.
Reset	Resets the values displayed in the window to the default values.
Reset Size	Click the Reset Size button to return the window to its original size.
Save	Commits any changes to user-defined fields to the Prime Optical database and saves the changes to the NE.
Unlock	Unlocks the Prime Optical session and displays the Domain Explorer.
Update	Retrieves all current configuration settings for the selected NE. The time stamp Last Update Time: *date time* indicates the last time the configuration settings were retrieved for the NE. Any changes to user-defined fields that have not been applied are not updated with the fields' current configuration settings for the selected NE.

1.7 Related Documentation

This section summarizes the Prime Optical documentation and related documentation.

1.7.1 Prime Optical Documentation Set

Note You can access the most current Prime Optical documentation online at http://www.cisco.com/en/US/products/ps11670/tsd_products_support_series_home.html.

The Prime Optical documentation set comprises the following guides:

- *Release Notes for Cisco Prime Optical 9.6.3*—Describes the caveats for Prime Optical.
- *Cisco Prime Optical 9.6.3 Installation Guide*—Explains how to install Prime Optical and how to upgrade from previous releases.
- *Cisco Prime Optical 9.6.3 User Guide*—Describes how to use the Prime Optical software, which consists of user applications and tools for network discovery, network configuration, connection management, fault management, system administration, and security management.
- *Cisco Prime Optical 9.6.3 GateWay/CORBA User Guide and Programmer Manual*—This guide.
- *Cisco Prime Optical 9.6.3 Database Schema*—Describes the database schema that Prime Optical uses to store information in a Structured Query Language (SQL) database such as the Oracle database. The document is designed for users who need to create their own reports without using Prime Optical.
- *Cisco Prime Optical 9.6.3 High Availability Installation Guide*—Explains how to install Prime Optical in a high availability (HA) environment.

  Note To obtain the *Cisco Prime Optical 9.6.3 High Availability Installation Guide*, contact your Cisco account representative.

- *Cisco Prime Optical 9.6.3 Basic External Authentication*—Describes how Prime Optical supports basic external authentication.
- *Cisco Prime Optical 9.6.3 ML Provisioning Methodology*—Describes the methodology that Prime Optical uses to provision ML-series cards.
- *Migration Matrix for Cisco Prime Optical and Cisco Transport Manager Service Pack Releases*—Describes the migration matrix for service pack releases.

1.7.2 Related Cisco NE Documentation

The following table lists the related NE hardware documentation.

Table 1-23 Related Cisco NE Documentation

Cisco Product	Document Title
ONS 15216	• *Cisco ONS 15216 EDFA Operations Guide* • *Cisco ONS 15216 EDFA2 Operations Guide* • *Cisco ONS 15216 EDFA3 Operations Guide* • *Cisco ONS 15216 FlexLayer User Guide* • *Cisco ONS 15216 OSC-1510 User Guide* • *Cisco ONS 15216 System Dispersion Compensation Unit User Guide* • *Installing Cisco ONS 15216 100 GHz DWDM Filters* • *Installing Cisco ONS 15216 OADMs* • *Release Notes for the Cisco ONS 15216 EDFA* • *Release Notes for the Cisco ONS 15216 OADM* • *Upgrade Procedures for the Cisco ONS 15216 EDFA2*
ONS 15305 (non-CTC-based)	• *Cisco ONS 15305 Installation and Operations Guide* • *Cisco ONS 15305 Quick Installation Guide* • *Release Notes for the Cisco ONS 15305*
ONS 15305 (CTC-based)	• *Cisco ONS 15305 Cisco Transport Controller Operations Guide* • *Release Notes for Cisco ONS 15305*
ONS 15310 CL and ONS 15310 MA SONET	• *Cisco ONS 15310 Network Defaults* • *Cisco ONS 15310-CL and Cisco ONS 15310-MA Ethernet Card Software Feature and Configuration Guide* • *Cisco ONS 15310-CL and Cisco ONS 15310-MA Procedure Guide* • *Cisco ONS 15310-CL and Cisco ONS 15310-MA Reference Manual* • *Cisco ONS 15310-CL and Cisco ONS 15310-MA Troubleshooting Guide* • *Release Notes for the Cisco ONS 15310*
ONS 15310 MA SDH	• Cisco ONS 15310 MA SDH • Cisco ONS 15310 MA SDH Procedure Guide • Cisco ONS 15310 MA SDH Reference Manual • Cisco ONS 15310 MA SDH Troubleshooting Guide

Table 1-23 Related Cisco NE Documentation (continued)

Cisco Product	Document Title
ONS 15327	• *Cisco ONS 15327 Procedure Guide* • *Cisco ONS 15327 Reference Manual* • *Cisco ONS 15327 Software Upgrade Guide* • *Cisco ONS 15327 Troubleshooting Guide* • *Cisco ONS 15454 and Cisco ONS 15327 TL1 Command Guide* • *Cisco ONS 15454 and Cisco ONS 15327 TL1 Command Quick Reference Guide* • *Release Notes for the Cisco ONS 15327*
ONS 15454 SDH	• *Cisco ONS 15454 SDH Procedure Guide* • *Cisco ONS 15454 DWDM Procedure Guide* • *Cisco ONS 15454 SDH Reference Manual* • *Cisco ONS 15454 SDH Software Upgrade Guide* • *Cisco ONS 15454 SDH Troubleshooting Guide* • *Cisco ONS 15454 SONET/SDH ML-Series Multilayer Ethernet Card Software Feature and Configuration Guide* • *Release Notes for the Cisco ONS 15454 SDH*
ONS 15454 SONET	• *Cisco ONS 15454 and Cisco ONS 15327 TL1 Command Guide* • *Cisco ONS 15454 and Cisco ONS 15327 TL1 Command Quick Reference Guide* • *Cisco ONS 15454 Procedure Guide* • *Cisco ONS 15454 Reference Manual* • *Cisco ONS 15454 Software Upgrade Guide* • *Cisco ONS 15454 SONET/SDH ML-Series Multilayer Ethernet Card Software Feature and Configuration Guide* • *Cisco ONS 15454 Troubleshooting Guide* • *Release Notes for the Cisco ONS 15454*
ONS 15530	• *Cisco ONS 15530 Configuration Guide and Command Reference* • *Cisco ONS 15530 Hardware Installation Guide* • *Cisco ONS 15530 MIB Quick Reference* • *Cisco ONS 15530 Optical Transport Turn-up and Test Guide* • *Cisco ONS 15530 Planning and Design Guide* • *Cisco ONS 15530 System Alarms and Error Messages* • *Network Management for the Cisco ONS 15530* • *Quick Reference for the Cisco ONS 15530 TL1 Commands* • *Release Notes for the Cisco ONS 15530*

Table 1-23 Related Cisco NE Documentation (continued)

Cisco Product	Document Title
ONS 15540 ESP	• *Cisco ONS 15540 ESP Configuration Guide and Command Reference* • *Cisco ONS 15540 ESP Hardware Installation Guide* • *Cisco ONS 15540 ESP MIB Quick Reference* • *Cisco ONS 15540 ESP Planning and Design Guide* • *Cisco ONS 15540 ESP Troubleshooting Guide* • *Network Management for the Cisco ONS 15540 ESP* • *Optical Transport Turn-Up and Test Guide* • *Regulatory Compliance and Safety Information for the Cisco ONS 15500 Series* • *Release Notes for the Cisco ONS 15540 ESP* • *ROMMON and Functional Image Release Notes*
ONS 15540 ESPx	• *Cisco ONS 15540 ESPx Cleaning Procedures for Fiber Optic Connections* • *Cisco ONS 15540 ESPx Configuration Guide and Command Reference* • *Cisco ONS 15540 ESPx Hardware Installation Guide* • *Cisco ONS 15540 ESPx MIB Quick Reference* • *Cisco ONS 15540 ESPx Planning and Design Guide* • *Cisco ONS 15540 ESPx System Alarms and Error Messages* • *Network Management for the Cisco ONS 15540 ESPx* • *Optical Transport Turn-Up and Test Guide* • *Quick Reference for the Cisco ONS 15540 ESP and Cisco ONS 15540 ESPx TL1 Commands* • *Regulatory Compliance and Safety Information for the Cisco ONS 15500 Series* • *Release Notes for the Cisco ONS 15540 ESPx* • *ROMMON and Functional Image Release Notes*
ONS 15600 SDH	• *Cisco ONS 15600 SDH Procedure Guide* • *Cisco ONS 15600 SDH Reference Manual* • *Cisco ONS 15600 SDH TL1 Test Access* • *Cisco ONS 15600 SDH Troubleshooting Guide* • *Release Notes for the Cisco ONS 15600 SDH*
ONS 15600 SONET	• *Cisco ONS 15600 Procedure Guide* • *Cisco ONS 15600 Reference Manual* • *Cisco ONS 15600 TL1 Command Guide* • *Cisco ONS 15600 Troubleshooting Guide* • *Release Notes for the Cisco ONS 15600*

The following related documentation can be used for reference:

- ITU-T G.774: SDH—Management information for the network element view
- ITU-T G.784: SDH management
- ITU-T G.826: Error performance parameters and objectives for international, constant bit rate digital paths at or above the primary rate
- ITU-T G.829: Error performance events for SDH multiplex and regenerator sections
- ITU-T G.831: Management capabilities of transport networks based on SDH
- ITU-T G.872: Architecture of optical transport networks
- ITU-T G.7712: Architecture and specification of data communication networks
- ITU-T M.3010: Principles of a telecommunications management network
- ITU-T M.3100: Generic network information model
- ITU-T M.3400: TMN management functions
- ITU-T X.721: Information technology–Open systems interconnection–Structure of management information: Definition of management information
- ITU-T X.731: Information technology–Open systems interconnection–Systems management: State management function
- ITU-T X.733: Information technology–Open systems interconnection–Systems management: Alarm reporting function
- ITU-T X.734: Information technology–Open systems interconnection–Systems management: Event report management function
- ITU-T X.735: Information technology–Open systems interconnection–Systems management: Log control function
- ITU-T X.736: Information technology–Open systems interconnection–Systems management: Security alarm reporting function
- *SQL*Plus User's Guide and Reference*
- Telcordia GR-253-CORE: SONET transport systems: Common generic criteria
- Telcordia GR-815-CORE: Generic requirements for Network Elements/Network Systems (NE/NS) security
- Telcordia GR-820-CORE: Generic digital transmission surveillance
- Telcordia GR-831-CORE: Operations applications messages
- Telcordia GR-2998-CORE: Generic requirements for Wavelength Division Multiplexing (WDM) element management systems
- Telcordia GR-3000-CORE: Generic requirements for SONET element management systems
- TMF 513: Multi-technology network management business agreement, version 2.0
- TMF 608: Multi-technology network management information agreement, version 2.0
- TMF 814: Multi-technology network management solution set, version 2.0
- TMF 814A: Multi-technology network management solution set, TM forum implementation template guidelines, version 2.0

Basic Concepts

This chapter introduces some basic Cisco Prime Optical and networking concepts, including:

- 2.1 Prime Optical Interfaces, page 2-1
- 2.2 Data Communications Network, page 2-4
- 2.3 What is FCPS?, page 2-5
- 2.4 Fault Management, page 2-5
- 2.5 Configuration Management, page 2-6
- 2.6 Performance Management, page 2-11
- 2.7 Security Management, page 2-13

2.1 Prime Optical Interfaces

This section describes the southbound interfaces that Prime Optical uses to communicate with NEs and the northbound interfaces that Prime Optical uses to communicate with Operations Support Systems (OSSs).

2.1.1 Southbound Interfaces with NEs

The Prime Optical server communicates with NEs through the data communications network (DCN) by using several protocols (CORBA, HTTP, SNMP, TL1, and so on).

2.1.1.1 ONS 15216

The ONS 15216 product family consists of the following classes of products:

- DWDM filters or multiplexer/demultiplexer units
- Optical add/drop multiplexers (OADMs)
- Optical amplifiers (OAs), which are also referred to as erbium-doped fiber amplifiers (EDFAs)
- Dispersion compensation, including the Optical Supervisory Channel (OSC) and Dispersion Compensation Unit (DCU)

The ONS 15216 NEs are referred to as *active* or *passive*. Active NEs support a management interface; passive NEs do not. There is no communication between passive NEs and Prime Optical; rather, all of the information is user-defined. You can use the Domain Explorer to manually add inventory information

for passive NEs. You can use the NE Explorer to manually add specific information such as serial number. For passive ONS 15216 NEs with multiple slots (such as the DCU), you can use the NE Explorer to specify the content of each slot. All of the information that you define is maintained in the Prime Optical database and propagated to an external OSS through Prime Optical GateWay/CORBA.

The following table summarizes the management protocol support available for the ONS 15216 product family. It also identifies each NE type as active or passive.

Table 2-1 ONS 15216 Management Protocols

ONS 15216 Product	Active or Passive NE?	Management Protocol
ONS 15216 100-GHz OADM1/2/4	Active	TL1[1]
ONS 15216 EDFA2	Active	SNMPv2c[1], TL1
ONS 15216 EDFA3	Active	SNMPv2c[1], TL1
ONS 15216 100-GHz Red/Blue Filters	Passive	—
ONS 15216 200-GHz Red/Blue Filters	Passive	—
ONS 15216 200-GHz OADM1/2	Passive	—
ONS 15216 EDFA1	Passive	—
ONS 15216 OSC	Passive	—
ONS 15216 DCU	Passive	—
ONS 15216 FlexLayer	Passive	—

1. Protocol that Prime Optical uses to manage the NE.

2.1.1.2 ONS 15305

Prime Optical uses SNMP as the primary management interface for the ONS 15305. Prime Optical supports the use of Cisco Edge Craft to configure the ONS 1530x. Cisco Edge Craft is the local craft application used to manage ONS 15305 NEs.

2.1.1.3 ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, and ONS 15600 SDH

The ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, and ONS 15600 SDH support TL1 and SNMP interfaces, as well as a CORBA interface for Cisco Transport Controller (CTC) and Prime Optical management. The CORBA interface is a proprietary Cisco interface and is not published for use by customers or third parties.

Note TL1 support is not available for ONS 15305 CTC, ONS 15454 SDH releases earlier than R5.0, or ONS 15600 SDH releases earlier than R8.0.

The ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, and ONS 15600 SDH also support a Cisco proprietary HTTP interface for bulk collection of performance management (PM) data. This interface is not published for customer or third-party use.

Note The ONS 15305 R3.0 does not support the Cisco proprietary HTTP interface for bulk collection of PM data. Instead, the ONS 1530x PM Service collects PM data by using the SNMP protocol.

Note In general, any updates from CTC for ONS 15600-specific screens can take up to several minutes. This delay affects Prime Optical screens that are specific to the ONS 15600 SONET and ONS 15600 SDH.

2.1.1.4 ONS 155xx

Prime Optical uses SNMP to manage the ONS 15530 and ONS 15540 NEs. For the ONS 15530 and ONS 15540, Prime Optical also provides access to the Cisco IOS command-line interface (CLI) through Telnet.

2.1.2 Northbound Interfaces with OSSs

Prime Optical supports three gateway modules that provide northbound EMS-to-NMS interface mediation. Not all NE types are supported by each module. The following table shows the NE types supported by each gateway module.

Table 2-2 Prime Optical GateWay/CORBA and SNMP Coverage

NE Type	GateWay/CORBA Support?	GateWay/SNMP Support?
ONS 15216 EDFA2	Yes	Yes
ONS 15216 EDFA3	Yes	Yes
ONS 15216 100-GHz OADM	No	No
ONS 15216 100-GHz Red/Blue Filters	Yes[1]	No
ONS 15216 200-GHz Red/Blue Filters	Yes	No
ONS 15216 200-GHz OADM1/2	Yes	No
ONS 15216 EDFA1	Yes	No
ONS 15216 OSC	Yes	No
ONS 15216 DCU	Yes	No
ONS 15216 FlexLayer	Yes	No
ONS 15305 2.0.x	Yes	Yes
ONS 15305 CTC	Yes	Yes
ONS 15310 CL	Yes	Yes
ONS 15310 MA SONET	Yes	Yes
ONS 15310 MA SDH	Yes	Yes
ONS 15327	Yes	Yes
ONS 15454 SONET	Yes	Yes
ONS 15454 SDH	Yes	Yes
ONS 15530	Yes	Yes

Table 2-2 Prime Optical GateWay/CORBA and SNMP Coverage (continued)

NE Type	GateWay/CORBA Support?	GateWay/SNMP Support?
ONS 15540 ESP, ESPx	Yes	Yes
ONS 15600 SONET	Yes	Yes
ONS 15600 SDH	Yes	Yes
Not Managed/Other Vendor NEs	Yes	No

1. Prime Optical GateWay/CORBA supports only inventory management for the passive ONS 15216 NEs and Not Managed/Other Vendor NEs.

See Chapter 12, "Managing Southbound and Northbound Interfaces" for detailed information about Prime Optical GateWay/SNMP. See also *Cisco Prime Optical 9.6.3 GateWay/CORBA User Guide and Programmer Manual* for detailed information about Prime Optical GateWay/CORBA.

2.2 Data Communications Network

A DCN, also known as an Operations Support Network (OSN), is the management network that provides connectivity between a service provider's operations support center applications and the NEs that they support. The DCN supports operations, administration, management, and provisioning (OAM&P) functions such as network surveillance, provisioning, service restoration, and so on. NEs that make up the provisioned services infrastructure used to deliver services to customers include SDH, SONET, add-drop multiplexers (ADMs), optical repeaters, voice switches, digital cross-connect systems, frame relay, asynchronous transfer mode (ATM) switches, digital subscriber line access multiplexers (DSLAMs), digital loop transmission systems, and so on.

The DCN establishes the link between Prime Optical and the EMS. The DCN is important to service providers because it is a vital element in getting fast, reliable management information about the network. Service providers design the DCN as a carrier-class management solution where a single failure does not jeopardize the ability to manage the network.

2.2.1 Proxy Server/Firewall Configurations

The ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, and ONS 15600 SDH support a proxy server configuration that allows networking ONS NEs in environments where visibility and accessibility between NEs must be restricted. In a proxy server environment, NEs are designated as gateway NEs (GNEs) or end NEs (ENEs). The GNE is LAN-connected to the DCN, while the ENEs are accessed through the proxy server feature on the GNE over the section data communications channel (SDCC). The ENEs are not directly accessible by IP address; in fact, the ENE IP addresses can be in a separate, private IP address space because they are not visible on the larger DCN. The GNE must have an IP address that is valid for the DCN LAN.

2.3 What is FCPS?

Prime Optical's strategy is to provide a common, carrier-class fault, configuration, performance, and security (FCPS) EMS.

FCPS refers to the different types of information handled by management systems. A fifth area, accounting, is often included, making the acronym *FCAPS*. However, Prime Optical does not support accounting management.

2.4 Fault Management

Fault management (FM) detects, isolates, and reports faults for the network and service. Fault management tracks the correlation of related services; for example, reliability, availability, survivability, quality assurance, alarm surveillance, alarm management, fault localization, fault correction, testing, and trouble administration. Fault management also maximizes the availability of the network for service delivery.

The Alarm Browser, Alarm Log, and Dashboard provide information on fault management. Fault management tools are described in the following table.

Table 2-3 Fault Management Tools

Name	Description
Alarm Management	Identifies network problems and failures. For more information, see Chapter 9, "Managing Faults."
Alarm Browser	Displays standing alarms and conditions in the managed domain. The Alarm Browser window lists the conditions that are assigned a severity level of critical, major, minor, or warning. It also shows cleared alarms that are not acknowledged. For more information, see Chapter 9, "Managing Faults."
Alarm Log	The Alarm Log window contains alarms that have transitioned from the Alarm Browser. Cleared alarms are transitioned when you acknowledge them or when automatic acknowledgment has been enabled (in the **Control Panel > UI Properties** pane). In addition, the Alarm Log shows a history of cleared and acknowledged alarms and all transient conditions (also known as events or autonomous nonalarmed messages). For more information, see Chapter 9, "Managing Faults."
Dashboard	The Dashboard shows useful alarm and NE information in one easily accessible location. See Figure 1-2 on page 1-10.

The FM function is responsible for the discovery and localization of malfunctions on managed NEs. Prime Optical supports consolidated FM by way of the following functions:

- Alarm collection
  - Alarm and event acquisition and storage
  - EMS alarms for loss of communication, software download failure, memory backup failure, login security violation, server monitor thresholds, and free remaining disk space
  - Fault synchronization after connection loss
  - Maintenance mode state for suppression of alarms, events, and PM collection
- Alarm display

  - Quick-view Dashboard window for display of alarm count and unacknowledged alarm count, and launch of EMS alarm view
  - Alarm indication and propagation
  - Color and shape coding of severity for critical, major, minor, and warning alarms
- Alarm acknowledgement
  - Flexible alarm acknowledgment—single, multiple, all, automatic
  - Editable notes per alarm record
- Historic alarm retrieval
- Alarm sorting and filtering
- Visible and audible notification of alarm reporting
- Reports and exporting facilities

2.5 Configuration Management

With configuration management, you set and control NEs, identify resources, collect information about a resource, and manage connections between NEs. Configuration management deals not only with the state of NEs, but also with the provisioning of resources and services. Generally, configuration management involves network planning, installation, service planning and negotiation, service provisioning, equipment provisioning, status and control, and network topology. Configuration management allows you to prepare the network to deliver services.

Examples of configuration management include:

- Discovering the inventory of what is installed in the network
- Configuring chassis slots for cards based on desired services
- Managing intra-chassis connections between NEs
- Configuring cards in protected or unprotected relationships
- Configuring physical (PTP) or logical (CTP) ports to support service profiles
- Creating, modifying, viewing, and deleting network topologies and connections
- Downloading and activating NE software
- Backing up and restoring the NE configuration

Prime Optical provides different graphical views to support configuration management. All views can be classified into three main groups: explorers, network maps, and wizards.

2.5.1 Explorers

Explorer windows are divided into two sections: a tree and a pane. The tree organizes the resources (domain, groups, nodes, network partitions, subnetworks, and modules), which are displayed in a hierarchical format. You can access information about each resource by browsing the tree section. The pane provides specific information about the selected object. There are three types of explorers:

- Domain Explorer
- Subnetwork Explorer
- NE Explorer

2.5.2 Network Maps

Network Map windows display how the network is partitioned graphically. The Network Map is organized into a multilevel hierarchy that corresponds with the structure of Domain Explorer and Subnetwork Explorer trees. Users with the appropriate privileges can organize their own map display.

For more information, see 1.5.6 Network Map, page 1-28.

2.5.3 Wizards

Wizards are used to simplify involved configuration management tasks such as:

- A-to-Z circuit provisioning
- NE user access administration
- Layer 2 service provisioning
- VLAN and SVLAN provisioning
- Software download
- Native equipment/facility provisioning
- Topology/link management
- Automatic NE memory backup, on-demand restoration
- General operation on multiple NEs

2.5.4 Inventory Management

Inventory information is another component of configuration management. Prime Optical provides two levels of inventory reports:

- Domain NE table—A complete list of all the NEs that belong to a specific group or to the entire domain
- Equipment Inventory table—A detailed list of cards and modules installed on a specific NE

Note For detailed information about inventory reports, see Chapter 11, "Managing Inventory."

2.5.4.1 Adding New NEs to the Prime Optical Domain

The Add New NE wizard allows you to add a new NE, or to add several new NEs at once. The wizard allows you to enter multiple NE IP addresses one at a time, or enter a beginning and ending IP address and automatically add a range of NEs. See 3.5.2 Adding NEs, page 3-13.

2.5.4.2 NE Connectivity and Operational States

The operational state of an NE can have the following values:

- Preprovisioned—The NE has been added to the database for provisioning but is not yet in service. Prime Optical does not manage preprovisioned NEs.

- Under Maintenance—The NE is temporarily under maintenance but requires monitoring. This state is the same as In Service except that Prime Optical does not report alarms or events for under-maintenance NEs.
- In Service—The NE is currently deployed and requires monitoring. Prime Optical collects polling, FM, configuration management, and PM data from in-service NEs and stores the data in the database.
- Out of Service—The NE has been marked Out of Service by a network administrator and does not require monitoring. The Prime Optical database records the last known state of the NE when it was in service.
- In Service–Initializing—The NE is marked as In Service–Initializing when Prime Optical connects to the NE (Communication State is marked as Available) and the discovery process starts. The initialization process is completed when fault and inventory have been synchronized. The operational state changes from In Service–Initializing to In Service–Synch Configuration.
- In Service–Synch Configuration—The NE is marked as In Service–Synch Configuration when Prime Optical uploads a configuration for that NE. You can change the operational state of an NE from In Service–Synch Configuration to Out of Service.

The communication state of an NE can have the following values:

- Not Applicable—The NE is Preprovisioned or Out of Service. The connection to the NE has not been established or has been dropped.
- Available—The NE is In Service or Under Maintenance and Prime Optical is connected to the NE. The NE is declared Available when it is reachable and supported by Prime Optical (as defined in **Administration > Supported NE Table**).
- Unavailable—The NE is In Service or Under Maintenance but Prime Optical cannot establish a connection to the NE. When Prime Optical loses the connection to the NE, an EMS alarm with a probable cause of *Connection loss* is generated.
- Initialization Failed—The NE software version is not listed in the Supported NE table.

2.5.5 Provisioning

Prime Optical supports provisioning through:

- NE Explorer—Shows service-provisioning information about the selected NE.
- Craft interface—Depending on the NE model, Prime Optical provides access to NE craft interfaces such as CTC, Cisco Edge Craft, web browsers, and the CLI.

Note A CLI session might not have a scroll bar depending on the operating system you are using. To enable the scroll bar on Solaris, hold down the Ctrl key, click the middle button of your mouse, and select enable scroll bar.

The following table lists the available craft interfaces by NE model.

Table 2-4 Craft Interface by NE Model

NE Model	Craft Interfaces Available from Prime Optical
ONS 15216 EDFA2	TL1 interface
	CLI

Table 2-4 Craft Interface by NE Model (continued)

NE Model	Craft Interfaces Available from Prime Optical
ONS 15216 EDFA3	TL1 interface
ONS 15216 100-GHz OADM	TL1 interface
ONS 15305	CLI
	CTC (available only for the ONS 15305 R3.0)
	Cisco Edge Craft
ONS 15310 CL	CTC
	TL1 interface
ONS 15310 MA SONET	CTC
	TL1 interface
ONS 15310 MA SDH	CTC
	TL1 interface
ONS 15327	CTC
	TL1 interface
ONS 15454 SONET	CTC
	TL1 interface
ONS 15454 SDH	CTC
	TL1 interface
ONS 15530	Cisco IOS CLI
	TL1 interface
ONS 15540 ESP, ESPx	Cisco IOS CLI
	TL1 interface
ONS 15600 SONET	CTC
	TL1 interface
ONS 15600 SDH	CTC
	TL1 interface

2.5.6 Link Management

A link is a connection between two termination points (TPs). Prime Optical represents the physical connectivity between NEs in the domain by defining the physical links between NEs. Prime Optical allows you to view, create, modify, and delete links. Prime Optical also supports a Link Utilization table, which displays utilization information and overall consumption of bandwidth for the selected links.

Note For all NEs that support links, you can add manually provisioned links. For example, you can define manual and patchcord links for the ONS 15454. For detailed information, see 3.6 How Do I Build Links?, page 3-28.

2.5.7 Circuit Management

A circuit represents an end-to-end connection between two or more connection termination points (CTPs). A circuit consists of an alternating series of cross-connections and link connections. In its simplest form, a circuit consists of a single cross-connection (if the circuit is defined between two CTPs on the same NE). A circuit can be bidirectional or unidirectional, point-to-point or point-to-multipoint, and protected or unprotected.

Prime Optical supports the following circuit management operations:

- Find circuits
- View circuits and circuit spans
- Create circuits
- Modify circuits
- Delete circuits
- Trace circuits
- Display associated VLANs
- Upgrade circuits
- Repair circuits
- Update circuits
- Roll circuits
- Merge circuits
- Reconfigure circuits

Note See Chapter 7, "Provisioning Services and Connections" for detailed information about circuit provisioning.

2.5.8 NE Release Management

An NE added to the Prime Optical domain is discovered and managed by Prime Optical only if the NE software version is defined in the Supported NE table.

Note See *Release Notes for Cisco Prime Optical 9.6.3* for the NE software versions that are supported in Prime Optical 9.3.1.

Caution Before updating the software image on an NE, check the Prime Optical release notes to verify whether the NE software version is supported in this Prime Optical release.

The following NE administration features are available for ONS 15216 EDFA, ONS 15305, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 155xx, ONS 15600 SONET, and ONS 15600 SDH NEs:

- Software download (not available for the ONS 15305 R3.0)
- Memory backup and restore (not available for the ONS 15305)

- Job monitoring
- NE Software table (used to commit or revert software images)

2.5.8.1 Software Download Wizard

Use the Software Download wizard to download software to NEs. After the download is complete you can use the NE Software table to activate the software. The downloaded software becomes the active version, and the active version becomes the standby version. Prime Optical stores two software versions: active and standby.

2.5.8.2 Memory Backup Dialog Box

Use the Memory Backup dialog box to back up configuration and provisioning information that resides in the flash memory of an NE. By default, the local Prime Optical server automatically backs up the memory of NEs once a day for seven days and stores the backup files on the Prime Optical server. After seven days, the oldest backup file is replaced by the current backup.

2.5.8.3 Memory Restore Dialog Box

Use the Memory Restore dialog box to restore provisioning and configuration information stored in the flash memory of an NE.

2.5.8.4 Job Monitor Table

The Job Monitor table provides information about scheduled administrative tasks such as task type, task owner, task status, task start and end time, and so on.

2.5.8.5 NE Software Table

The NE Software table displays the active and standby software versions for the NE. From this table, you can activate new software or revert software on NEs.

2.6 Performance Management

Performance management (PM) involves gathering and reporting information on the behavior of NEs, networks, and services, including quality assurance, monitoring, management control, and analysis. It also involves the system's ability to collect and store massive amounts of statistical data for network activity.

Performance management ensures that the network delivers services with the promised quality. PM data is useful for fine-tuning the performance of the device and proactively monitoring for catastrophic failures before they occur. The NEs accumulate PM statistics in 15-minute and 1-day intervals.

Note See Chapter 10, "Managing Performance" for more information.

Examples of performance management include:

- Collecting, storing, and forwarding data to characterize the integrity of transmission

- Determining when connections fail to meet committed integrity thresholds

2.6.1 Selectable Collection of PM Data Parameters

There are two steps to setting PM collection:

1. Enable PM collection for a given NE model (in the **Control Panel > PM Service** pane)
2. Enable PM collection for specific NEs (in the Domain Explorer or **Subnetwork Explorer > NE Properties** pane > **Status** tab > **PM Collection** area)

PM data cannot be collected unless the PM Service process is running. If PM data collection is enabled on an NE but the PM Service is not running, Prime Optical displays a warning message.

For certain NEs, you can also enable robust PM data collection at the NE level. With robust collection, Prime Optical attempts to recover from any data collection gaps that might occur due to an outage or an extended communication failure. If Prime Optical detects a data gap, it attempts to retrieve the missing PM data from the historical registers available on the NE.

For the ONS 15530 and ONS 15540, you can use the Cisco IOS CLI to enable performance monitoring on each NE and module.

Note See 10.3.6 Enabling or Disabling PM Data Collection on an Individual NE, page 10-12 and 10.3.7 Enabling or Disabling PM Data Collection by PM Category for CTC-Based NEs, page 10-13 for information on enabling and disabling PM data collection.

2.6.2 PM Query and Graphs

Prime Optical offers two PM query wizards to view PM reports:

- Query by NE Model—Allows you to filter PM data by non-CTC-based NE models
- Query by PM Category—Allows you to filter PM data by PM category, which can span multiple NE models

The PM Query by NE Model wizard allows you to specify:

- Non-CTC-based NE model (ONS 15530, ONS 15305, and so on)
- PM type (SONET Section, SONET Line, and so on)
- 15-minute, 1-day, or real-time collection
- Near-end or far-end collection
- Time period
- Module type (valid only for real-time PM data collection)
- Physical location, where applicable

The PM Query by Category wizard allows you to specify:

- PM category (SONET, SDH, DWDM, and so on)
- PM type (SONET Section, SONET Line, and so on)
- 15-minute, 1-day, or real-time collection

- Near-end or far-end collection
- Time period
- Module type (valid only for real-time PM data collection)
- Physical location, where applicable

Note Performance management is not supported for the ONS 15216.

All PM tables contain a Plot tab that you can use to plot the data in a graphical view that is stored in the Prime Optical database. Prime Optical plots up to three parameters in one graph for comparison. The Y axis represents the selected parameter(s); the X axis shows the time.

2.6.3 Real-Time PM Reporting

Prime Optical supports the ability to launch a real-time PM report from the PM Query wizard or from a single row in a PM table. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. You can view and modify the polling interval for the real-time PM reporting session. You can end a real-time PM session at any time and export the data. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Note Real-time PM reporting applies only to CTC-based NEs.

2.7 Security Management

Security management prevents and detects any improper use of network resources and services. Aspects of security management include prevention, detection, containment, and recovery.

Security management protects the revenue-generating assets in the network. Examples of security management include:

- Controlling access to network management functions
- Controlling access to network logical resources

Security for the Prime Optical system can be divided into the following areas:

- Prime Optical security domain: To log into the Prime Optical client, a username and password are required. A user profile defines the access privileges. Prime Optical passwords are stored using MD5 one-way encryption. DES 64-bit encrypted passwords are stored in MD5 on the Prime Optical server. A password entered on the Prime Optical client is converted to DES-64 before being sent to the Prime Optical server. If the password matches the password on the server that the SuperUser or SysAdmin configured for the user, or if the user changed his or her password when prompted, that password is stored on the server. Passwords are not stored on the user's local workstation.
- OSS security domain: OSS-to-Prime Optical sessions are configured by the Prime Optical GateWay EMS-to-NMS interface architectural component.
- NE security domain: At the NE level, a username and password are configured to enable the user to connect directly through the console port (EIA/TIA-232), through the management port (10BASE-T), or remotely through a Telnet session. NE passwords are stored using base-64 two-way encryption.

- Prime Optical server login: You must have root user privileges to log into the Prime Optical server workstation for debugging or changing the Prime Optical server program. A username and password are required.
- Oracle database access: Access to the Oracle database requires Oracle root user authentication, as well as Prime Optical database access authentication. The Oracle username and password are encrypted in the server configuration file.

Prime Optical supports the following security features:

- Login advisory message
- User management and profiles
- NE access control
- Audit Log

2.7.1 Login Advisory Message

The following is the default advisory message after logging into the Prime Optical client:

```
Cisco Prime Optical is a carrier-class, multitechnology management system that integrates
the end-to-end management of legacy transport networks and packet optical transport
networks. Cisco Prime Optical helps communication service providers (CSPs) deliver the
capacity and quality of service (QoS) required to support the delivery of
rich-content-based services and high-bandwidth applications.
```

Note The login advisory message is not shown if you login to Prime Optical through Prime Central.

You can customize the default advisory message, or disable it altogether. See Chapter 8, "Managing Security."

2.7.2 Network Partitioning

You can configure for network partitioning by dividing the network into logical areas. You can then access only the areas that are specified under your security profile. The nodes and elements must fall under the area or areas that fit your security profile for each Prime Optical application.

You can:

- Define the network partitions from the associated list of nodes.
- Define, modify, and view the areas within your network.
- Manage only the areas under your security profile.
- Manage connections that originate and terminate within the assigned area(s). The domain can include multiple areas.

2.7.3 User Management and Profiles

Prime Optical user management includes the ability to:

- Manage predefined default user profiles with different access privileges. The default user types are:
  - SuperUser—Users who have access to all operations.

  - SysAdmin—System administrators who manage Prime Optical access.
  - NetworkAdmin—Typically, network operations center (NOC) supervisors who perform daily network surveillance, provisioning, and PM activities on any group or NE.
  - Provisioner—Users who perform daily network surveillance, provisioning, and PM activities on specific NEs. Each provisioner can have only one active session. Provisioners cannot access administrative information.
  - Operator—Users who perform daily network surveillance and PM activities on specific NEs. Each operator can have only one active session. Operators cannot access administrative information.
- Create, delete, modify, and duplicate custom user profiles with certain privileges. Custom user profiles are grouped into categories and each category has a set of operations.
- Create, delete, or modify Prime Optical users; view logged-in users; and end active user sessions.
- Regulate user logins, including password aging, login disable period, and logout time.
- Specify a CTC username and password.

Note Prime Optical can connect to a CTC-based NE only if that NE is configured with a CTC user who has SuperUser privileges.

- Configure the username and password used by the Prime Optical server to access NEs.
- View, add, modify, and delete NE user accounts on one or more NEs.

Note For detailed information about user management, see Chapter 8, "Managing Security."

2.7.4 NE Access Control

NE access control includes the ability to:

- Configure the username and password used by the Prime Optical server to access NEs and retrieve alarms, configuration, and inventory information.

Note Each username and password specified must exist on the selected NE in order for Prime Optical to manage it. A new or modified password takes effect at the next reconnection.

- Configure the username and password on multiple NEs by using the bulk NE authentication feature. With a single operation, you can specify the same username and password for NEs that belong to the same group or are assigned to the same user.
- Manage NE user accounts by using the NE User Access Administration table. This feature supports the ability to view, add, modify, and delete NE user accounts on one or more NEs.
- Monitor active NE users and log out selected users.
- Add predefined users on a selected NE.

2.7.5 Audit Log

The Audit Log contains information about significant events (user-initiated changes and activities) that occurred on the Prime Optical server during a specific time period for the purposes of establishing accountability. It also helps in identifying remedial actions to correct an improper activity. The Audit Log is implemented in the Prime Optical database, where each record has a time stamp, record type, and message string.

Note See Chapter 8, "Managing Security" for a list of runtime-affecting operations that the Audit Log records for monitoring purposes.

Building the Network

After you have planned your network, you can begin building the network components: groups, network partitions, subnetworks, NEs, links, and network maps.

This chapter contains the following sections:

- 3.1 Overview, page 3-1
- 3.2 How Do I Build Groups?, page 3-2
- 3.3 How Do I Build Network Partitions?, page 3-4
- 3.4 How Do I Build Subnetworks?, page 3-5
- 3.5 How Do I Build NEs?, page 3-7
- 3.6 How Do I Build Links?, page 3-28
- 3.7 How Do I Build Server Trails?, page 3-53
- 3.8 How Do I Use Network Maps?, page 3-55
- 3.9 How Do I Discover the Network for Optical Devices?, page 3-63
- 3.10 How Do I Manually Discover NEs and Add Them to Specific Network Partitions?
- 3.11 How Do I Test Connectivity for Optical and Routing Devices?, page 3-73

3.1 Overview

The Cisco Prime Optical management domain is the top-level root node in the Domain Explorer tree. The management domain contains NEs and the following network components:

- Groups—Collection of groups or collection of NEs. NEs are often grouped geographically or by domain.
- Network Partitions—Logical segment of NEs (grouped in subnetworks) in which NEs of the same model type are managed by a single NE service.
- Subnetworks—Sets of NEs interconnected at a specific network layer (such as physical, section, line, and so on). Subnetworks are contained within network partitions. NEs must belong to the same subnetwork to create circuits between them.
- Links—Physical or logical entities (for example, a fiber) between two physical points (for example, ports). Circuits are provisioned through links.
- Network Maps—Geographic representation of the NEs in the domain, the circuits and links between NEs, and the number of alarms associated with NEs.

3.2 How Do I Build Groups?

NEs in the Domain Explorer are organized into groups, which consist of NEs or other groups. NEs are often grouped geographically or by domain. The same NE or group can be assigned to different groups. The following sections describe how to add, copy, move, and delete groups.

3.2.1 Adding Groups

Step 1 Select a node or group in the Domain Explorer tree.

Note You cannot add a new group to the Discovered Network Elements or Deleted Network Elements groups.

Step 2 Choose **File > New Group** (or click the **Add a New Group** tool). The New Group dialog box opens.

Step 3 Enter the following information in the New Group dialog box.

Table 3-1 Field Descriptions for the New Group Dialog Box

Field	Description
Group ID	Unique name for the group.
Location Name	Geographic location of the group.
Description	Description of the group.

Step 4 Click **OK**. The new group appears in the Domain Explorer tree.

3.2.2 Copying Groups

You can easily create domains for multiple users in Prime Optical. Just copy the same groups in different domains, so that users who work different shifts can use the same group.

Step 1 In the Domain Explorer tree, select the group to be copied.

Step 2 Choose **Edit > Copy** (or click the **Copy** tool).

Step 3 Select the group where the group will be pasted and choose **Edit > Paste** (or click the **Paste** tool). This pastes the group under the selected group.

Note You cannot paste a group into the Discovered Network Elements or Deleted Network Elements groups.

Tip The drag-and-drop feature can also be used to copy groups. Use the mouse to drag and drop the group to a new location.

Since they cannot see the entire domain, users with the Assign NEs property (Provisioner, Operator, and some custom user profiles) are not allowed to modify the topology using copy, cut, paste, or drag and drop. See Chapter 8, "Managing Security" for information about the Assign NEs property.

3.2.3 Moving Groups

Prime Optical provides drag-and-drop capabilities to easily move groups in the Domain Explorer tree.

Step 1 In the Domain Explorer tree, select the group to be moved.

Step 2 Use the mouse to drag and drop the selected group to a new location.

Note You cannot move groups into the Discovered Network Elements or Deleted Network Elements groups.

3.2.4 Deleting Groups

Prime Optical allows you to delete a single group or multiple groups.

3.2.4.1 Deleting a Single Group

Step 1 In the Domain Explorer tree, select the group to be deleted.

Step 2 You can delete either the selected instance of the group or all instances of the group:

- To remove the selected instance of the group, choose **Edit > Delete**; then, click **Yes** in the confirmation dialog box.
- To remove all instances of the selected group, choose **Edit > Delete All**; then, click **Yes** in the confirmation dialog box.

Note Before deleting the last instance of a group, the group must be empty. Move all of the NEs and groups that the group contains to a different group.

3.2.4.2 Deleting Multiple Groups

Step 1 In the Domain Explorer tree, select the group to be deleted. Select multiple groups by pressing the **Ctrl** key, then click each group that will be deleted.

Step 2 You can delete either the selected instance of the groups or all instances of the groups:

- To remove the selected instance of the groups, choose **Edit > Delete**; then, click **Yes** in the confirmation dialog box.
- To remove all instances of the selected groups, choose **Edit > Delete All**; then, click **Yes** in the confirmation dialog box.

Note Before deleting the last instance of a group, the group must be empty. Move all of the NEs and groups that the group contains to a different group.

3.3 How Do I Build Network Partitions?

Network partitions are groups of subnetworks or groups of NEs that are managed by the same NE service. Different network partitions mean different NE services. You can add, modify, or delete network partitions in the Subnetwork Explorer window.

Note Prime Optical contains one network partition by default.

Note A single network partition should contain fewer than 500 CTC-based NEs. Multiple network partitions must be used if your NE counts exceed these limits or if you are managing ANSI and ETSI devices in the same Prime Optical domain.

Note When automatic subnetwork grouping is enabled while performing operations on a network partition, NE visibility might be affected. Wait for a few minutes while Prime Optical arranges the NEs and subnetworks in the correct network partition. For more information on automatic subnetwork grouping, see 3.5.6 Automatically Grouping NEs in Subnetworks, page 3-23.

3.3.1 Adding Network Partitions

Step 1 In the Domain Explorer window, choose **File > Subnetwork Explorer**.

Step 2 In the Subnetwork Explorer window, choose **File > Add New Network Partition** (or click the **Add a New Network Partition** tool). The Add New Network Partition dialog box opens.

Step 3 Enter the following information.

Table 3-2 Field Descriptions for the Add New Network Partition Dialog Box

Field	Description
Network Partition ID	ID of the network partition. The range is from 1 to 128 alphanumeric or special characters.
Description	Network partition description.

Step 4 Click **OK**. The new network partition appears in the Subnetwork Explorer tree.

3.3.2 Modifying Network Partitions

Step 1 In the Domain Explorer window, choose **File > Subnetwork Explorer**. The Subnetwork Explorer opens.

Step 2 In the Subnetwork Explorer tree, select a network partition to modify.

Step 3 In the Network Partition Properties pane, click the **Identification** tab.

Step 4 Modify the following information as needed.

Table 3-3 Field Descriptions for the Network Partition Properties Pane

Field	Description
Network Partition ID	ID of the network partition. The range is from 1 to 128 alphanumeric or special characters.
Description	Network partition description.

Step 5 Click **Save**.

Step 6 In the confirmation dialog box, click **Yes**. The modifications are visible in the Subnetwork Explorer tree and Network Partition Properties pane.

3.3.3 Deleting Network Partitions

Step 1 In the Domain Explorer window, choose **File > Subnetwork Explorer**. The Subnetwork Explorer opens.

Step 2 In the Subnetwork Explorer tree, select the network partition that you want to delete; then, choose **Edit > Delete**.

Note A network partition cannot be deleted if it is associated with any subnetwork in the domain, or if it is the last network partition in the domain. When the network partition is deleted, any running instances of the NE Service that were associated with the partition stop running.

Step 3 In the confirmation dialog box, click **Yes**. The network partition is removed from the Subnetwork Explorer tree.

3.4 How Do I Build Subnetworks?

Subnetworks are sets of NEs interconnected at a specific network layer (such as physical, section, line, and so on). Subnetworks are contained within network partitions. NEs must belong to the same subnetwork to create circuits between them.

The following sections describe how to add, move, and delete subnetworks. Users with the Assign NEs property (Provisioner, Operator, and some custom user profiles) can see only the subnetworks of the NEs that are assigned to them.

Note When automatic subnetwork grouping is enabled while performing operations on a subnetwork, NE visibility might be affected. Wait for a few minutes while Prime Optical arranges the NEs in the correct subnetwork. For information on automatic subnetwork grouping, see 3.5.6 Automatically Grouping NEs in Subnetworks, page 3-23.

3.4.1 Adding Subnetworks

Step 1 In the Domain Explorer window, choose **File > Subnetwork Explorer**.

Note To open the Subnetwork Explorer, the domain must contain at least one NE. If the domain does not contain any NEs, the Subnetwork Explorer menu option is unavailable.

Step 2 In the Subnetwork Explorer tree, select the network partition where you will add the subnetwork and choose **File > Add New Subnetwork** (or click the **Add a New Subnetwork** tool). The Add New Subnetwork dialog box opens.

Step 3 Enter the following information in the Add New Subnetwork dialog box.

Table 3-4 Field Descriptions for the Add New Subnetwork Dialog Box

Field	Description
Subnetwork ID	Unique name for the subnetwork. The name can contain up to 32 alphanumeric or special characters.
Subnetwork Type	Type of subnetwork (SONET, SDH, other, or unknown).
Subnetwork Topology	Subnetwork topology.
Description	Description of the subnetwork.

Step 4 Click **OK**. The new subnetwork appears in the Subnetwork Explorer tree.

Note The Add New Subnetwork feature is not available for users with the Assign NEs property (Provisioner, Operator, and custom user profiles) because they cannot see the entire domain.

3.4.2 Moving Subnetworks

A subnetwork can be moved from one network partition to another if there are no routable links among the NEs that belong to that subnetwork and if automatic subnetwork grouping is disabled. (For information about automatic subnetwork grouping, see 3.5.6 Automatically Grouping NEs in Subnetworks, page 3-23.)

Step 1 In the Domain Explorer window, choose **File > Subnetwork Explorer**.

Step 2 In the Subnetwork Explorer tree, select the subnetwork to be moved.

Step 3 Use the mouse to drag and drop the selected subnetwork to a new network partition.

3.4.3 Deleting Subnetworks

Step 1 In the Domain Explorer window, choose **File > Subnetwork Explorer**.

Step 2 In the Subnetwork Explorer tree, click the subnetwork that will be deleted.

Note Only an empty subnetwork can be deleted. An empty subnetwork is one that does not contain any NEs or deleted NEs. Trying to delete a subnetwork that contains deleted NEs will generate the error message: "Selected subnetwork has some deleted NEs. Prune those NEs to delete the subnetwork." Before deleting the subnetwork, remove the deleted NEs from the Prime Optical database. For more information, see 3.5.7.4 Removing a Deleted NE, page 3-27.

Step 3 Choose **Edit > Delete**.

Step 4 In the confirmation dialog box, click **Yes** to remove the subnetwork from the tree.

3.5 How Do I Build NEs?

When you add a new NE, you select the subnetwork to which you will add it. Consequently, the NE is added to the network partition that contains the selected subnetwork. This allows you to create circuits between NEs.

You can also add a new NE without selecting a subnetwork. A new subnetwork will be created for each new NE.

3.5.1 Prerequisites for Adding NEs

Before adding a new NE, enable the NE service for that NE. (You can, however, add the NE even if the NE service is disabled.) The NE service is enabled by default, but the service is not started as a process unless you activate an NE for that particular service. You must also meet certain other specific prerequisites depending on the type of NE you are adding.

Note There are no prerequisites for adding ONS 15327, ONS 15600 SONET, or ONS 15600 SDH NEs.

3.5.1.1 Prerequisites for Adding ONS 15216 EDFA2 and EDFA3 NEs

Before adding ONS 15216 EDFA2 and EDFA3 NEs to Prime Optical, you must do the following:

- Configure the Prime Optical SNMP community string with read-write access on the ONS 15216 EDFA2 or EDFA3. Refer to the NE documentation for more information.
- Ensure that the Prime Optical SNMP community string value and the CommTrapEntry community string value on the ONS 15216 EDFA2 or EDFA3 match. To ensure that these values match, enter the value from the CommTrapEntry in the ONS 15216 EDFA2 or EDFA3 into the SNMP Community String field in the Domain Explorer.
- (For the ONS 15216 EDFA3 only) Start the FTP service. To verify that the FTP service has started, enter the **ftp 0** command and enter the username and password specified during installation.
- (For the ONS 15216 EDFA2 only) Configure the TFTP service on the Prime Optical server to publish the TFTP directory and start the TFTP service. The directory to be published as a TFTP directory should have read-write access.

To configure the default tftpboot directory:

Step 1 Start the TFTP service on the Prime Optical server by uncommenting the TFTP service entry from the /etc/inetd.conf file, and update the name of the directory to be published as a TFTP directory. For example:

```
tftp dgram udp6 wait root /usr/sbin/in.tftpd in.tftpd -s /tftpboot
```

Step 2 Stop and restart the inetd process.

The name of the ONS 15216 EDFA3 NE must be unique and cannot be a null value. To set the name of the ONS 15216 EDFA3 NE:

Step 1 Log into TL1 for that particular NE. For example, enter:

telnet *IP-address* **3083**

Step 2 Enter the username and password. For example, enter:

ACT-USER::*username***:123::***password***;**

Step 3 Enter the following command to set the new name on the ONS 15216 EDFA3 NE:

ED-NE-GEN:::123:::NAME=*new-name***;**

Step 4 Enter the following command to verify that the name is correct:

RTRV-NE-GEN:::123;

Step 5 Enter the following command to log out:

CANC-USER::*username***:123;**

Note For passive ONS 15216 NEs, there is no communication between Prime Optical and the NE itself, and all the information is user-defined. For example, you can add inventory information in the Domain Explorer and add specific information (such as a serial number) in the NE Explorer. For passive ONS 15216 NEs with multiple slots, you can use the NE Explorer to specify the content of each slot. The information you define is maintained in the database and propagated to an external OSS by using Prime Optical GateWay/CORBA.

3.5.1.2 Prerequisites for Adding ONS 15305 NEs

Before adding ONS 15305 NEs to Prime Optical, be sure that a valid SNMP community string is set up on the ONS 15305 to allow performance monitoring and fault management data collection from the NE.

Note To enable you to add an ONS 15305 NE to Prime Optical, its SNMP Users table must contain the row 0.0.0.0 public true, where *public* is the community string. In addition, to obtain trap events from the NE, the Prime Optical server IP address must be added to the NE. See the Cisco Edge Craft user documentation for more information.

3.5.1.2.1 Important Note About Upgrading from ONS 15305 R2.0.2, R2.0.3, or R2.0.4 to ONS 15305 R3.0

When upgrading from ONS 15305 R2.0.2, R2.0.3, or R2.04 to ONS 15305 R3.0, note the following constraints:

- After you upgrade the NE to ONS 15305 R3.0, you must delete the R2.0 NE (with NE model "ONS 15305") from Prime Optical and add it again with the correct NE model attribute ("ONS 15305 CTC").
- All PM data that was collected before the upgrade will be lost.

These constraints exist because the NE service that manages the ONS 15305 R2.0.2, R2.0.3, and R2.0.4 is different from the NE service that manages the ONS 15305 R3.0.

3.5.1.3 Prerequisites for Adding ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH NEs

Before adding ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH NEs with ML-series cards to Prime Optical, be sure the NEs are set up as follows:

- Because Prime Optical does not support duplicate IP addresses, be sure that your ONS network does not contain duplicate IP addresses before adding ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH NEs.
- A valid SNMP community string must be given when adding an NE with ML-series cards to resynchronize Syslog and Configuration events. Audit log messages will be added in case of a resynchronization failure.

Note For SNMPv3 node configuration, see 8.4.6 Managing SNMPv3—CTC-Based Release 9.6 NEs, page 8-64.

- A trap destination with IP address equal to the Prime Optical server IP address, UDP port 162, SNMP version as SNMPv2c, maximum traps per second set to 0, and SNMP community string must be created and must allow SNMP sets to receive traps from ML-series cards.
- The Cisco IOS startup-config file must have the **snmp-server enable traps** command to receive traps from ML-series cards.
- Whenever the user changes the trap destination for NE IP address and port=162/391 in either CTC or Prime Optical, NEs must be out of service to resynchronize the ML-series card events and be registered for traps. Change the operational state of the NE to In Service after making the changes.
- CTC SuperUser credentials (NE username and password) are required to exploit full Prime Optical functionalities.
- If your network contains ML cards, SNMPv1/SNMPv2c uses the following configurations on GNEs and ENEs for traps:
  - GNE trap destination: Prime Optical server IP address
  - GNE trap port: 162
  - GNE community string: public
  - GNE version: v1 or v2c
  - ENE trap destination: GNE IP address
  - ENE trap port: 391
  - ENE community string: Same as on GNE
  - ENE version: v1 or v2c

Note Keep the SNMP version consistent across all the GNEs/ENEs in the ring.

3.5.1.3.1 Adding a DWDM Node to an Existing Multi-Service Transport Platform (MSTP) Network

Step 1 Mark the two NEs of the DWDM span (where you want to insert the new node) as Out of Service.

Step 2 Delete all invalid DWDM links between the two NEs from Prime Optical.

Step 3 Complete the steps in the *NTP-G129 Add a DWDM Node* section, described in the *Cisco ONS 15454 DWDM Procedure Guide*.

Step 4 Mark the two NEs as In Service. The newly added NE will be automatically discovered when the new links are running.

3.5.1.4 Prerequisites for Adding ONS 15530 and ONS 15540 NEs

Before adding ONS 15530 and ONS 15540 NEs to Prime Optical, verify that the NEs are set up correctly. You can perform most of the setup by using the NE CLI.

When adding NEs to the network, first add information to the SNMP Community String table; then, add one NE (in the Add New NE wizard) for each group of interconnected ONS 155xx NEs. This NE becomes the starting point for automatically discovering the other NEs. Immediately after you add this NE, the information in the SNMP Community String table is used to discover all other ONS 155xx NEs in the group.

The examples given in this section are provided as examples only. Refer to the relevant hardware documentation for detailed command information.

3.5.1.4.1 Hostnames and IP Addresses (Required)

All NEs must be configured with unique hostnames and IP addresses.

3.5.1.4.2 SNMP Community Strings (Required)

NEs must be reachable through SNMP. Use the **snmp-server host** command to add the Prime Optical server to the list of SNMP trap destinations on each NE. Use the **snmp-server enable traps** command to enable trap generation for events and alarms.

Note Only SNMP version 2c traps are supported.

Each NE must have an entry in the SNMP Community String table, which is the basis for ONS 155xx autodiscovery and must contain valid community strings for each ONS 155xx in the network. Autodiscovery relies on Cisco Discovery Protocol (CDP) or on the configuring topology on the device.

There is one default entry in this table, which provides SNMP access to all ONS 155xx NEs in the network, provided you are using the default community strings.

You can add, modify, and delete entries in this table. All fields in an entry must be filled in; blank fields are not permitted.

To add entries to the SNMP Community String table:

Step 1 In the Domain Explorer window, choose **Administration > ONS 155XX > ONS 155XX SNMP Settings Table**. The SNMP Community String table opens. Table 3-5 provides descriptions.

Step 2 If the IP address of the NE is not already in the table, choose **Edit > Add**. The Add SNMP Parameters dialog box opens.

Note The SNMP Community String table contains a default entry for all ONS 15530 and ONS 15540 NEs that are configured with the default community string.

Step 3 Add the IP address in the Target field; the IP addresses for all ONS 15530 and ONS 15540 NEs must be specified in this table.

Step 4 Be sure that the correct community strings for each ONS 15530 and ONS 15540 are in the table under the Read/Write field.

Step 5 (Optional) Configure the timeout and retry values.

Step 6 Click **OK**.

Table 3-5 Field Descriptions for the SNMP Community String Table

Field	Description
Target	IP address of the NE or range of NEs to which you are assigning the community strings in this entry. You can enter a specific IP address, wildcard characters (*) in any portion of the address, and ranges. For example: • 172.*.*.* • 172.20.[4-55].* You can add a combination of general and specific entries, but the community strings are read from most specific to least specific. Wildcard characters cannot appear in ranges.
Read/Write	Community string that allows read/write access to the NEs in the entry.
Retry	Number of times the server attempts to communicate with the device before reporting that the device has timed out. By default, the server makes one retry. You can specify from 0 to 5 retries.
Timeout	Length of time the server waits for a response from the device before performing the first retry. The Cisco default timeout is 15 seconds. You can specify from 0 to 60 seconds.

Note

- You can change SNMP Community String table entries at any time to match the community strings set on NEs. Routine community string changes take effect after the next health poll cycle or after a rediscovery. For information about the health poll or about discovery, see Chapter 4, "Maintaining an Efficient Network."
- You can modify SNMP parameters. In the SNMP Community String table, choose **Edit > Modify** to modify the SNMP parameters in the Modify SNMP Parameters window.
- You can delete SNMP parameters. In the SNMP Community String table, choose **Edit > Delete** to delete SNMP parameters.

3.5.1.4.3 Topology Setup

Appropriate topology information must be configured on ONS 15530 and ONS 15540 NEs for automatic discovery of neighbors and discovery of physical links. For the ONS 15530 and ONS 15540, the topology can be configured in two ways: by using CDP learning or through IP using Ethernet.

CDP neighbor information exchanged between the Optical Supervisory Channel (OSC) ports of two adjacent NEs, or between the wavelength division multiplexing (WDM) ports of two NEs that are directly connected, usually reflects the actual physical topology. CDP neighbor information can be used to populate the physical topology in these cases. To enable topology learning through CDP, you must first enable CDP on the corresponding OSC ports, and then enable topology learning via CDP. For example, assume that two ONS 15540 NEs are connected through the wdm0/0 port on each side, with OSC port Wave0 present on both sides:

1. The **cdp enable** CLI command, when entered in the interface configuration mode of interface Wave0 of both NEs, enables CDP on the two Wave0 interfaces.
2. The **topology neighbor cdp proxy Wave0** CLI command, when entered in the interface configuration mode of interface wdm0/0 of both NEs, enables physical topology learning via CDP information exchanged between the Wave0 ports of the two NEs.

For NEs without OSC, manually configure the appropriate topology neighbors between all of the connected inter-NE links by using **topology neighbor** commands, as in the following examples:

- For the ONS 15530 and ONS 15540, if wdm0/0 of NE1 (IP address 1.1.1.1) is connected to wdm1/0 of NE2 (IP address 2.2.2.2) in a point-to-point topology, add the following commands to the configuration for interface wdm0/0 of NE1:

```
topology neighbor name NE2 port name Wdm1/0
topology neighbor agent ip-address 2.2.2.2
```

  Add the following topology commands to the configuration for interface wdm1/0 of NE2:

```
topology neighbor name NE1 port name Wdm0/0
topology neighbor agent ip-address 1.1.1.1
```

3.5.1.4.4 Patch Setup

Optical patches must be set up on all NEs between through interfaces, WDM interfaces, and so on.

For NEs with OSC, additional configuration is required. Add patches between the Wave and OSC filter interfaces. For example, if the Wave 0 interface is connected physically to the OSC filter 0/0 interface, add a patch using the following command:

```
patch Wave 0 Oscfilter 0/0
```

3.5.1.4.5 Performance Monitoring (Optional)

Performance monitoring is optional, but you must enable it if you want to monitor threshold alarms and performance parameters.

You can enable performance monitoring by using the device CLI. For information about using the CLI, see the relevant hardware documentation.

3.5.1.5 Prerequisites for Adding CPT 200 and CPT 600 NEs

If a CPT 200 or CPT 600 NE is connected to an ONS 15454 NE, the CPT NE model must match the ONS 15454 NE model. For example, if the ONS 15454 NE is added as a SONET NE, the CPT 200 or CPT 600 NE must be added as a SONET NE.

If the CPT 200 or CPT 600 NE is a standalone NE, the NE model is irrelevant.

3.5.2 Adding NEs

From the Domain Explorer or Subnetwork Explorer tree, you can use the Add New NE wizard to add a single NE or multiple NEs.

Note Prime Optical does not support duplicate IP addresses. Before adding NEs, be sure that your network does not contain duplicate IP addresses.

3.5.2.1 Adding a Single NE

Note If you are adding an ONS 155xx NE, first verify that the NE is covered by an entry in the SNMP Community String table.

Step 1 Select a node in the Domain Explorer or Subnetwork Explorer tree; then, choose **File > Add Network Element(s)** (or click the **Add Network Element(s)** tool). The Add New NE wizard opens. Table 3-6 provides descriptions.

Note You cannot add a new NE to the Discovered Network Elements or Deleted Network Elements groups.

Step 2 Enter the following information:

- NE model
- NE type

Step 3 Click one of the following radio buttons in the NE Addition area:

- **Single NE Addition**—To add only one NE.
- **Single NE Addition (Use TL1 Tunnel)**—To add only one tunnel NE (TNE). Prime Optical can connect to a TNE that belongs to an OSI network behind a non-Cisco GNE.

Step 4 Complete the following substeps if you are adding a single NE:

a. Click one of the following radio buttons in the IP Address area:
   - IP
   - Hostname

b. Enter the IP address or hostname; then, click **Add**.

Note You can enter an IP address in IPv4 or IPv6 format.

To enable you to add an NE using its hostname, the hostname must be resolved inside the Domain Name Service (DNS).

Step 5 Complete the following substeps if you are adding a single TNE:

a. Enter the gateway NE.

b. Click one of the following radio buttons:
   - Use Default TL1 Port.
   - Use Other TL1 Port—If selected, enter the TL1 port number.

c. Choose a TL1 encoding mode from the drop-down list.

d. Check the GNE Login Required check box if GNE login is required.

e. Enter the GNE TID (*available if the GNE Login Required check box is checked*)

Step 6 Click **Next**.

Note If you click **Finish** in this window, Cisco default values are assigned to the remaining fields. In addition, the NE is placed in a preprovisioned state, and discovery does not start automatically. If you want to add the NE in a nonpreprovisioned state, click **Next** and proceed to the next window; then, in the Operational State field, select a state other than Preprovisioned.

Step 7 Enter the following information. Fields shown depend on the NE type.

a. NE ID

Note
- Do not use "Prime Optical" as an NE ID because the Alarm Browser might contain Prime Optical alarms with the source ID "Prime Optical." It will be difficult to distinguish between NE alarms and Prime Optical alarms if they both have the same source ID. For the same reason, do not cause Prime Optical to automatically populate an NE whose NE ID is "Prime Optical."
- If you are using Prime Optical with Prime Central, do not use "None" or "All" as the NE ID, because those names have internal meaning to Prime Central.
- If the NE ID field is left blank, it will default to the IP address. After communication is established, Prime Optical discovers the NE ID from the NE.

b. Alias

c. Operational state

d. Description

e. Location name

f. Subnetwork ID

Note This field is dimmed when the Automatically Group NEs in Subnetworks check box is checked in the UI Properties pane of the Control Panel.

g. Network partition ID.

Step 8 Click the icon to view the parameters.

Step 9 Click **OK** to change the discovery mode of the network partition.

Note You can also create new network partitions by clicking the ellipsis (...) icon. Specify a name and description for the new network partition.

Step 10 To view the threshold of the new network partition, the number of NEs (which will be 0), and the option to change the discovery mode, select either Manual or Automatic (the default) from the drop-down list.

If you choose Automatic, Prime Optical automatically discovers all NEs and adds them to the network partition. If you choose Manual, the NE is added and remains in the Undiscovered Network Elements folder (**Administration > Control Panel**).

Note If you have no NEs in a network partition but are still unable to change the discovery mode, check if the Allow Provisioning (**Administration > Control Panel > UI Properties**) check box is unchecked. Also, check the value of the Discovery Mode drop-down list.

Caution Be sure to specify the correct partition. If you specify the wrong partition, the new NE will not be added, and you will get an error message.

Step 11 Click **Next** if you are adding an ONS 15305, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15530, ONS 15540, or ONS 15600 SONET NE.

Note If you click Finish in this window, Cisco default values will be assigned to the remaining fields.

Step 12 Click **Finish** if you are adding an ONS 15216, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15600 SDH, or Not Managed/Other Vendor NE.

Step 13 Select the grouping option for the NE.

Step 14 Click **Finish** to add the new NE to the domain.

Wait 2 to 5 minutes while the Prime Optical server completes the node discovery. (Not applicable if the operational state is Preprovisioned.)

Step 15 Check to see if the communication state is correct. If Prime Optical cannot connect to the NE, the NE displays an unavailable communication state icon in the tree.

Step 16 Verify that the NE software version is listed in the Supported NE table (Domain Explorer > Administration > Supported NE table). If it is not listed, see 4.3.8 Adding a New NE Software Version to the Prime Optical Domain, page 4-40.

3.5.2.2 Adding Multiple NEs

Step 1 Select a node in the Domain Explorer or Subnetwork Explorer tree; then, choose **File > Add Network Element(s)** (or click the **Add Network Element(s)** tool). The Add New NE wizard opens. Table 3-6 provides descriptions.

Note You cannot add a new NE to the Discovered Network Elements or Deleted Network Elements group.

Step 2 Enter the following information:

- NE model.
- NE type.
- NE addition—Click the **Bulk NE Addition** radio button.

  Note Bulk NE addition does not apply to passive ONS 15216 NEs or Not Managed/Other Vendor NEs.

- IP address range—Enter the IP addresses in the From and To fields; then, click **Add**.

Note The IP addresses must be from the same subnetwork.

You can enter IP addresses in IPv4 or IPv6 format. You can only enter IPv6 addresses if all of the selected NE models support IPv6. Prime Optical provides IPv6 support for the following NE releases: ONS 15310 MA SDH R9.3, ONS 15310 MA SONET R9.3, ONS 15454 SDH R9.3, and ONS 15454 SONET R9.3.

- IP address selection—Add or remove IP addresses using the **Add** or **Remove** button.

Step 3 Click **Next**.

Note If you click Finish in this window, Cisco default values are assigned to the remaining fields.

Step 4 Enter the following information. Fields shown depend on the NE type.

a. NE ID—*Display only.*

b. Alias—*Display only.*

c. Operational state.

d. Description.

e. Location name.

f. Subnetwork ID.

Note This field is dimmed when the Automatically Group NEs in Subnetworks check box is checked in the UI Properties pane of the Control Panel.

g. Network partition ID.

Step 5 Click the icon to view the parameters.

Step 6 Click **OK** to change the discovery mode of the network partition.

Note You can also create new network partitions by clicking the ellipsis (...) icon. Specify a name and description for the new network partition.

Step 7 To view the threshold of the new network partition, the number of NEs (which will be 0), and the option to change the discovery mode, select either Manual or Automatic (the default) from the drop-down list.

If you choose Automatic, Prime Optical automatically discovers all NEs and adds them to the network partition. If you choose Manual, the NE is added and remains in the Undiscovered Network Elements folder (**Administration > Control Panel**).

Note If you have no NEs in a network partition but are still unable to change the discovery mode, check if the Allow Provisioning (**Administration > Control Panel > UI Properties**) check box is unchecked. Also, check the value of the Discovery Mode drop-down list.

Caution Be sure to specify the correct partition. If you specify the wrong partition, the new NE will not be added, and you will get an error message.

Step 8 Click **Next** if you are adding an ONS 15305, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15530, ONS 15540, or ONS 15600 SONET NE.

Note If you click Finish in this window, Cisco default values are assigned to the remaining fields.

Step 9 Click **Finish** if you are adding an ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, or ONS 15600 SDH NE.

Step 10 Select the grouping option for the NE.

Step 11 Click **Finish** to add the NEs to the domain.

Wait 2 to 5 minutes while the Prime Optical server completes the node discovery. (Not applicable if the operational state is Preprovisioned.)

Step 12 Check to see if the communication state is correct. If Prime Optical cannot connect to the NE, the NE displays an unavailable communication state icon in the tree.

Step 13 Verify that the NE software version is listed in the Supported NE table (Domain Explorer > Administration > Supported NE table). If it is not listed, see 4.3.8 Adding a New NE Software Version to the Prime Optical Domain, page 4-40.

Table 3-6 Field Descriptions for the Add New NE Wizard

Field	Description
NE Addition Panel	
NE Model	Select the NE model (Carrier Packet Transport 200, Carrier Packet Transport 200 SDH, Carrier Packet Transport 600, Carrier Packet Transport 600 SDH, Cisco ONS 15216 [all types], Cisco ONS 15305, Cisco ONS 15305 CTC, Cisco ONS 15310 CL, Cisco ONS 15310 MA SONET, Cisco ONS 15310 MA SDH, Cisco ONS 15327, Cisco ONS 15454 SONET, Cisco ONS 15454 SDH, Cisco ONS 15530, Cisco ONS 15540 ESP, Cisco ONS 15540 ESPx, Cisco ONS 15600 SONET, Cisco ONS 15600 SDH, or Not Managed/Other Vendor).
NE Type	Select the type of NE. Available types depend on the selected NE model.
NE Addition	Click one of the following radio buttons. The available fields change, depending on which option you select: • **Single NE Addition**—To add only one NE. • **Bulk NE Addition**—To add several NEs simultaneously. • **Single NE Addition (Use TL1 Tunnel)**—To add only one TNE.
IP Address	Click one of the following radio buttons: • IP—To enter an IP address in IPv4 or IPv6 format. • Hostname—To enter a hostname.

Table 3-6 Field Descriptions for the Add New NE Wizard (continued)

Field	Description
IP/Hostname (*for single NE additions*)	Enter a unique IP address or hostname for the NE. You can enter an IP address in IPv4 or IPv6 format. The IPv4 address must be in the form *ddd.ddd.ddd.ddd*, where *ddd* is a decimal octet expressed as an integer between 0 and 255. The first octet cannot be a zero. The IPv6 address is a 128-bit address (*hhhh:hhhh:hhhh:hhhh:hhhh:hhhh:hhhh:hhhh*) that is divided into 16-bit blocks, where each block is converted to a 4-digit hexadecimal number and separated by a colon (:). An IPv6 address is valid only if the NE model that you selected supports IPv6 addresses. **Note** Prior to the NE ID discovery, Prime Optical uses the NE IP address as a temporary NE ID. To enable you to add an NE using its hostname, the hostname must be resolved inside the DNS. The IP/Hostname field is unavailable when adding passive NEs and Not Managed/Other Vendor NEs.
From IP Address (*for bulk NE additions*)	Enter the beginning IP address for the range of NEs you want to add. **Note** You can enter an IP address in IPv4 or IPv6 format.
To IP Address (*for bulk NE additions*)	(Optional) Enter the ending IP address for the range of NEs you want to add. Click **Add** to add the range to the Selected IP field.
IP Address Selection (*for bulk NE additions*)	Select one or more IP addresses in the Deleted IP field and click **Add** to add them to the Selected IP field. Select one or more IP addresses in the Selected IP field and click **Remove** to remove them. Only the IP addresses in the Selected IP field are affected by clicking **Next**. **Note** You can add IPv6 addresses only if the selected NE model supports IPv6. Prime Optical provides IPv6 support for the following NE releases: ONS 15310 MA SDH R9.3, ONS 15310 MA SONET R9.3, ONS 15454 SDH R9.3, and ONS 15454 SONET R9.3.
Gateway NE (*for single TNE additions*)	If you selected Single NE Addition (Use TL1 Tunnel) in the NE Addition area, the Gateway NE area becomes visible. Fill in the following fields to add a TNE to the Prime Optical domain. The following NE models support TL1 tunnels: ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, and ONS 15454 SDH. • GNE IP Address—IP address of the non-Cisco GNE that supports the TL1 tunnel. This field is mandatory. • Use Default TL1 Port—If selected, the default value for the TL1 port is used. • Use Other TL1 Port—If selected, specify the TL1 port number in the text field. • TL1 Encoding Mode—Specify the TL1 encoding mode: – LV + Base64 Payload: (Default) If selected, and if Use Default TL1 Port is selected, TL1 port 3081 is used. – LV + Binary Payload: If selected, and if Use Default TL1 Port is selected, TL1 port 3081 is used. – Raw: If selected, and if Use Default TL1 Port is selected, TL1 port 3082 is used. • GNE Login Required—If checked, a login is required on the non-Cisco GNE. The GNE login uses the following settings: – GNE TID: The value specified in the GNE TID field. – Username and password: The values specified in the Control Panel > Security Properties pane > CTC-Based SDH or CTC-Based SONET tab > Server - GNE Connection (TL1 Tunnel) area.

Table 3-6 Field Descriptions for the Add New NE Wizard (continued)

Field	Description
NE Properties Panel	
NE ID	Enter a unique name for the NE in the form of an ASCII text string. Apostrophes (') and quotation marks (") are not accepted. The NE ID you enter should be the same as the NE ID that is configured on the NE itself. If it is not the same, this field will be updated with the NE hostname. **Note** Do not use "Prime Optical" as an NE ID because the Alarm Browser might contain Prime Optical alarms with the source ID "Prime Optical." It will be difficult to distinguish between NE alarms and Prime Optical alarms if they both have the same source ID. For the same reason, do not cause Prime Optical to automatically populate an NE whose NE ID is "Prime Optical." **Note** If the NE ID field is blank, it will default to the IP address. After communication is established, Prime Optical autodiscovers the NE ID from the NE.
Alias	Enter a unique alias name for the NE. The alias name can contain alphanumeric characters. It can also contain characters from international character sets.
Operational State	Specify the operational state of the NE. There are four states: • Preprovisioned—The NE has been added to the database for provisioning but is not yet in service. • Under Maintenance—The NE is temporarily under maintenance but requires monitoring. • In Service—The NE is currently deployed and requires monitoring. • Out of Service—The NE has been marked Out of Service and does not require monitoring.
SNMP Community String	Enter the SNMP community string for the NE. The Cisco default is **public**. **Note** The SNMP community string applies only to the ONS 15216 EDFA2, ONS 15216 EDFA3, ONS 15305, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, and ONS 15454 SDH NEs. **Note** When adding ONS 155xx NEs, this field is unavailable. You must enter the community strings in the SNMP Community String table before adding the NE.
Description	Enter a description of the NE.
Location Name	Enter the NE geographic location.
Subnetwork ID (*not selectable if automatic subnetwork grouping is enabled*)	Select the subnetwork ID associated with the NE.
Network Partition ID	Select the network partition associated with the NE. To add a CTC-based NE that was discovered manually, do the following: • To view the NE partition details, click the icon next to the NE partition ID. • Click **OK** to change the discovery mode. The discovery mode can be changed only if the network partition is empty. • You can also create new network partitions by clicking the ellipsis (...) icon. Specify a name and description for the network partition. **Note** When you are adding manually discovered NEs to a network partition, only the partitions that are compatible with the selected NE model are listed.

Table 3-6 Field Descriptions for the Add New NE Wizard (continued)

Field	Description
Group Properties Panel	
Grouping Option for Discovered NEs	Select one of the following grouping options for the discovered NEs: • Group discovered NEs in the Discovered Network Elements group • Group NEs with the NE that discovered them (Cisco default) • Group NEs by subnet **Note** If you are adding manually discovered NEs, the first option is preselected, and the other options are dimmed. To move an NE, cut and paste it into the desired group.

Note

- For Prime Optical to communicate with certain NE types, you must set the username and password that the Prime Optical server uses to establish a session with the NE. To enter user information, choose **Administration > Control Panel > Security Properties** tab; then, enter the username and password on the **ONS 15216 EDFA2**, **ONS 15216 EDFA3**, **ONS 15216 OADM**, **ONS 15305 CTC, ONS 15327**, **ONS 15454**, **ONS 15454 SDH**, **ONS 155XX**, **ONS 15600 SDH**, or **ONS 15600** tab.
- Regardless of the actual length of the password, the Password and Confirm Password fields display only a fixed-length string of 15 asterisks (*).
- For more information, see 8.3.3.13 Configuring Prime Optical Security Parameters, page 8-29. For NEs that do not use SNMP, you can set the username and password in the NE Authentication tab of the Domain Explorer. For more information, see 8.4.1 Setting NE Authentication, page 8-41.
- When adding more than one data communications channel (DCC)-connected, CTC-based NE, add one NE to a subnetwork and allow the other NEs to be automatically discovered and placed in the same subnetwork. When moving NEs from one subnetwork to another, move all DCC-connected NEs to the same subnetwork. Move the entire subnetwork instead of splitting DCC-connected NEs between subnetworks.
- Errors encountered while adding NEs are listed in the Error Log.

3.5.3 Copying an NE from One Group to Another

Groups for multiple users can easily be created in Prime Optical. Just copy the same NE into different groups.

Step 1 In the Domain Explorer tree, select the NE to be copied.

Step 2 Choose **Edit > Copy** (or click the **Copy** tool).

Step 3 Select the group or management domain node where the NE will be pasted and choose **Edit > Paste** (or click the **Paste** tool). This pastes the NE under the selected node.

Note You cannot paste an NE in the Discovered Network Elements or Deleted Network Elements groups. Also, you cannot paste an NE in a group where the same instance of the NE already exists.

Tip The drag-and-drop feature can also be used to copy NEs. Use the mouse to drag and drop the NE to a new location.

Note Since they cannot see the entire domain, users with the Assign NEs property (Provisioner, Operator, and some custom user profiles) are not allowed to modify the topology using copy, cut, paste, or drag and drop.

3.5.4 Moving an NE from One Group to Another

Prime Optical provides drag-and-drop capabilities to allow you to easily move NEs from one group to another.

Step 1 In the Domain Explorer tree, select the NE to be moved.

Step 2 Choose **Edit > Cut**, then **Edit > Paste**. You can also use the mouse to drag and drop the selected NE to a new location.

Note You cannot copy or move NEs into the Discovered Network Elements group.

Note Since they cannot see the entire domain, users with the Assign NEs property (Provisioner, Operator, and some custom user profiles) are not allowed to modify the topology using copy, cut, paste, or drag and drop.

3.5.5 Moving an NE from One Network Partition to Another

Caution Prime Optical cannot manage circuits across network partitions. Be sure that all connected NEs are managed under the same network partition.

Note Do not add SONET and SDH NEs in the same network partition.

Step 1 In the Domain Explorer tree, select **File > Subnetwork Explorer**. The Subnetwork Explorer opens.

Step 2 Identify the network partition ID:

a. In the Subnetwork Explorer tree, click the new network partition where you will move the NE.

b. In the Network Partition Properties pane, click the **Identification** tab.

Step 3 Identify the subnetwork(s) assigned to the new network partition.

Note A subnetwork can only be assigned to one network partition.

Step 4 In the Domain Explorer, click the NE to be moved. In the Network Element Properties pane, click the **Address** tab.

Step 5 Change the subnetwork ID to a subnetwork ID assigned to the new network partition. Choose from the list of subnetwork IDs; then, click **OK**.

Step 6 Click **Save**.

3.5.6 Automatically Grouping NEs in Subnetworks

Note An NE can be assigned to only one subnetwork.

Prime Optical allows you to automatically group NEs in a subnetwork. When this feature is enabled, Prime Optical automatically creates the subnetwork, which consists of NEs that are connected by topological links; you cannot change the subnetwork of the NE. This means that:

- When adding a new NE, the option to select the subnetwork ID is disabled. The Subnetwork ID field displays *System Default*.
- In the Address tab of the Domain Explorer > Network Element Properties pane, you cannot change the subnetwork ID.
- You cannot drag and drop NEs in the Subnetwork Explorer tree.

Complete the following steps to automatically group NEs in a subnetwork:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel** and click **UI Properties**.

Step 2 In the Subnetwork Grouping area, check the **Automatically Group NEs in Subnetworks** check box.

Step 3 Click **Save**.

Note If a topological link is deleted while NEs are automatically grouped in subnetworks, Prime Optical deletes isolated NEs, creates a new subnetwork, and moves the deleted NEs to the new subnetwork.

If a topological link is discovered or added manually, it will result in a network that contains disjointed

subnetworks. Prime Optical deletes the NEs from the disjointed subnetwork that contains fewer NEs, deletes the disjointed subnetwork, and adds the deleted NEs to the subnetwork where the topological link was added manually.

3.5.7 Deleting NEs

From the Domain Explorer tree, you can delete a single NE, multiple NEs, or out-of-service NEs.

Note All links from the NE are deleted automatically from the database during the purge phase of NE deletion. The purge process does not start if there are valid links on the NEs scheduled for permanent deletion. You must wait until all links on the NE become invalid and then try again.

3.5.7.1 Deleting a Single NE

Only out-of-service or preprovisioned NEs can be placed in the Deleted Network Elements group.

If a CTC-based NE is deleted and then DCC connectivity to the deleted NE is removed, Prime Optical rediscovers the deleted NE. If DCC connectivity is removed *before* deleting the NE, Prime Optical does not rediscover the NE. Therefore, remove DCC connectivity to the NE before deleting the NE from Prime Optical.

Step 1 In the Domain Explorer tree, select the NE that will be deleted.

Step 2 In the Status tab of the Network Element Properties pane, set the Operational State field to **Out of Service**; then, click **Save**. Click **Yes** in the confirmation dialog box.

Note If there is more than one instance of an NE (that is, if the NE was copied so two versions exist), you do not need to move the NE to Out of Service before deleting it.

Step 3 You can delete either a selected instance of the NE or all instances of the NE:

- Deleting the selected instance of the NE—Only the specific NE that you selected in the Domain Explorer tree is deleted. To delete the selected instance of the NE, choose **Edit > Delete**; then, click **Yes**. If this is the last instance of the NE, the NE is placed in the Deleted Network Elements group.

  Note A GNE that has associated subtending NEs cannot be deleted. A subtending NE can be disassociated from the GNE by removing the NE from the Prime Optical domain or by assigning it to a different GNE.

- Deleting all instances of the NE—All NEs in the user domain that have the same NE ID are deleted. To delete all instances of the selected NE, choose **Edit > Delete All**; then, click **Yes** in the confirmation dialog box. The NE is placed in the Deleted Network Elements group.

Note Check the Audit Log to confirm that the selected NE has been successfully deleted from the database. The deletion is not complete until the following message is displayed in the Audit Log: *AUD-5015 NE ID has been successfully purged*. See 8.5.1 Viewing the Audit Log, page 8-73 for information on how to view the Audit Log.

No client views for an NE can be opened in the Deleted Network Elements group. Also, no properties of a deleted NE can be modified. The deleted NE and its associated data are removed from all client views except the Domain Explorer.

Step 4 To purge the NEs in the Deleted Network Elements group, see 3.5.7.4 Removing a Deleted NE, page 3-27.

3.5.7.2 Deleting Multiple NEs

Step 1 For each NE that will be deleted:

a. In the Domain Explorer tree, select the NE that will be deleted.

b. In the Status tab of the Network Element Properties pane, set the Operational State field to **Out of Service**; then, click **Save**.

Step 2 In the Domain Explorer tree, select again all the NEs that will be deleted. To select multiple NEs, press and hold down the **Ctrl** button; then, click each NE that will be deleted.

Step 3 You can delete the selected instance of the NEs or all instances of the NEs:

- Deleting the selected instance of the NE—Only the specific NEs that you selected in the Domain Explorer tree will be deleted. To delete the selected instance of the NEs, choose **Edit > Delete**; then, click **Yes** in the confirmation dialog box. If the selected NEs are the last instance of the NE, the NEs are placed in the Deleted Network Elements group.

Note A GNE that has associated subtending NEs cannot be deleted. A subtending NE can be disassociated from the GNE by removing the NE from the Prime Optical domain or by assigning it to a different GNE.

- Deleting all instances of the NEs—All NEs in the user domain that have the same NE ID as the NE being deleted will be deleted. To delete all instances of the selected NEs, choose **Edit > Delete All**; then, click **Yes** in the confirmation dialog box. The NEs are placed in the Deleted Network Elements group.

Note Both the Delete and Delete All menu options are enabled if at least one of the selected NEs can be deleted. The confirmation dialog box lists the NEs that can and cannot be deleted.

Note Check the Audit Log to confirm that the selected nodes have been successfully deleted from the database. The deletion is not complete until the following message is displayed in the Audit Log: *AUD-5015 NE ID has been successfully purged*. See 8.5.1 Viewing the Audit Log, page 8-73 for information on how to view the Audit Log.

Note You can use the mouse to drag and drop the selected NEs to the Deleted Network Elements group only if all the selected NEs can be deleted.

Step 4 To purge the NEs in the Deleted Network Elements group, see 3.5.7.4 Removing a Deleted NE, page 3-27.

3.5.7.3 Using the prune_ne.sh Script to Remove an Out-of-Service NE from the Database

Note It is recommended that you delete an out-of-service NE from the Prime Optical client (see 3.5.7.1 Deleting a Single NE, page 3-24 or 3.5.7.2 Deleting Multiple NEs, page 3-25), because doing so does not involve stopping and starting the Prime Optical server.

Aside from using the Domain Explorer to remove an out-of-service NE from the database, you can also use the **prune_ne.sh** script.

Note Shut down the Prime Optical server and all Prime Optical clients before running the prune_ne.sh script.

Step 1 In the Domain Explorer tree, select the NE that will be removed.

Step 2 In the Status tab of the Network Element Properties pane, set the Operational State field to **Out of Service**; then, click **Save**.

Step 3 Close the Prime Optical client.

Step 4 Log into the Prime Optical server as the root user and enter the following command to stop the server:

```
opticalctl stop
```

Step 5 Enter the following command to verify that all Prime Optical processes have stopped:

```
opticalctl status
```

a. If any processes are still running, enter the following command:

```
kill -9 process-id
```

b. Re-enter the following command to verify that the processes have stopped:

```
opticalctl status
```

Step 6 Change the directory to /opt/CiscoTransportManagerServer/bin and enter the following command:

```
prune_ne.sh NE-name
```

Step 7 Enter the following command to start the Prime Optical server:

```
opticalctl start
```

3.5.7.4 Removing a Deleted NE

Complete the following steps to remove an NE from the client view and delete all records associated with the NE from the database:

Step 1 In the Domain Explorer tree, click the **Deleted Network Elements** group.

Step 2 Click the NE that will be removed from the Prime Optical domain.

Step 3 Choose **Edit > Delete**; then, click **Yes**.

One of the following happens:

- The NE purge begins for NEs without any valid links.
- If the NEs that are scheduled for permanent deletion contain any valid links, the purge process does not start. You must wait until all links become invalid; then, then try again.

While the purge is in progress, the following icon is displayed in the Domain Explorer tree.

Figure 3-1 Domain Explorer Icon—NE Purge In Progress

If the NE purge fails, the following icon is displayed in the Domain Explorer tree. The Audit Log reports the purge failure. You can repeat the purge and view the progress.

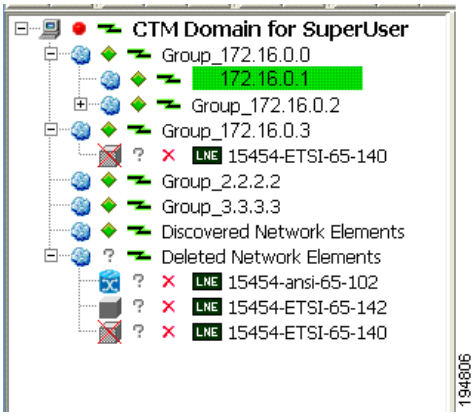
Figure 3-2 Domain Explorer Icon—NE Purge Failed

Step 4 When the NE purge completes successfully, the NE is removed from the Deleted Network Elements group.

The following figure shows the different purge states, where:

- 15454-ansi-65-102—NE has been deleted but not yet purged.
- 15454-ETSI-65-142—Purge is in progress.
- 15454-ETSI-65-140—Purge failed.

Figure 3-3 Sample Purge States: Deleted, In Progress, Failed



Note

- Wait until all records associated with the NE are deleted from the database before adding the NE back again.
- The amount of time it takes to prune NEs depends on the amount of data that needs to be removed, the amount of data in the database, the system performance, and so on. The Deleted Network Elements group is visible to users who have the add_delete_NE_group permission. You can purge or undelete an NE that is in the Deleted Network Elements group only if that NE was assigned to you.

3.5.8 Restoring a Deleted NE

Step 1 In the Domain Explorer tree, click the Deleted Network Elements group.

Step 2 Click the NE to restore.

Step 3 Choose **Edit > Undelete**.

Prime Optical restores the selected NE under the management domain node.

3.5.9 Searching for an NE

Prime Optical allows you to search for a specific NE in the network. See 1.6.5.1 Finding Data in the Domain Explorer, page 1-38.

3.6 How Do I Build Links?

A link is a connection between two termination points (TPs). Prime Optical represents the physical connectivity between NEs in the domain by defining the physical links between NEs. It is through these links that circuits (if supported on the NE) are provisioned. Links can be viewed, modified, created, and

deleted. Prime Optical automatically discovers links between CTC-based (including the ONS 15305 R3.0) and ONS 155xx NEs. For CTC-based NEs, links are autodiscovered only when the DCCs are created on both ends of the link. Autodiscovery requires configuration on ONS 15530 and ONS 15540 NEs. For the ONS 15216, links are manually added.

Note An autodiscovered link between two TPs will override previously autodiscovered links and any manual links on any of the TPs.

3.6.1 Setting Up ONS 15530 and ONS 15540 NEs for Link Discovery

Links between ONS 15530 and ONS 15540 NEs are automatically discovered and displayed, provided that physical topology is configured correctly on all ONS 15530 and ONS 15540 NEs in the network. Each physical topology neighbor of an NE represents a physical link between the NE and its neighbor NE. The ONS 15530 and ONS 15540 discovery service collects physical topology information and converts it into physical links displayed by Prime Optical.

Links between ONS 15530 and ONS 15540 devices can be bidirectional or unidirectional. A unidirectional link operates in the context of the transmit or receive side of a fiber connection and is represented by an arrowhead link in the Network Map.

Be sure that have you have set up the topology on all of the ONS 15530 and ONS 15540 NEs in your network, as described in 3.5.1.4 Prerequisites for Adding ONS 15530 and ONS 15540 NEs, page 3-10.

3.6.2 Overview of Supported Links

Links can be created at different layer rates depending on the card type. See Table 3-7 for the links supported between NEs at compatible layer rates. See Table 3-8 for the supported links per layer rate.

Note Links can be created for a Not Managed/Other Vendor NE only if the NE is in service or under maintenance. Links created for CTC-based NEs are for circuit routing purposes only. Links created for Not Managed/Other Vendor NEs are not used for circuit routing.

Note Physical nonroutable links can be created between NEs that are in the same or a different network partition(s).

Links between TXP_MR_2.5G, TXPP_MR_2.5G, MXP_2.5G_10G, TXP_MR_10G, 2.5G_DM, 2.5G_DMP, TXP_MR_10E, or MXP_MR_10E cards are automatically discovered and cannot be manually created. They can exist if:

- The layer rate is Optical Channel Layer (OCH).
- Both cards support the same wavelength.
- The links are bidirectional.

Links between TXP_MR_2.5G, TXPP_MR_2.5G, MXP_2.5G_10G, TXP_MR_10G, 2.5G_DM, 2.5G_DMP, TXP_MR_10E, MXP_MR_10E cards or DWDM cards are manually created and cannot be automatically discovered. They can be created if:

- The layer rate is Physical.

- The link is unidirectional.
- The link rate is 10G ITU if a MXP_2.5G_10G, TXP_MR_10G, TXP_MR_10E or MXP_MR_10E card is used at one end of the link, or 2.5 G ITU if a TXP_MR_2.5G, TXPP_MR_2.5G, 2.5G_DM or 2.5G_DMP card is used at one end of the link.
- The link is unprotected.
- The link is created between TXP_MR_2.5G, TXPP_MR_2.5G, MXP_2.5G_10G, TXP_MR_10G, 2.5G_DM, 2.5G_DMP, TXP_MR_10E, or MXP_MR_10E trunk ports and DWDM channel ports.
- DWDM channel ports are unidirectional and can only be used as the link source if they are transmit ports and as the link destination if they are receive ports.
- The working wavelength of TXP_MR_2.5G, TXPP_MR_2.5G, MXP_2.5G_10G, TXP_MR_10G, 2.5G_DM, 2.5G_DMP, TXP_MR_10E, and MXP_MR_10E cards is equal to the expected wavelength set on the DWDM channel port on the other end of the link.

Prime Optical discovers links that are created in CTC as L2 trunk-to-trunk links and displays them with a layer rate of L2. Only 10GE_XP and GE_XP cards in L2 mode support L2 trunk-to-trunk links.

When a DWDM transponder card (including a DWDM line card) is used as the destination of a manual link with a channel port, the wavelength is not calculated, because the physical connection works correctly. Therefore, verify that you want to create a manual link between a given channel (for example, a demux card) and a TXP card whose trunk port is set to a different wavelength.

Table 3-7 Links Supported Between NEs at Compatible Layer Rates

NE Model	Supports Links with These NEs at Compatible Layer Rates
ONS 15216	ONS 15216
	ONS 15327
	ONS 15454 SONET/SDH
	ONS 15600 SONET
ONS 15305 (R2.x)	ONS 15305
	ONS 15327
	ONS 15454 SONET/SDH
	ONS 15600 SONET/SDH
ONS 15305 (R3.0)	ONS 15305
	ONS 15327
	ONS 15454 SONET/SDH
	ONS 15600 SONET/SDH
	Unmanaged NEs
ONS 15310 CL	ONS 15310 CL
	ONS 15310 MA SONET/SDH
	ONS 15327
	ONS 15454 SONET/SDH
	ONS 15600 SONET/SDH

Table 3-7 Links Supported Between NEs at Compatible Layer Rates (continued)

NE Model	Supports Links with These NEs at Compatible Layer Rates
ONS 15310 MA SONET	ONS 15310 CL
	ONS 15310 MA SONET/SDH
	ONS 15327
	ONS 15454 SONET/SDH
	ONS 15600 SONET/SDH
ONS 15310 MA SDH	ONS 15310 CL
	ONS 15310 MA SONET/SDH
	ONS 15327
	ONS 15454 SONET/SDH
	ONS 15600 SONET/SDH
ONS 15327	ONS 15216
ONS 15454 SONET	—
ONS 15454 SDH	ONS 15305
	ONS 15310 CL
	ONS 15310 MA SONET/SDH
	ONS 15327
	ONS 15454 SONET/SDH
	ONS 15600 SONET/SDH
	Unmanaged NEs
ONS 15530	ONS 15530
ONS 15540 (ESP/ESPx)	ONS 15540 (ESP/ESPx)
ONS 15600 SONET	ONS 15216
ONS 15600 SDH	ONS 15305
	ONS 15310 CL
	ONS 15310 MA SONET/SDH
	ONS 15327
	ONS 15454 SONET/SDH
	ONS 15600 SONET/SDH
Unmanaged NEs	ONS 15305 (R3.0)
	ONS 15327
	ONS 15454 SONET/SDH
	Unmanaged NEs

Table 3-8 Supported NE Links

NE Model	NE Card	Physical	OTS	OMS	OCH	SONET/SDH	Layer 2
ONS 15216	100-GHz Filter	X		X			
	100-GHz OADM 1/2/4	X		X			
	200-GHz Filter	X		X			
	200-GHz OADM 1/2	X		X			
	DCU	X					
	EDFA 1	X	X				
	EDFA2	X	X				
	EDFA3	X	X				
	FlexLayer	X		X			
	OSC	X		X			
ONS 15305	STM-1	X				X	
	STM-4	X				X	
	STM-16	X				X	
ONS 15310 CL	CTX-CL600 (OC-3 port)	X				X	
	CTX-CL600 (OC-12 port)	X				X	
	PoS						X
ONS 15310 MA SONET	CE-MR-6						X
	CTX-2500 (OC-3 port)	X				X	
	CTX-2500 (OC-12 port)	X				X	
	CTX-2500 (OC-48 port)	X				X	
	PoS						X
ONS 15310 MA SDH	CE-MR-6						X
	CTX-2500 (STM-1 port)	X				X	
	CTX-2500 (STM-4 port)	X				X	
	CTX-2500 (STM-16 port)	X				X	
	PoS						X
ONS 15327	E10/100-4						X
	G1000-2						X
	OC-3/STM-1	X				X	
	OC-12/STM-4	X				X	
	OC-48/STM-16	X				X	

Table 3-8 Supported NE Links (continued)

NE Model	NE Card	Physical	OTS	OMS	OCH	SONET/SDH	Layer 2
ONS 15454 SONET and ONS 15454 SDH	10GE_XP and GE_XP				X		X
	32MUX-O	X					
	32DMX-O	X					
	4MD-xx.x	X					
	AD-1C-xx.x	X					
	AD-2C-xx.x	X					
	AD-4C-xx.x	X					
	CE-MR-10						X
	E100T-12						X
	E100T-12-G						X
	E1000-2						X
	E1000-2-G						X
	ML100-12						X
	ML1000-2						X
	MXP_2.5G_10G	X			X		
	OC-3/STM-1	X				X	
	OC-12/STM-4	X				X	
	OC-48/STM-16	X				X	
	OC-48/STM-16 ITU	X			X		
	OC-192/STM-64	X				X	
	OC-192/STM-64 ITU	X			X		
	OPT-AMP-C	X	X				
	OPT-BST	X	X				
	OPT-RAMP-C	X	X				
	OSC-CSM	X	X				
	OTU2-XP	X			X		
	TXP_MR_2.5G and TXPP_MR_2.5G	X			X		
	TXP_MR_10G	X			X		
ONS 15530	10 Gb/s Uplink	X					
	OADM	X		X			
	Nonsplitter 2.5 Gb/s ITU Trunk	X			X		
	Nonsplitter 10 Gb/s ITU Trunk	X			X		
	Splitter 10 Gb/s ITU Trunk	X			X		

Table 3-8 Supported NE Links (continued)

NE Model	NE Card	Physical	OTS	OMS	OCH	SONET/SDH	Layer 2
ONS 15540	10 GE Transponder xx.x	X			X		
	32-channel Mux/Demux	X		X			
	OADM xx.x	X		X			
	Type 1 single-mode Transponder xx.x	X			X		
	Type 1 multi-mode Transponder xx.x	X			X		
	Type 2 extended range Transponder xx.x	X			X		
ONS 15600 SONET	ASAP (OC-3 port)	X				X	
	ASAP (OC-12 port)	X				X	
	ASAP (OC-48 port)	X				X	
	OC-48	X				X	
	OC-192	X				X	
ONS 15600 SDH	STM-16	X				X	
	STM-64	X				X	

3.6.3 Viewing the Link Table

The Link table shows information about each link attribute. Use the Link table to view, modify, and delete links. You can open the Link table for the Prime Optical domain, network partition, subnetwork, group, or NE.

- If you select the Prime Optical domain, network partition, subnetwork, or group, the Link table shows all links that terminate on any of the NEs contained in the Prime Optical domain, subnetwork, or group.
- If you select an NE, the Link table shows all links that terminate on that particular NE.

Use one of the following methods to open the Link table:

- From the Network Map—In the Domain Explorer or Subnetwork Explorer, choose **File > Network Map**. In the Network Map, select a network partition, subnetwork, group, or NE; then, choose **Configuration > Link Table**.
- From the Network Map—Right-click a link or server trail and choose **Link Table** from the shortcut menu.
- From the Domain Explorer—Select the Prime Optical domain, group, or NE; then choose **Configuration > Link Table**.
- From the Subnetwork Explorer—Select the Prime Optical domain, network partition, subnetwork, or NE; then, choose **Configuration > Link Table**.

Note

- A link is visible in the Link table even if the source or destination NE has been deleted, but this same link is not visible in the Network Map. If the NE is deleted from the Deleted Network Elements group, the references to that NE are removed from the Link table.
- When launching the Link table in a large or high-end network setup and on a larger scope (for example, for the Domain Explorer), a database timeout can occur due to the large volume of data that needs to be retrieved. As a workaround, launch the Link table on a smaller scope.

Note the following constraints for OCH unidirectional and bidirectional patchcord links, Optical Transmission Section (OTS) links, Y-cable patchcord links, server trail links, and autodiscovered links:

- An invalid patchcord link is a link that has been deleted from the Network Control Protocol (NCP) layer but is still present in the Prime Optical database. The resources allocated for the patchcord link are freed up and made available for a new link.
- Invalid links are shown in strikethrough font.
- An invalid patchcord link is removed from the Prime Optical database and disappears from the Link table only if a Prime Optical user deletes that link. All logical and physical resources are released from the deleted link.
- If the Link table contains an invalid patchcord link and you create a new patchcord link using the same termination points and attributes as the invalid link, the invalid patchcord link becomes valid and is shown in the Link table as a valid link.
- When an invalid patchcord link becomes valid, the link name changes. Prime Optical uses link identification numbers to create the patchcord link name. The NCP layer associates identification numbers to both terminations during the link creation phase. These numbers are used to identify the patchcord link inside the NCP layer and are required to delete the patchcord link. To change the patchcord link name:
  1. Use the Create Link wizard to create a new patchcord link.
  2. Force the patchcord link validity to change to INVALID (for example, by marking the NE as Out of Service or deleting the patchcord link).
  3. Create a new patchcord link that uses the same termination points and attributes as the invalid link.
  4. View the patchcord link name in the Link table. The link name has changed.

The following table describes the fields in the Link table.

Table 3-9 Field Descriptions for the Link Table

Field	Description
Link Alarm Severity	Highest severity alarm associated with the selected link.
Link Source ID	ID of the link source.
Link Source Termination Point	PTP of the link source.
Link Destination ID	ID of the link destination.
Link Destination Termination Point	PTP of the link destination. Because a link can have up to two destinations on the same NE, a “DST1” or “DST2” label is affixed to the destination to indicate the destination number.

Table 3-9 Field Descriptions for the Link Table (continued)

Field	Description
Layer Rate	Layer rate, defined as per ITU-T standard G.872 for multilayered optical networks. Values are Physical, Transmission Section, Optical Multiplex Section (OMS), OCH, SONET/SDH, Layer 2, Composite, and OTU.
Layer Detail	Bandwidth of the link as per the layer rate: • For SONET links, the link rate is OC-3, OC-12, OC-48, OC-192, or Layer 2, depending on the NE configuration. • For SDH links, the link rate is STM1, STM-4, STM-16, STM-64, or Layer 2. • For DWDM links, the link rate is 40G ITU, 10G ITU, 2.5G ITU, or OTS. • For OCH links, the link rate is 10G ITU or 2.5G ITU. • For patchcord links on Layer 2, the link rate is 10G ITU, 1G ITU, or Fast Ethernet. • For links between Not Managed/Other Vendor NEs, the link rate is Not Applicable. • For links between Not Managed/Other Vendor NEs and a CTC-based NE, the rate is that of the CTC-based NE. Links between a SONET/SDH link and a Not Managed/Other Vendor NE depend on the link source. If the link source is the Not Managed/Other Vendor NE, the layer rate is Not Applicable. If the link source is the SONET/SDH link, the layer rate is that of the SONET/SDH link. For server trails, this field displays the server trail type and the number of server trails.
Link Direction	Whether the link is unidirectional or bidirectional.
Link Provision Type	Whether the selected link is automatically discovered by an NE. Values are: • Manual—For manual links. • Auto—For automatically discovered links. • PatchCord—For patchcord links. For server trails, the value displayed is *Server Trail*. **Note** Autodiscovered links between transponder or muxponder cards on release 4.6 NEs are always reported with a constant size, regardless of payload type.

Table 3-9 Field Descriptions for the Link Table (continued)

Field	Description
Is Link Valid	Validity of the link. Values are Valid or Invalid. For autodiscovered links, the value is Valid if both the terminating NEs are in service and the NEs are able to confirm the presence of the link. An autodiscovered link is invalid if (1) the DCC is disabled on either PTP; (2) either PTP is marked as Out of Service (OOS); (3) there is a fiber cut or transmitter/receiver failure; or (4) either NE is marked as OOS. The following rules apply to link validity: • All invalid links are shown as gray in the Network Map. • Valid links are shown in the Network Map with a color corresponding to alarm severity, with green for no alarm, yellow for minor alarms, orange for major alarms, and red for critical alarms. • Manual and unmanaged links can be valid or invalid. • A link between an unmanaged NE and a managed NE can be valid or invalid. If the link is valid, it is shown with the same color as the PTP alarm on the managed NE. • The delete link operation is available for all links except for valid, autodiscovered links. You can delete links of the following type: – Manual (valid and invalid) – Virtual (valid and invalid) – Unmanaged (valid and invalid) – Invalid autodiscovered
Link Connection Type	Whether the link connection is inter-NE or intra-NE. An inter-NE link represents an external fiber connection between PTPs on different NEs. An intra-NE link represents a fiber connection between two PTPs on the same NE.
Link Protection Type	Whether the link protection is unprotected, 1+1, 1+1 with Y-cable protection, 2-fiber BLSR/MS-SPRing, 4-fiber BLSR/MS-SPRing, or not applicable. For ONS 155xx NEs, protection types are Y-cable/line card protection, trunk protection, splitter protection, or no protection. The Y-cable protection type also applies to ONS 15454 SONET and ONS 15454 SDH NEs.
Used for Routing	Whether the selected link is used for routing. Values are Yes or No.
Link Name	Name of the selected link. **Note** The names of bidirectional links are prone to change when they are rediscovered as a result of a system restart. Prime Optical assigns names to the links, combining their source and destination points. Because the links are bidirectional, the order of the source and destination points could change when the links are rediscovered.
Link Description	User-entered description of the selected link. If you do not modify the *System Default* string in the Create Link wizard, the description is a string built from the endpoint information.
Alarm Counts	Total number of critical, major, minor, and warning alarms associated with the selected link. **Note** This field does not apply to ONS 155xx NEs.
Link Cost	Numeric cost associated with the selected link. The link cost is used while routing a circuit. The lowest link cost is preferred in circuit routing. The Cisco default value is 1024. This attribute is editable for manual links in the SONET or SDH layer.

Table 3-9 Field Descriptions for the Link Table (continued)

Field	Description
Shared Risk Link Groups	(SONET/SDH layer rates only) Free-format string that represents the shared risk link group (SRLG), or a group of links that share a common risk. For example, a set of links that originate at a node share the node as the common risk. SRLGs allow you to classify links into logical groups. By grouping the links, you can specify diverse link routing for a circuit. That is, if the circuit is fully protected, it is routed on the working and protect paths with a diverse SRLG attribute. The Shared Risk Link Groups field supports up to 5 comma-separated values, with 32 characters per value.
Link Utilization	Link utilization information for Layer 3, SONET/SDH, and OTS links. For non-Layer 3, non-SONET/SDH, non-OTS links, this field shows Not Applicable. For detailed information about link utilization, see 3.6.9 Viewing Link Utilization, page 3-47.
Link Alias Name	Alias name of the link.

3.6.4 Filtering the Link Table

Step 1 In the Link table, choose **File > Filter**. The Filter dialog box opens.

Step 2 Specify the filter parameters described in the following table.

Step 3 Click **OK** to run the filter.

Table 3-10 Field Descriptions for the Link Table Filter Dialog Box

Field	Description
Source/Destination ID	Filters by source/destination IDs of the available NEs. Click **Add** and **Remove** to move NEs to and from the Selected NEs list.
Connection Type	Filters out inter-NE or intra-NE links. By default, all links are shown. Only the ONS 15530 and ONS 15540 have intra-NE connections. You can also filter on server trails.
Link Layer	Filters by layer combination. You can select any subset of the following layers: Physical, OTS, OMS, OCH, SONET/SDH, Layer 2, Layer 3, and OTU.

3.6.5 Creating Links

Step 1 Open the Create Link wizard by using one of the following methods:

- From the Network Map—Select the source NE and choose **Configuration > Create Link** (or right-click the NE and choose **Create Link**). Connect the line to the destination NE or click the map. The Create Link wizard opens. The Link Destination panel displays a list of NEs that support compatible layer rates with the source NE.
- From the Domain Explorer or Subnetwork Explorer—Select the source NE and choose **Configuration > Create Link** (or right-click the NE and choose **Create Link**). The pointer changes to a plus sign; select the destination NE or group. The Create Link wizard opens.

Note If you press the **Esc** key while the plus sign is enabled, the operation is canceled and the plus sign returns to a pointer.

Note Table 3-11 describes the fields in the Create Link wizard. Fields shown depend on the NE selected.

Step 2 Create the link, as follows:

a. Enter the following information in the Link Attributes panel:

- Name
- Link alias
- Description
- Provision type
- Layer
- Layer detail

Note Links from a Not Managed/Other Vendor NE to a CTC-based or Not Managed/Other Vendor NE will have a link rate of Not Applicable. Links from a CTC-based NE to a Not Managed/Other Vendor NE will have the link rate allowed for the CTC-based NE.

Note The layer details displayed in the Create Link wizard are based on the NE selected as the link source. For example, when you attempt to create a link from NE A to NE B, the link sizes displayed are based on the supported sizes and inventory of NE A. If the link is attempted in the reverse direction, from NE B to NE A, the link sizes displayed are based on the inventory and sizes for NE B. As a result, the link sizes displayed could differ when the operation is attempted differently. An error message is displayed in the Link Destination panel when the size displayed is not applicable for the destination NE.

- Wavelength (*available only if the layer is Optical Channel, the provisioning type is Patchcord, and the direction is Unidirectional*)
- Protection
- Direction

Note Prime Optical allows creation of bidirectional SONET/SDH links as well as unidirectional and bidirectional physical links.

If the layer rate is SONET/SDH or Layer 2, only bidirectional links are available. For other layer rates, both unidirectional and bidirectional links are available.

- Cost
- Shared risk link groups

b. Click **Next**.

c. Enter the following information in the Link Source panel:

- Node
- PTP slot
- PTP port
- PTP value
- Name

d. Click **Next**.

e. Enter the following information in the Link Destination panel:

- Node
- PTP slot
- PTP port
- PTP value
- Name

Note A PTP can be associated with only one bidirectional link or two unidirectional links at a particular layer rate for all NEs except Not Managed/Other Vendor NEs. For Not Managed/Other Vendor NEs, a PTP can terminate in only one link.

Note If you are creating a SONET/SDH-layer manual link between two CTC-based NEs, verify that no DCC exists on the endpoints that are selected for the link termination.

Note You can create a provisional patch cord (PPC), a virtual link, between 15600 and 15454 NEs destination points.

f. Click **Next**.

Step 3 The Link Summary panel summarizes the attributes of the new link. To change the link summary information, click **Back** and change the selections as needed.

Step 4 Click **Finish**.

Table 3-11 Field Descriptions for the Create Link Wizard

Field	Description
Link Attributes Panel	
Name	Enter a unique name for the new link. The link name is a free-format string, up to 256 characters.
Link Alias	Enter a unique alias name for the new link. The alias name can contain alphanumeric characters. It also supports international character sets.
Description	Enter a description of the new link. The link description is a free-format string, up to 256 characters.
Provision Type	Specify the type of link provisioning. Values are: • Manual—The link is manually provisioned. • Patchcord—(*Applicable only to links involving transponders and DWDM modules*) The link is an internode or intranode termination provisioned between homogeneous ports. A patchcord link represents the connection between a line card and a transponder, or the connection between a transponder and a DWDM card. Patchcord links can be provisioned by Prime Optical or CTC users and are maintained by the NEs. **Note** Protection groups are not recognized when creating patchcord or manual links.
Layer	Choose the link layer rate, defined as per ITU-T standard G.872 for multilayered optical networks. Values are: • Physical • Transmission Section • OMS • OCH • SONET/SDH • Layer 2 **Note** Patchcord links on Layer 2 can be created between NNI ports on GE-XP or 10GE-XP cards if the card modes are set to *L2 over DWDM*.
Layer Detail	Choose the bandwidth of the link as per the layer rate. • For SONET links, the link rate is OC-3, OC-12, OC-48, OC-192, or Layer 2, depending on the NE configuration. • For SDH links, the link rate is STM1, STM-4, STM-16, STM-64, or Layer 2. • For DWDM links, the link rate is 100G ITU, 40G ITU, 10G ITU, 2.5G ITU, or OTS. • For OCH links, the link rate is 10G ITU or 2.5G ITU. • For patchcord links on Layer 2, the link rate is 10G ITU,1G ITU, or Fast Ethernet. • For links between Not Managed/Other Vendor NEs, the link rate is Not Applicable. • For links between Not Managed/Other Vendor NEs and CTC-based NEs, the rate is that of the CTC-based NE. Links between a SONET/SDH link and a Not Managed/Other Vendor NE depend on the link source. If the link source is the Not Managed/Other Vendor NE, the layer rate is Not Applicable. If the link source is the SONET/SDH link, the layer rate is that of the SONET/SDH link.

Table 3-11 Field Descriptions for the Create Link Wizard (continued)

Field	Description
Wavelength	Filter the wavelength in the first drop-down list. In the second drop-down list, select the appropriate wavelength value according to the selected filter. The Wavelength drop-down lists are available only if the layer is *Optical Channel*, the provisioning type is *Patchcord*, and the direction is *Unidirectional*. **Note** When the layer is *Optical Channel*, the provisioning type is *Patchcord*, and the direction is *Bidirectional*, the Wavelength drop-down lists are disabled, but Prime Optical executes an automatic wavelength check on the endpoints before creating the link. If the link endpoints do not have the same wavelength value, the link is not created and a wavelength error is generated.
Protection	Specify the link protection: Unprotected, 1+1, Y-Cable (meaning 1+1 with Y-cable protection), 2-Fiber BLSR/MS-SPRing, 4-Fiber BLSR/MS-SPRing, or Not Applicable. For CTC-based NEs, select Unprotected, 1+1, or Y-Cable. For links between Not Managed/Other Vendor NEs, the link protection is Not Applicable. For links between Not Managed/Other Vendor NEs and CTC-based NEs, the link protection is that of the CTC-based NE.
Direction	Specify whether the link is unidirectional or bidirectional.
Cost	Specify a numeric cost associated with the SONET or SDH layer link. The cost range is 0 to 999999. This field applies only to links in the SONET or SDH layer between CTC-based NEs. For all other links, the Cisco default value is 1024. All autodiscovered links have the Cisco default cost 1024.
Shared Risk Link Groups	(SONET/SDH layer rates only) Enter a free-format string that represents the SRLG, or a group of links that share a common risk. For example, links that originate at a node share the node as the common risk. The Shared Risk Link Groups field supports up to 5 comma-separated values, with 32 characters per value.
Link Source Panel	
Node	Identify which NE serves as the source of the link.
Physical Termination Point	Identify the physical side, shelf, slot, subslot (if applicable), and port in the source NE. For the ONS 15216, identify the name of the PTP. **Note** The card type is shown adjacent to the slot number; for example, “1 (OC3_8)” represents the OC3_8 card in slot 1. **Note** If the port name is available, it is shown adjacent to the port number.
PTP Value	(Not Managed/Other Vendor NEs only) Specify the PTP value. The maximum length is 30 characters; the minimum length is 1 character.
Name	For the ONS 15530 and ONS 15540, identify the PTP as a single name, which includes a port type and slot number and might also include a subslot number and port number.
Link Destination Panel	
Node	This is a display-only field if you selected an NE as the destination of the link. If you selected a group as the destination of the link, select from the drop-down list a specific NE that will be the destination of the link.
Physical Termination Point	Identify the physical side, shelf, slot, subslot (if applicable), and port in the destination NE. For the ONS 15216, identify the name of the PTP. **Note** The card type is shown adjacent to the slot number; for example, “1 (OC3_8)” represents the OC3_8 card in slot 1. **Note** If the port name is available, it is shown adjacent to the port number.

Table 3-11 Field Descriptions for the Create Link Wizard (continued)

Field	Description
PTP Value	(Not Managed/Other Vendor NEs only) Specify the PTP value. The maximum length is 30 characters; the minimum length is 1 character.
Name	For the ONS 15530 and ONS 15540, identify the PTP as a single name, which includes a port type and slot number and might also include a subslot number and port number.
Link Summary Panel	
Link Summary	Summarizes the selections you made. To change the Link Summary, click **Back** and change your selection(s).

Note

- After the links are created, each link has a different color notation depending on the alarm status of the PTP on which the link is created. Links between Not Managed/Other Vendor NEs are always black. The color of the link between a Not Managed/Other Vendor NE and a CTC-based NE is the color of the TP of the CTC-based NE. The colors are green for no alarm, yellow for minor alarms, orange for major alarms, and red for critical alarms. Invalid links (as reflected in the Is Link Valid field) are gray. An autodiscovered link can become invalid if (1) the DCC is disabled on either PTP; (2) either PTP is marked as Out of Service (OOS); (3) there is a fiber cut or transmitter/receiver failure; or (4) either NE is marked as OOS. Manual links are colored to match the highest alarm severity on either PTP. L2 links are always gray.
- Links that are supported in different layer rates can be created only if the link endpoints are compatible with the specified layer rate.
- If Prime Optical discovers a link, it automatically assigns layer rates based on its endpoint.

The following table summarizes link color as it relates to link type and the involved NEs.

Table 3-12 Summary of Link Color

Link Type	Link Validity	Link Color	Can the Link Be Deleted?
Manual	Valid	Color of the highest severity alarm on the PTP.	Yes
Manual	Invalid	Gray.	Yes
Virtual	Valid	Color of the highest severity alarm on the PTP.	Yes
Virtual	Invalid	Gray.	Yes
Unmanaged	Valid	Black, if the link is between two unmanaged NEs. Otherwise, the color corresponds to the highest severity alarm on the PTP.	Yes
Unmanaged	Invalid	Gray.	Yes
Autodiscoverd	Valid	Color of the highest severity alarm on the PTP.	No
Autodiscovered	Invalid	Gray.	Yes

3.6.6 Modifying Links

Use the Modify Link wizard to modify the name, alias, description, cost, or SRLG (if applicable) of links displayed in the Link table. You can modify a link in the Link table or in the Network Map.

Note You cannot modify patchcord links.

Step 1 Open the Modify Link wizard (see Table 3-13) by using one of the following methods:

- In the Link table, select a link and choose **Edit > Modify Link** (or click the **Modify Selected Link** tool).
- In the Network Map, select a link and choose **Configuration > Modify Link** (or click the **Modify Selected Link** tool).

Step 2 In the Link Attributes panel, modify the following information, as needed:

- Name
- Link alias
- Description
- Direction
- Cost
- Shared risk link groups

Note If you modify the SRLG value, you receive the warning popup "There might be circuits routed with diverse SRLG constraints on this link. Changing risk link groups might affect the diversity constraint." Click **OK**; then, verify the SRLG value that you entered.

Step 3 Click **Next** until you reach the Finish panel.

Step 4 Verify the link summary and click **Finish**.

Note After certain topology reconfigurations that involve removing fiber, the Network Map might not report the correct links. This problem occurs because the Prime Optical server is not synchronized with the new network topology and cannot retrieve network or link updates. This problem applies only to CTC-based NEs. The workaround is to remove the links completely by deleting the SDCC termination on the ports, rather than by simply unplugging the fiber cable.

Table 3-13 Field Descriptions for the Modify Link Wizard

Field	Description
Link Attributes Panel	
Name	Modify the name of the selected link. The link name is a free-format string, up to 256 characters. The link name must be unique.
Link Alias	Modify the alias name of the selected link. The alias name can contain alphanumeric characters. It also supports international character sets.

Table 3-13 Field Descriptions for the Modify Link Wizard (continued)

Field	Description
Description	Modify the link description. The link description is a free-format string, up to 256 characters.
Provision Type	*Display only.* View the type of link provisioning (Manual or Patchcord).
Layer	*Display only.* View the link layer.
Layer Detail	*Display only.* View the link size.
Wavelength	*Display only.* View the link wavelength value.
Protection	*Display only.* View the link protection.
Direction	Modify whether the link is unidirectional or bidirectional.
Cost	Modify the numeric cost associated with the SONET or SDH layer link. The cost range is 0 to 999999. This field is editable only for links in the SONET or SDH layer. For all other links, the Cisco default value is 1024. All autodiscovered links have the Cisco default cost 1024.
Shared Risk Link Groups	(SONET/SDH layer rates only) Modify the strings that represent the SRLG. The SRLG attribute supports up to 5 comma-separated values, with 32 characters per value.
Link Summary Panel	
Link Summary	Summarizes the changes you made to the editable fields. To change the Link Summary, click **Back** and change your selection(s).

3.6.7 Deleting Links

You can delete one or multiple links from the Link table. You can delete a single link from the Network Map.

Step 1 In the Link table, select one or multiple links and choose **Edit > Delete Link** (or click the **Delete Selected Link** tool). In the Network Map, select a single link and choose **Configuration > Delete Link**.

Step 2 Click **OK** in the confirmation dialog box.

Step 3 For multiple link deletion, complete the following substeps:

a. The Deleting Links dialog box tracks the progress of the deletion. If you selected links that cannot be deleted, you receive the message: "Some of the links can't be deleted, proceed anyway?" Review the links that you selected for deletion; then, click **OK**.

b. The Multiple Link Deletion Summary dialog box opens, summarizing the results of the deletion. Click the **Details** button to see which links were deleted, and which links could not be deleted.

The following rules apply to single and multiple link deletion:

- User-created links or invalid autodiscovered links can be deleted.
- Valid autodiscovered links cannot be deleted.
- An autodiscovered link is marked Invalid when Prime Optical can no longer verify the link from either of the NEs at the ends of the link.
- To remove a valid autodiscovered link from Prime Optical, you must remove the topology neighbors from both NEs at the end of the link.
- Prime Optical can delete physical links even if there is an autodiscovered SONET/SDH link.

- If you use Prime Optical to delete invalid autodiscovered links, verify that the DCCs are deleted on both ends of the link. If you delete a partial link with a DCC up on one end, it might cause problems later with the creation of phantom links.
- When you delete an OSC termination, any autodiscovered links become invalid. If you then delete the invalid links and recreate the OSC termination, an update event is generated. But because Prime Optical cannot find a link to update, it discards the event and does not discover the link. This is normal Prime Optical behavior in response to the deletion of invalid links. The workaround is to mark the NE(s) as Out of Service and then In Service.

3.6.8 Viewing the Link Maintenance Report

The following new functionality is supported on the OCHCC, OCHNC and OCH Trail circuits:

- Protection groups related to the circuits sharing a selection of OTS links.
- Perform bulk protection operations on those circuits

The information is available in the Link Maintenance Report.

You can launch the Link Maintenance Report only from the network map by right clicking the multiple links selection.

Table 3-14 Field Descriptions for the Link Maintenance Report

Field	Description
Circuit Name	Displays the name of the selected circuit. **Note** If there are multiple circuits with the same name displayed in the Circuit table, the label Duplicate appears in this column.
Circuit Type	Displays the type of circuit selected. SONET circuit types are STS, VT, VT Aggregation, VT Tunnel, VT VCAT (shown as VT-v), STS VCAT (shown as STS-v), DWDM optical channel network connection (OCHNC), DWDM optical channel client connection (OCHCC), optical channel trail (OCHTRAIL), and OCHNC DCN. SDH circuit types are HOP, LOP, LOPA, LOPT, HOV (HO VCAT), LOV (LO VCAT), OCHNC, OCHCC, OCHTRAIL, and OCHNC DCN.
Customer ID	Optional text field that displays the customer ID of the circuit.
Service ID	Optional text field that displays the service ID of the selected circuit.
Operation on Source	The current operation on the protection group on circuit source.
Operation on Destination	The current operation on the protection group on circuit destination.
Link on Active Path	Displays the link on the active path. Values are: • Yes—If the links are on the active path of the protection group • No—If the links are on the standby path of the protection group • N/A—If no protection group is available
Protection Group Type	Displays the type of protection group.

Table 3-14 Field Descriptions for the Link Maintenance Report

Field	Description
Circuit Source NE	Circuit source Network Element
Circuit Destination NE	Circuit destination Network Element

3.6.8.1 Performing Switch Operations

You can perform protection operations on single and multiple circuits only if the following conditions are met:

- A protection group is present.
- Current protection operations on sources and destinations are the same.

From the Link Maintenance Report, click the **Perform Protection Switch Operations** button. An Operations dialog box containing the protection operations available for Y-Cable and Splitter protection groups is displayed.

Table 3-15 Field Descriptions for Operations Dialog_Box

Field	Descriptions
Switch Commands	
Clear	Clears a traffic switch on the card or port highlighted under Selected Group
Manual	(1+1, splitter, and Y-cable protection groups only) Initiates a manual switch on the selected port. This command switches traffic only if the path has an error rate less than the signal degrade (SD) bit error rate threshold.
Force	(1+1, splitter, and Y-cable protection groups only) Initiates a forced switch on the selected port. This command switches traffic even if the path has SD or signal fail (SF) conditions. A Force switch has a higher priority than a Manual switch.
Lockout Commands	
Unlock	Clears a lockout.
Lock Out	Prevents traffic from being switched to the card. Lockouts can only be applied to protect cards (in 1+1, splitter, and Y-cable configurations) and prevent traffic from switching to the protect port under any circumstance. Lockouts have the highest priority.
Lock On	Locks traffic on to the working card, that is, prevents a traffic switch from occurring. In a 1+1 configuration you can also apply a lock-on to the working port. A working port with a lock-on applied cannot switch traffic to the protect port in the protection group (pair). For splitter and Y-cable protection groups, Prime Optical allows Lock On for a protect port if other switch conditions (Manual, Force) exist. Lock On is not available if the protect port already has a Lock Out or Lock On present.

Once the operation is completed, a protection operation report with the result is displayed.

3.6.9 Viewing Link Utilization

The Link Utilization table displays utilization information for the selected links. Link utilization, shown as a percentage, displays the overall consumption of bandwidth. All bandwidths are in megabits per second (Mb/s).

% Link utilization = ([Bandwidth consumed] / [Total bandwidth of link]) x 100

Example: In SONET, for an OC12 link, the total bandwidth is (12 x 51.84) Mb/s, where STS-1/OC12 = 51.84 Mb/s.

Depending on the number of provisioned circuits, the consumed bandwidth is totaled. Circuits such as VAP/LAP and virtual tributary (VT) tunnel are preprovisioned and are not included in the calculation. This is applicable to SONET and SDH.

Example: In SDH, for an STM4 link, the total bandwidth is (4 x 155) Mb/s, where STM-1 = 155 Mb/s.

Note

- Link utilization does not apply to server trails. An error message is displayed if you attempt to launch the Link Utilization table from a server trail.
- The customize table view function is not available for the Link Utilization table.

To view the Link Utilization table:

Step 1 In the Domain Explorer window, choose **Configuration > Link Table**. The Link table opens.

Step 2 In the Link table, choose **Configuration > Link Utilization Table** (or click the **Open Link Utilization Table** tool). The following table provides descriptions.

Note You can launch the Circuit Trace window from a selected circuit in the Link Utilization table. Select a circuit in the Link Utilization table and then choose **View > Circuit Trace**. See 7.2.20 Tracing Circuits, page 7-159.

Table 3-16 Field Descriptions for the Link Utilization Table

Column	Description
STS ID (SONET only)	Displays the STS ID.
VT1.5 ID (SONET only)	Displays the VT 1.5 ID.
VT2 ID (SONET only)	Displays the VT2 ID.
VC4 ID (SDH only)	Displays the VC4 ID.
VC3/TUG3 ID (SDH only)	Displays the VC3/TUG3 ID.
TUG2 ID (SDH only)	Displays the TUG2 ID.
VC12 ID (SDH only)	Displays the VC12 ID.
VC11 ID (SDH only)	Displays the VC11 ID.
Circuit Name	Displays the name of any circuits passing through the link. When *Unused* appears in the Circuit Name field there is unused bandwidth available, and the Circuit Type, Circuit Protection Type, Customer ID, and Service ID fields are blank.
Circuit Alias	Displays a unique alias name for the new circuit. The alias name can contain alphanumeric characters. It also supports international character sets.
Circuit Type	Displays the circuit type.
Circuit Protection Type	Displays the circuit protection type.

Table 3-16 Field Descriptions for the Link Utilization Table (continued)

Column	Description
Switch State	Displays the switch state for UPSR protected circuits only. Values are: • CLEAR—Removes a previously set switch command. • MANUAL—A manual switch is active on the span. • FORCE—A force switch is active on the span. • LOCKOUT_OF_PROTECTION—A protection lockout is active on the span; traffic cannot be switched to the span. **Note** A force switch always overrides a manual switch. A protection lockout always overrides both a force switch and a manual switch. To configure the span switch state, see 3.6.9.2 Configuring the Span Switch State on a UPSR Protected Circuit, page 3-49. **Note** *N/A* is displayed for non-UPSR-protected circuits.
Customer ID	Displays the user-defined customer ID.
Service ID	Displays the user-defined service ID number.

3.6.9.1 Launching the Link Utilization Table for SONET/SDH or OTS Links from the Network Map

Step 1 In the Domain Explorer or Subnetwork Explorer tree, click a node and choose **File > Network Map** (or click the **Open Network Map** tool).

Step 2 Right-click a SONET/SDH or OTS link in the Network Map and choose **Link Utilization** from the right-click menu.

3.6.9.2 Configuring the Span Switch State on a UPSR Protected Circuit

Note The span switch is applicable to all UPSR circuits in the Link Utilization table. The selection context has no impact on the switching. When you perform protection switching after selecting an unprotected circuit, the protection switch applies to only UPSR-protected circuits.

Step 1 In the Domain Explorer window, choose **Configuration > Link Table**. The Link table opens.

Step 2 In the Link table, choose **Configuration > Link Utilization Table** (or click the **Open Link Utilization Table** tool).

Step 3 In the Link Utilization table, choose **Configuration > Span Switch > CLEAR, MANUAL, FORCE**, or **LOCKOUT_OF_PROTECTION**.

Note Switch states that cannot be applied are dimmed.

The possible switch state that can be applied to the circuits in the Link Utilization table is decided by switch priority. The switch priority order is:

1. MANUAL
2. FORCE
3. LOCKOUT_OF_PROTECTION
4. CLEAR

Note The CLEAR switch state overrides all other switch states.

Example 3-1 Unprotected OC-48 Link

```
1 - In Use
2 - In Use
3 - In Use
4 - VT Mapped (VTs 1-4 in use)
5 - Available
...
48 - Available


STS Utilization = 4/48 = 8.3%
VT Utilization = (3x28 + 4)/(28 x 48) = 6.5%
STS PCA Utilization = N/A
VT1.5 PCA Utilization = N/A
```

Example 3-2 2-Fiber BLSR OC-48 Link

```
1 - In Use
2 - In Use
3 - In Use
4 - VT Mapped (VTs 1-4 in use)
5 - Available
...
24 - Available
25 - STS PCA Circuit In Use
26 - 8 VT1.5 PCA circuits In Use
27 - Protection
...
48 - Protection

STS Utilization = 4/24 = 16.7%
VT-1.5 Utilization = (3x28 + 4)/(28 x 24) = 13.1%
STS PCA Utilization = 2/24 = 8.2%
VT-1.5 PCA Utilization = (1x28 + 8)/(28 x 24) = 5.4%
```

3.6.10 Filtering the Link Utilization Table

Step 1 In the Link Utilization table, choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog box opens.

Step 2 Specify the filter parameters described in the following table.

Step 3 Click **OK** to run the filter.

Table 3-17 Field Descriptions for the Link Utilization Table Filter Dialog Box

Payload Type	Description
SONET	You can filter on the STS ID to see circuits going through that STS only. Select **All** to see all the tributaries on that link.
SDH	You can filter on specific VC4, VC3/TUG3, and TUG2 IDs. The ALL option shows all tributaries. The None option is available on VC3/TUG3 and TUG2. Using None, you can select VC4 circuits (including VC LO Path Tunnel and LAP).

3.6.11 Setting OTS Link Capacity

You can set the maximum number of wavelengths on one or more OTS links.

Step 1 In the Link table, select a single OTS link or multiple OTS links, and choose **Configuration > Set OTS Link Capacity** (or click the **OTS Link Capacity** window icon).

Step 2 Enter the maximum number of wavelengths for the selected OTS links.

Step 3 Click **Apply**. A Link Capacity Set Result window appears and summarizes the number of links that were configured or have failed.

Note A warning message appears when you select links of different layers.

Step 4 Click on the OTS success link to launch the report. The results can be printed in a text report.

3.6.12 Viewing OTS Link Utilization and Circuits

The OTS Link Utilization Report displays utilization information for the selected OTS links. OTS link utilization, shown as a percentage, displays the resources used. You can also view associated circuit names, types and wavelengths.

To view the Link Utilization and Circuit reports:

Step 1 In the Domain Explorer window, choose **Configuration > Link Table**. The Link table opens.

Step 2 Select the OTS links that you want to view utilization for.

Step 3 In the Link table, choose **Configuration > OTS Link Utilization Report** (or click the **Open Link Utilization Report** icon).

Step 4 From the OTS Link Utilization Report, select the link that you want to view associated circuit names, types, and wavelengths for.

Step 5 Click the **Open Circuit Report** icon.

If the Auto-Refresh check box is checked in the OTS Link Utilization Report window, the respective rows are automatically highlighted when a circuit undergoes a change. When the Auto-Refresh check box is not unchecked, a notification bar appears at the top of the window, stating that the reported data has changed. To refresh the report, click the **Refresh** tool.

If the report consists of more than one page, the Previous Page and Next Page arrows at the top-right corner of the Circuit Report window are enabled. The Pagination Settings tool allows you to select the number of records per page to display.

The status bar at the bottom of the OTS Link Utilization Report window displays:

- Current page number
- Total number of pages in the report
- Number of records displayed
- Number of records selected

To move to a specific page, enter the page number in the Page text box and press **Enter**.

3.6.13 Exporting the OTS Link Utilization Report

To export the OTS Link Utilization Report, complete the following steps:

Step 1 In the OTS Link Utilization Report window, choose **File > Export to CSV** (or click the **Export to CSV** tool). The Export to CSV dialog box appears.

Step 2 Specify the filter parameters described in the following table.

Step 3 Click **OK** to export.

Table 3-18 Field Descriptions for the Export to CSV Dialog Box

Field	Description
Separator Character	Allows you to select a separator character. Values are Comma, Tab, and Other. **Note** If you select Other, enter a value in the text box next to the Separator Character drop-down list.
Data to Export	Allows you to define the rows to be exported. Values are: • All {0} Selected Records • All Records at Page {0} • Entire Table **Note** The first option is available only if at least one record is selected. The second option is available only if there is more than one page.
Export File	Click **Browse** to select the location to which you want to export the file.

3.7 How Do I Build Server Trails?

A server trail is a subnetwork connection within a network that interconnects ONS 155xx edge connection termination points (CTPs). Some limitations of server trails are:

- A server trail connection should not cross the port boundary. For an NxVC4 server trail connection, all N-VC4 terminations must be on the same port.
- Users with permissions to manage links can also manage server trails. Link preferences and not circuit preferences are applied for server trail operations, even though the server trails terminate on CTPs. A user might therefore be allowed to create an STS-1 server trail but not able to create STS-1 circuits (if that circuit size is not allowed for the user).
- Server trail connections cannot be provisioned on DCC-enabled ports. If DCC is enabled on a port, you cannot use the port as the source or destination for the server trail.
- You cannot change the size of an existing server trail.
- Multiple server trails can start from the same PTP. On a given PTP, the server trail can be of different connection types.
- Only one server trail can start from a CTP. CTPs of multiple server trail connections should be of the same type.
- Server trail connections cannot overlap each other.
- The sum of server trail sizes for an existing port cannot exceed the size of the port.
- Any alarm on a physical port affects all links that have an endpoint on that port, including all server trail links. For example, an alarm that has a port as its physical location affects all server trails, even if the affected object is a specific VC within that port.

Following are the differences between manual links and server trails:

- Manual links occupy an entire port while server trails occupy parts of a port. This means that a single port can terminate only one link but several server trails.
- Manual links can terminate on optical cards. Server trails can terminate on optical and electrical cards.
- Manual links can be created on DCC-enabled ports, while you cannot create server trails using DCC-enabled ports.
- The endpoints of manual links should be the same size. The endpoints of server trails can be different sizes and types.

3.7.1 Creating Server Trails

Step 1 Select the source NE in the Domain Explorer or Subnetwork Explorer and choose **Configuration > Create Server Trail** (or right-click the NE and choose **Create Server Trail**). The pointer changes to a plus (+) symbol; select the destination NE. The Create Server Trail wizard opens.

Step 2 In the Server Trail Attributes pane, specify the following:

- Type—Select the type of server trail to create.
- Size—Select the size of the server trail. The options displayed depend on the type selected.
- Protection—Select the server trail protection type.
- Number of Trails—Enter the number of trails.

- Shared Risk Link Groups—Enter a free-format string that represents the shared risk link group or a group of links that share a common risk.
- Cost—Specify the numeric cost associated with the server trail.

Step 3 Click **Next**.

Step 4 In the Source pane, set the server trail source. The options displayed depend on the server trail type selected in the Server Trail Attributes pane.

Step 5 Click **Next**.

Step 6 In the Destination pane, set the server trail destination. The options displayed depend on the server trail type selected in the Server Trail Attributes pane.

Step 7 Click **Finish**. The server trail is listed in the Link table. You can also view the server trail in the Network Map.

Note Server trails that were created in Prime Optical or CTC are listed in the Link table. Open the Link table, and you will see that the value of the Link Provision Type field for server trails is *Server Trail*. See 3.6.3 Viewing the Link Table, page 3-34 for more information.

3.7.2 Modifying Server Trails

Step 1 Open the Modify Link wizard using one of the following methods:

- In the Link table, select a server trail and choose **Edit > Modify Link** (or click the **Modify Selected Link** tool).
- In the Network Map, select a server trail and choose **Configuration > Modify Link** (or click the **Modify Selected Link** tool).

Step 2 In the Link Attributes panel, modify the following information, as needed:

- Name
- Alias
- Description
- Cost
- Shared risk link groups

Note If you modify the SRLG value, you receive the warning popup "There might be circuits routed with diverse SRLG constraints on this link. Changing risk link groups might affect the diversity constraint." Click **OK**; then, verify the SRLG value that you entered.

Step 3 Click **Next**.

Step 4 Verify the link summary and click **Finish**.

3.7.3 Deleting Server Trails

Step 1 In the Link table, select a server trail and choose **Edit > Delete Link** (or click the **Delete Selected Link** tool). In the Network Map, select a server trail and choose **Configuration > Delete Link**.

Step 2 Click **OK** in the confirmation dialog box.

3.8 How Do I Use Network Maps?

The Network Map is organized into a multilevel hierarchy that corresponds to the structure of the Domain Explorer tree. The Network Map hierarchy consists of management domains, groups, and NEs that are displayed graphically.

Network Map backgrounds are provided by default as part of Prime Optical and are used to display a geographical layout of the network.

By default, the Network Map consists of the following areas:

- Center pane—Displays the map with individual groups, NEs, and link icons.
- Explorer pane—Displays a Search text box and Domain Explorer tree.
- Overview pane—Shows the position of the displayed map with respect to a larger world map.
- Properties pane—Displays the domain or group properties, including the number of alarms and the ID. It also displays the properties of selected links.

The Explorer pane in the Network Map contains a Search text box and the Domain Explorer tree. The Search text box allows you to search for NEs based on one or all of the following parameters:

- NE ID
- NE Alias ID
- NE IP Address
- NE Version
- NE Description
- NE Location Name
- Group Name
- NE Operational State
- NE Communication State
- NE Model

From the Search drop-down list, choose the parameter to search by, and enter appropriate data in the text box.

You can select one node or multiple nodes from the Domain Explorer tree in the Topology pane.

Tip Hold down the **Shift** key to select more than one node sequentially, or hold down the **Ctrl** key to select more than one node nonsequentially.

When you right-click a node in the Topology pane or on the map, a popup menu is displayed, from which you can select one of the following options:

- NE Explorer—Displays the NE Explorer for the selected node.
- Equipment Inventory Table—Displays the Equipment Inventory Table of the NE.
- Alarm Browser—Displays the Alarm Browser for the NE.
- Alarm Log—Displays the Alarm Log for the NE.
- Delete Map Element—Allows you to delete the selected node from the map.
- Create Link—Allows you to create a link between NEs.
- Create Server Trail—Allows you to create a server trail for the selected NE.
- Create Circuit—Allows you to create a circuit.
- Search Circuits—Displays the Circuit Search window.
- Circuit Report—Displays the Circuit Table for the NE.
- Link Table—Displays the Link Table for the NE.
- Test NE Connectivity—Tests connectivity to the NE.
- Change State—Allows you to change the state of the NE by selecting one of the following options:
  - Mark In Service
  - Mark Out of Service
  - Mark Under Maintenance
- Network—Allows you to view details of the NE selected on the map.

Note The popup menu is also displayed when you select and right-click multiple nodes of the same type. However, the following options are disabled: NE Explorer, Equipment Inventory Table, and Test NE Connectivity.

Unplaced NEs, or NEs for which the coordinates on the related Network Map are initially null, are represented in italics in the Domain Explorer tree of the Explorer pane. Checking the **Unplaced** check box in the Explorer pane filters the tree view to show only the unplaced NEs.

The Properties pane in the Network Map window displays domain or group properties and allows you to perform certain actions.

The following links are available at the bottom of the Properties pane:

- NE Explorer—Displays the NE Explorer for the selected node.
- Equipment Inventory Table—Displays the Equipment Inventory Table of the NE.
- Alarm Browser—Displays the Alarm Browser for the NE.
- Test NE Connectivity—Tests connectivity to the NE.
- Circuit Table—Displays the Circuit Table for the NE.
- Link Table—Displays the Link Table for the NE.

In the Overview pane, you can view the position of the displayed Network Map with respect to a larger world map and adjust the pan position of the Network Map.

Note The Explorer, Properties, and Overview panes can be docked, floated, or auto-hidden. These panes can also be grouped into a single tabbed pane by dragging and dropping one pane into another. In this case, each pane appears as a tab within a panel. From the Customize icon at the top-right corner, you can also select which of these panes to display.

3.8.1 Customizing a Network Map

Use the Edit menu and toolbar buttons to customize your network map.

Step 1 In the Domain Explorer tree, click a node and choose **File > Network Map** (or click the **Open Network Map** tool).

Note There is no Network Map for the Discovered Network Elements or Deleted Network Elements groups.

Step 2 Use the Edit menu in the Network Map window to customize the Network Map. Edit menu options include:

- Toggle Selection—Selects elements that you click on the map.
- Filter—Filters the network map by NEs, groups, or links.
- Toggle Panning—Pans across the map.
- Set Background—Allows you to set the map background.
- Zoom Magnify—Magnifies the area on the map where the pointer is placed when the left mouse button is held down.
- Zoom In—Zooms in on an object in the map view.
- Zoom Out—Zooms out on the map view.
- Zoom to Fit—Adjusts the view of the map to fit the window.
- Zoom Area—Lets you pan and zoom the view to a different region of the map.
- Zoom Magnify—Magnifies the area under the lens.
- Expand/Collapse Group—Shows or hides NEs contained in a group selected on the map.

Note A group on the map can be expanded if all of its nodes have a coordinate set at the given level. When a group is expanded, all nodes and subgroups are displayed around the expanded group.

- Collapse All Groups—Hides NEs contained in all groups on the map.
- Expand All Links—Shows links contained in an aggregate link.
- Collapse All Links—Hides links contained in an aggregate link.
- Grid Layout—Arranges nodes in a grid pattern.
- Explorer Mesh Layout—Arranges nodes in planar or nonplanar cyclic patterns.
- Uniform Length Edges Layout—Arranges nodes in patterns with edges of uniform length.

- User Preferences—Opens the User Preferences dialog box to set user preferences for options such as event notification and time.

Note Users with SuperUser privileges can configure labels for various nodes and device icons.

3.8.2 Viewing a Node on the Network Map

Icons on the Network Map are displayed based on the nodes you select in the Domain Explorer. Nodes on the Network Map do not have a default position unless one has been configured in a Network Partition Map or a SuperUser has configured one in the current map.

Launching the Network Map from the following nodes displays varying results:

- From the Prime Optical domain in the Domain Explorer—Displays all the groups and individual nodes in the Prime Optical domain.
- From a specific group in the Domain Explorer—Displays all NEs that belong to that group.
- From a specific NE in the Domain Explorer—Displays the parent group that the selected NE belongs to.
- From a specific network partition in the Subnetwork Explorer—Displays all the NEs in that network partition.

3.8.3 Adjusting the Zoom Level or Pan Position

When the Network Map is launched from the Prime Optical domain, it displays a world map with the individual groups, network partitions, and NE icons. To view a particular region or icon, you adjust the zoom level or pan position.

Step 1 In the Domain Explorer or Subnetwork Explorer tree, click a node and choose **File > Network Map** (or click the **Open Network Map** tool). The Network Map opens with the node preselected.

Step 2 Do any of the following:

- To adjust the zoom level, do either of the following:
  - On the Network Map, choose **Edit > Zoom In**, **Zoom Out**, **Zoom to Fit**, or **Zoom Area**.
  - Click the **Zoom In**, **Zoom Out**, **Zoom to Fit**, or **Zoom Area** tool.
- To adjust the pan position, choose **Edit >Toggle Panning** and use the mouse to pan across to the desired region on the map.
- View or hide the links contained in each link bundle (aggregate link):
  - To view links, click a link bundle and choose **Edit > Expand All Links** (or double-click a link bundle to show all the links)
  - To hide links from view in the Network Map, click a link bundle and choose **Edit > Collapse All Links**.

The following table describes how the zoom tools at the right of the Network Map work.

Zoom Tool	Description
Zoom In	Zoom in on an object in the map view. This tool increases the size of all of the graphic objects on the map.
Zoom Out	Zoom out on the map view. This tool decreases the size of all of the graphic objects on the map.
Zoom Slider	Adjust the zoom level of the map by moving the slider up or down between the Zoom In and Zoom Out icons.
Toggle Selection	Select elements on the map.
Toggle Panning	Pan across the map. You can move your view of the map up and down as well as left and right.
Zoom Area	Pan and zoom the view to a different region of the map. Hold down the left mouse button and use the Zoom Area box to highlight an area on the map. When you release the left mouse button, the zoom is applied to the selected area of the map.
Zoom to Fit	Click to adjust the view of the map to fit the window.
Zoom Magnify	Magnify the area under the lens. Click the zoom magnify icon, point to the map region that you want to magnify, and hold down the left mouse button. The area is magnified until the left mouse button is held down.

Note When the network map is zoomed in to show the entire node icon, the related device icons and labels are displayed. When the zoom level is low, only the Alarm Severity icon for each node is displayed. When zoom magnify is applied to the Alarm Severity icon, the entire node icon is visible, along with the related device icons and labels.

3.8.4 Modifying a Map Background Image

Network map backgrounds are provided by default as part of Prime Optical, and are used to display a geographical layout of the network. The icons in the Network Map can be customized. See Appendix A, "Icons and Menus Displayed in Prime Optical" for details of all the icons displayed in the Network Map window.

Prime Optical supports nonanimated GIF, JPG/JPEG, PNG, and shapefile format icons and maps. Shapefile is a universal standard for data files and allows users to zoom in and zoom out without losing details.

To modify a map background:

Step 1 In the Domain Explorer tree, click a node and choose **File > Network Map** (or click the **Open Network Map** tool).

Step 2 In the Network Map window, choose **Edit > Select Background**. The Select Background dialog box opens.

Step 3 Select a background image from the list of existing background images. The selected image appears in the Preview area.

Note If you want to add a new background image to the list, click the **Add** tool at the top of the list, browse, and select the file to be added. In the Data area on the right, you can provide the name, description, and additional files if any, for the newly added background image. Clicking the **Save** tool in the Data area will save the attributes you entered for the background image.

Step 4 After choosing a map background, click **Apply**. The new map background appears in the network map.

Step 5 Select the **No Background** check box if you do not want a background image displayed for the network map.

Step 6 Choose **File > Save Map Settings** to save your settings.

Note You can edit the name and description, and change or upload new files for an existing background image, by selecting the row and editing the fields in the Data area. You can delete files for a selected background image by clicking the **Remove** tool in the Data area.

You can also delete an existing background image by selecting it from the list and clicking the **Remove** tool at the top of the list.

Table 3-19 Field Descriptions for the Select Background Dialog Box

Field	Description
Current Background	Read-only. Displays the name of the current map background.
Name	Read-only. Lists the names of the map background images.
Type	Read-only. Displays the format of the corresponding map background image. Values include jpeg, shape, gif, and png.
Size	Read-only. Displays the size of the map background image in KB or MB.
Added By	Read-only. Displays the name of the user who added the image, and the time stamp.
No Background	Check this check box if you do not want a background image for the network map.
Data Area	
Name	Enter the name of the map background image that you are uploading.
Description	Enter a description for the map background image that you are uploading.
Files	Displays the files added for the selected background image.

3.8.5 Configuring the Network Map View

Prime Optical allows you to configure the appearance of the graphical components on the network map. You can set how nodes, groups, and links appear.

To configure the network map view:

Step 1 In the Network Map window, choose **Edit > Global Network Map Configuration**.

Step 2 On the Node tab:

- In the Badges area, from the list of badges, drag and drop the badges to be displayed on the nodes in the map. The badges available are:
  - Multishelf
  - WSON State
  - Node Role
  - Admin State
  - Alarm
  - Discovery State
  - Connection State
- From the Labels area, drag and drop the labels to be displayed for each node. The labels to choose from include:
  - Alias
  - Model Type
  - IP Address
  - Software Version
- If you want the alarm to be highlighted on the map, check the **Highlight on Alarm** check box.

Step 3 On the Group tab, check one or both check boxes (**Alarm** or **Connection State**) to display the Alarm or Connection State badge for the group on the network map.

Step 4 On the Link tab:

- Enter the desired values for the following:
  - Width of the link
  - Distance between links
  - Width of the links for a bundle
  - Minimum number of links for a bundle
- If you want to hide all links in a bundle on the network map, select the **Bundle Collapsed by Default** check box.
- If you want the DWDM side for the links displayed on the map, select the **Show DWDM Side** check box in the Link Attributes section.
- Specify how frequently you want the links refreshed on the map, by selecting the **Refresh Interval** in the Link Refresh Interval section.

Note The default value for the Refresh Interval is 15 minutes.

Step 5 Click **OK**.

3.8.6 Saving Changes to the Network Map

Step 1 In the Domain Explorer or Subnetwork Explorer tree, click a node and choose **File > Network Map** (or click the **Open Network Map** tool).

Step 2 After making the necessary changes to the map background, map position, zoom level, node icon, or node coordinates in the Network Map window, Choose **File > Save Map Settings** to save your settings.

Depending on the user type and the settings saved, one of the following happens:

- SuperUser saves background and coordinates for:
  - Network partition map—Settings are saved as Absolute settings for the map.
  - Domain map—Settings are saved as System settings for the map.
- Operator or Provisioner saves settings for domain map—Settings are saved as Custom settings for the user.

3.8.7 Searching for Circuits

Prime Optical 9.6.3 allows you to search for circuits from the Network Map window by selecting one or multiple NEs.

You can search for circuits using the Network Map in the following ways:

- Right-click an NE on the map and choose **Circuit Search**.
- Right-click a link on the map and choose **Circuit Search**.
- Use the **Enter Search Query** text box available at the top of the network map.

The circuits associated with the selected NEs are displayed in a dockable Circuit Search window at the bottom of the Network Map window. If you select another NE in the network map, and want to refresh search results, click the Sync tool at the top of the Circuit Search window.

The Circuit Search window allows you to view the links on the map for a selected circuit. When you click the **Toggle Path Trace** tool at the top of the Circuit Search window, the links that contain the selected circuits are highlighted in yellow on the map.

You can launch the Circuit Report from the Circuit Search window, by clicking the Circuit Report tool at the top. You can also filter, and export the search results by choosing the appropriate tools.

Note See Appendix A, "Icons and Menus Displayed in Prime Optical" for an explanation of the icons in the Circuit Search window.

The **Enter Search Query** text box in the Network Map window allows you to search for circuits by the following attributes:

- Alias
- Customer
- Description
- Name
- Service

- Type

Press **Ctrl-Space** to display attributes and select from the list; then type a keyword to search by. You can use multiple keywords for the same attribute, and also select more than one attribute. All circuits with either of the attributes mentioned are displayed in the search results.

Note Clicking the Help icon within the Enter Search Query field displays hints and examples to help you search for circuits effectively.

3.9 How Do I Discover the Network for Optical Devices?

The Prime Optical discovery service collects information from individual CTC-based and ONS 155xx NEs; discovers new NEs added to the network; updates network-level information (such as physical topology, logical circuits, and discrepancies); and updates device-level information (such as inventory and alarms).

When you add a new NE to Prime Optical, the discovery process starts. When the process finishes, all of the NE information (such as inventory, configuration, physical topology, and discrepancies) is collected and Prime Optical is updated.

Note The Discovered Network Elements group can be viewed only by users who have all NEs assigned to them. Therefore, in the Add New NE wizard, the grouping option "Group discovered NEs in the Discovered Network Elements Group" is not available.

3.9.1 Discovering CTC-Based NEs

When a CTC-based NE is added as a GNE, the following NEs are discovered automatically:

- All NEs that are DCC-connected to the GNE
- All NEs that are connected to the GNE by any link other than a manual link

The discovered NEs are added automatically to Prime Optical. The location of new NEs depends on the location you specified in the discovery wizard.

Alternatively, for CTC-based NEs, you can choose to manually discover NEs and add them to a specific network partition. You can disable discovery when the NEs are being added to the network partition. To choose the discovery mode:

Step 1 Choose **Administration > Control Panel**.

Step 2 From the left panel, expand the CTC-based SDH or CTC-based SONET service and choose a network service instance. The property sheet is displayed.

Step 3 Choose a discovery mode (Manual or Automatic).

3.9.2 Discovering ONS 155xx NEs

When you add a new ONS 155xx NE to Prime Optical, the discovery process starts. When the process finishes, all of the NE information (such as inventory, configuration, physical topology, logical circuits, and discrepancies) is collected and Prime Optical is updated. In addition, neighbors of the added NE are discovered. To discover new neighbors, the discovery service relies on CDP neighbor information and topology neighbor information obtained from the NEs.

The ONS 155xx discovery service uses the following measures to keep the NE and network information in Prime Optical synchronized with the NEs themselves:

- Periodic rediscovery based on the resynchronization interval. Periodic rediscovery brings the information in Prime Optical up to date for all ONS 155xx NEs in the network and rediscovers any new neighbors. You can view and reset the synchronization interval in the Control Panel. (For information about resetting the resynchronization interval, see 3.9.5 Resetting the Resync Interval, page 3-68.) If at least one ONS 155xx is already in the system, the first periodic rediscovery starts when the ONS 155xx NE service starts. The NE service usually starts when the Prime Optical server is restarted. If no ONS 155xx NEs are in the system when Prime Optical restarts, the first periodic discovery starts when the first ONS 155xx is added.
- Event-triggered rediscovery launched by certain changes to ONS 155xx NEs. Event-triggered discovery incrementally updates Prime Optical with the new information. New neighbors of the affected NE are discovered. The device changes that trigger rediscovery include, but are not limited to, the following: reboot, CPU switchover, patch and topology changes, and insertion and removal of physical components.
- User-requested rediscovery. Users can request rediscovery of selected ONS 155xx NEs or the entire ONS 155xx network at any time. This updates Prime Optical with information about the NEs. For more information about using rediscovery commands, see 3.9.3 Rediscovering ONS 155xx NEs, page 3-65.

Note Only active NEs (NEs that are in the In Service or Under Maintenance states) can participate in the rediscovery process.

3.9.2.1 Discovery Information Table

The Discovery Information table displays discovery information for individual devices and for main discovery. The main discovery includes the discovery of individual devices plus network-level computations for topology, discrepancies, and logical circuits. The Discovery Information table shows all types of discovery: periodic rediscovery, user-requested rediscovery, and update-triggered discovery. To view the table, choose **Configuration > ONS 155XX > Discovery Info Table** in the Domain Explorer.

The following table describes the fields in the Discovery Information table.

Table 3-20 Field Descriptions for the Discovery Information Table

Field	Description
Discovered NE	NE system ID of the NE selected for discovery, or Main for the main discovery.
Start Time (*time stamp*)	Discovery start time. When the element name is an NE system ID, the elapsed time between start time and end time represents the amount of time required to discover the individual device. When the element name is Main, the elapsed time between the start time and end time includes: • The time required to discover all of the individual NEs that participated in the current discovery cycle • The time required for the network-level computations for topology, discrepancy, and logical circuits
End Time (*time stamp*)	Discovery end time (if the discovery has completed).
Status	Status of the discovery (whether it succeeded, failed, or is in progress). The status “idle” means that no discovery has ever occurred on the NE.
Start Mode	How the discovery was started (periodic rediscovery, user-requested discovery, or discovery triggered by an update).
Description	Type of discovery that was performed. If the discovery fails, this column includes a description of the cause of the failure.

3.9.3 Rediscovering ONS 155xx NEs

The **Rediscover** and **Rediscover All** commands perform a rediscovery of selected ONS 155xx NEs or of the entire ONS 155xx network. Rediscovery updates Prime Optical with current network-level information (such as physical topology, logical circuits, and discrepancies) and device-level information (such as inventory and alarms).

Note Periodic rediscovery occurs every 24 hours, and certain changes on the device can trigger incremental rediscovery.

Start rediscovery from any of the following windows:

- Domain Explorer
- Subnetwork Explorer
- Network Map

Note Only users with the appropriate privileges can use the **Rediscover All** command.

Step 1 To rediscover selected NEs, select NEs or groups of NEs and choose **Configuration > ONS 155XX > Rediscover**.

Note This command is unavailable unless at least one NE in the selection is in the In Service or Under Maintenance states.

Step 2 To rediscover all ONS 155xx NEs in the network, choose **Configuration > ONS 155XX > Rediscover All**.

Note This command is unavailable unless at least one NE in the network is in the In Service or Under Maintenance states.

Step 3 Click **Yes** in the confirmation dialog box to initiate rediscovery.

Rediscover and Rediscover All operations are available only for in-service or under-maintenance NEs. If you try to initiate rediscovery for NE(s) that are not in service or under maintenance, the Error Log records the following minor error:

`Skipping rediscover for: NE-IP-address as its state is neither In Service nor Under Maintenance.`

Note If a Rediscover process is already in progress on a single NE and you choose Rediscover again, the request will be accepted but not executed. Similarly, if a Rediscover All process is already in progress and you choose Rediscover All again, the request will be accepted but not executed.

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3.9.4 Viewing Manually Discovered NEs

Use the Orchestration Service pane to view the details of a discovery service and manage discovery processes. This page displays the status of a discovery service, which can be Running or Not Running. To view the Orchestration Service pane, choose **Administration > Control Panel > Orchestration Service**.

Table 3-21 Field Descriptions for the Orchestration Service Pane

Field	Description
Status Tab	
Service Status	Displays the status of the process associated with the discovery service. The status can be Running or Not Running. The Not Running status occurs only in the case of an unexpected system error.

Table 3-21 Field Descriptions for the Orchestration Service Pane (continued)

Field	Description
Discovery Properties Area	
Select link types to evaluate during discovery of adjacent nodes	To complete the discovery process, you must select at least one of the following link types: • Physical Links (including virtual links)—During the discovery process, all nodes that are connected by physical links are discovered. However, if the nodes are connected by virtual links, only the immediately adjacent node is discovered. • Server Trails. If you try to proceed without selecting a link type, the following message appears: `You must select at least one link type for evaluation during the discovery.`
Select details to retrieve	Check the details of the node you wish to retrieve during the discovery process. The details which you can retrieve are: • NE model • Software version • NE role The NE Model option is selected by default. If you deselect the option, the node is marked as Undefined NE in the Discovery Overview area (**Domain Explorer > Undiscovered Network Elements**). If you choose to discover additional details (Software Version and Connection Type), the discovery process will be slower. The following message appears: `The selected option(s) will slow down the discovery process.` By default, the node's IP address is retrieved.
Maximum Timeout in Seconds	Enter a maximum timeout, after which the discovery is interrupted. The minimum timeout you can define is 30 seconds.
Debug Tab	
Overall Logging	Enable—Choose the Enable radio button to enable logging. When you choose the Enable radio button, the debug modules in the Available list become selectable. Disable—Choose the Disable radio button to disable logging. When you choose the Disable radio button, the debug modules in the Available list become dimmed and you cannot make any selections.
Debug Modules	Available—Select one or more debug modules in the Available list and click **Add** to move them to the Selected list. **Tip** Hold down the Shift key to select more than one debug module sequentially. To select multiple debug modules nonsequentially, hold down the Ctrl key on your keyboard while using your mouse to select multiple debug modules. Selected—Select one or more debug modules in the Selected list and click **Remove** to move them to the Available list.
Save button	After making your selections, click **Save**. Changes take effect immediately.

3.9.5 Resetting the Resync Interval

The Resync Interval setting displays the frequency at which the configuration is rediscovered, retrieved, and processed for the NEs. The following information is retrieved:

- General system information including node name, system time zone, SNTP configuration, and power monitoring information
- NE's network information including IP address, static routes, OSPF, and RIP configuration
- Card provisioning data
- DCC configuration
- Timing synchronization
- Protection group configuration
- Ethernet Spanning Tree configuration
- Alarm profiles
- Security configuration
- NE defaults
- Routing table and protocol information

Complete the following steps to reset the resync interval:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Expand **NE Service**.

Step 3 Select an NE and change the Resync Interval field in the Resync Scheduling area.

Step 4 Click **Save**.

3.9.6 Discovering CRS-1 and CRS-3, NEs

Using Prime Optical, you can discover CRS-1, CRS-3 R4.2.3 and CRS-3 R4.3.0 NEs that are connected to a DWDM ONS 15454 NE using a virtual transponder. You can also manage the IP traffic that is exchanged in the CRS-1 and CRS-3 networks using the optical DWDM transport network. This is possible because of the presence of virtual transponders and DWDM colorless cards. Prime Optical does the following:

- Discovers the links that connect the ONS 15454 cards to the CRS-1 and CRS-3 virtual transponder cards.
- Discovers and manages CRS-1 and CRS-3 NEs.
- Discovers and manages OCH trail circuits between the CRS-1 and CRS-3 virtual transponder cards and the DWDM optical network. The following cards support OCH trail circuits:
  - Cisco CRS-1 1 x OC768 DPSK+ (C-band) DWDM PLIM
  - Cisco CRS-1 1 x OC768 (C-band) DWDM PLIM
  - Cisco CRS-1 4 x 10GE (C-band) DWDM PLIM
  - DWDM PLIM LINE card 10 GE
  - DWDM PLIM LINE card 100 GE

Note A virtual transponder is a virtual entity of the transponder cards. Prime Optical does not manage this type of equipment.

You cannot add a CRS-1 or CRS-3 NE directly to Prime Optical. For a CRS-1 or CRS-3 NE to be discovered and managed, it must be connected to Prime Optical through one of the following channels:

- An ONS 15454 DWDM NE through a link management protocol (LMP) link
- An ONS 15454 SDH DWDM NE through a link management protocol (LMP) link

Using the APIs available in the CTC library, Prime Optical discovers CRS-1 or CRS-3 NEs using the ONS 15454 or the ONS 15454 SDH NE service.

In the Domain Explorer window, select the CRS-1 or CRS-3 NE that you want to view. The property sheet is displayed. To discover a CRS-1 NE, you must log in with the credentials of the ONS 15454 NE to which it is connected; the NE Authentication tab, therefore, is unavailable for CRS-1 NEs.

Note In order to manage the CRS-1 and CRS-3 nodes, you must be logged in as a root user.

The following limitations apply to the discovery of CRS-1 or CRS-3 NEs:

- A CRS-1 or CRS-3 NE cannot be directly added to Prime Optical as can other NEs. It is discovered only if it is connected to an ONS 15454 NE.
- To discover a CRS-1 or CRS-3 NE, you must log in with the credentials of the ONS 15454 NE to which it is connected.
- You must use CTC to set up the physical connection between the ONS 15454 NE and CRS-1 NE or CRS-3.
- You cannot create an LMP link between the CRS-1 or CRS-3 NEs and 15454 ONS NEs using Prime Optical. Prime Optical automatically discovers CRS-1 or CRS-3 NEs through an existing LMP link. Also, you cannot manually discover CRS-1 or CRS-3 NEs. For information on creating LMP links through CTC, see NTP-G164 Configure Link Management Protocol.
- The NE Explorer is not supported on CRS-1 or CRS-3 NEs.

Once discovered, the Link table represents the CRS-1 or CRS-3 NE as autodiscovered; for more information, see 3.6.3 Viewing the Link Table, page 3-34. The type of link is Unidirectional.

You can use CTC to create OCH trail circuits between two PLIM cards on CRS-1 or CRS-3 NEs. For more information, see NTP-G178 Create, Delete, and Manage Optical Channel Trails. To use Prime Optical to enable the OCH trail circuit, you must enable a specific trunk protection called proactive protection, which applies to all supported cards involved in circuit routing. To define the proactive protection parameters, choose **Create Circuit Wizard > Trunk Filtering**. For more information on populating the Proactive Protection panel, see Table 7-6.

3.10 How Do I Manually Discover NEs and Add Them to Specific Network Partitions?

Using the manual mode of discovery of NEs, you can decide the NEs and the adjacencies you want Prime Optical to discover; once enabled, the respective NE service no longer discovers and manages NEs automatically. This feature lets you take more control over the method in which the network partitions are populated. The following are the advantages of enabling this feature:

- You can decide which NE needs to be added to which network partition. This is particularly useful if the partition reaches its threshold limit.
- You can partition a managed network into several network partitions without having to turn off the physical links connecting two NEs.
- You can effectively delete the NEs that you choose to not be managed. Unless you explicitly add it to a network partition, the NEs remain unmanaged by the network service, even after subsequent discoveries.

Prime Optical discovers NEs through the manual mode in two phases:

1. Enabling the manual mode of discovery at the NE service level—Once you enable the manual mode of discovery at the service level, all nodes that are connected to a managed NE are not automatically added to the service unless specifically added by the user.
2. Managing the discovered nodes—Once the unmanaged NEs are discovered through the manual mode of discovery, you can specify the network partition to manage the discovered NEs.

Limitations of Manual Mode of Discovery

- This feature lets you choose the network partition that will be manage the specified NE. Because of this, the NEs that are not managed yet are identified as missing. These missing NEs can lead to incomplete discovery of services such as links, circuits, BLSR, and L2 topologies.
- If you added NEs belonging to the same physical network (such as a DCN domain) to different network partitions, you have one of the following consequences:
  - The links between the NEs that belong to different network partitions are not discovered.
  - The services topologies (such as circuits, BLSR, L2, VLAN, and SVLAN—which consist of NEs that belong to different partitions) are partially discovered. Also, some of them might remain undiscovered.
  - L1 circuits that are partially discovered are labeled **Split** in the Circuits table. This occurs when the source and destination nodes of the circuit belong to different partitions. In such a scenario, the circuit is marked Split, and is present in the partition to which its source is attached to.

Note Services that are split are supported and provisioned only in case of manual mode of discovery.

3.10.1 Frequently Asked Questions

3.10.1.1 Mode of Discovery

Q. Can I change the mode of discovery for an existing service?

A. Yes. If you are a user with administrative privileges, you can change the mode of discovery of a CTC-based NE at any time. See 3.9.1 Discovering CTC-Based NEs, page 3-63.

Q. Can I change the mode of discovery from manual to automatic?

A. Yes; however, this is not recommended. Prime Optical considers the changed mode of discovery of NEs only during the first network topology change, such as change of a link state. If you need to change the mode, you must force the change by restarting the discovery of NEs, particularly those that are connected to devices that are not currently managed by the NE service.

Q. Can I change the mode of discovery from automatic to manual?

A. Yes. By changing the mode of discovery to Manual, you stop the automatic discovery of NEs, thus limiting the number of devices managed by an NE service. This is particularly useful when the NE service is about to reach its threshold. This allows you to selectively discover and manage the NEs.

Q. Can I define the mode of discovery while adding a new NE?

A. Defining the mode of discovery applies more at the NE service level than at the NE level. You can set the mode of discovery while adding the first NE to an NE service. You cannot set the mode of discovery for NE services that have already been initiated. For more information, see 3.5.2 Adding NEs, page 3-13.

Note You cannot set the mode of discovery to manual for CRS-1 NEs. All connected CRS-1 NEs are added automatically to the partition to which the peer ONS 15454 NE belongs.

3.10.1.2 Administrative Options

Q. What is the recommended link type setting for manual discovery?

A. Using the **Control Panel > Orchestration Service** pane, you can configure the initial set of options to be considered for the discovery process, one of which is the link type between the NEs. You can choose either Physical Links or Server Trails. Physical links include virtual links. With physical and virtual links, the information is cached locally. The information can be retrieved by querying a limited set of NEs. With server trails, the information is retrieved by contacting each NE.

Choosing Server Trails as the link type has an inherent risk of high response time. Therefore, this is not recommended as the default setting. However, if server trail links are present in your network, you must select this link type to be able to complete the discovery process. For more information, see 3.9.4 Viewing Manually Discovered NEs, page 3-66.

Q. How do I set a default mode of discovery for all network partitions?

A. Using the **Control Panel > UI Properties** pane, you can choose a default option to be applied for all network partitions.

- To set a default mode of discovery, and to disallow a change of the mode later, choose **Control Panel > UI Properties**. Uncheck the **Allow Provisioning** check box, and select a mode of discovery from the **Default Discovery Mode** drop-down list.
- To set a default mode of discovery, and to also allow a change of the mode later, check the **Allow Provisioning** check box. Select a mode of discovery from the **Default Discovery Mode** drop-down list. This lets you change the mode of discovery while creating a new NE service.

3.10.1.3 Discovery of Nodes

Q. How does the discovery of nodes work?

A. Once you set the parameters to be considered for the discovery process in the Orchestration Service pane, the NE service starts discovering NEs in its managed network based on the parameters specified. For more information on setting the parameters for mode of discovery, see 3.9.4 Viewing Manually Discovered NEs, page 3-66. The following events occur during the discovery process:

1. The NE service begins to analyze the network topology without actually communicating with NEs. Following the physical links and the server trails existing between the nodes, it determines the NEs that are currently not discovered and managed. Only NEs that are either in In Service state or in In Service - Initializing state are considered for discovery.
2. Once the undiscovered NEs are identified, the Orchestration Service starts retrieving from the remote devices the additional information that you specified.
3. After retrieving the required information, the Orchestration Service makes the data available to all the GUIs.

Q. How can I track the status and execution of discovery?

A. The main stages of discovery are tracked in the Audit Log. You can filter the messages from the log table based on an NE service.

To view the status of a discovery process, choose **Domain Explorer > Undiscovered Network Elements**. For information on undiscovered NEs, see 1.5.2.4 Undiscovered Network Elements, page 1-21.

Q. Can I limit the scope of discovery to reduce the waiting time?

A. When more than one NE service is configured in manual mode of discovery, you can choose the service for which you want the discovery process to begin first. Choose **Domain Explorer > Undiscovered Network Elements**; then, click **Start Discovery**. A table listing the available network partitions appears. Select the desired partitions.

Q. Should I wait for the discovery process to finish before I initiate the process for other nodes?

A. You can initiate the discovery process at any time. However, for a successful discovery, ensure that the following conditions are met:

- At least one NE present in the OSPF topology area must have been discovered—either in In Service state or in In Service - Initializing state.
- If you set the link type as Server Trails, all the NEs connected through server trails must have been fully discovered.

3.10.1.4 TMF CORBA Interface

Q. Is TMF CORBA supported?

A. The discovery mode does not support TMF CORBA. This feature is available only for GUI users. TMF CORBA users must interact with the Prime Optical GUI to define the discovery mode.

3.11 How Do I Test Connectivity for Optical and Routing Devices?

The following sections describe how to test server connectivity to an NE. The following table explains the difference between pinging an NE and testing NE connectivity.

Table 3-22 Testing NE Connectivity

Method	Description
Ping NE	Pinging the NE uses the standard UNIX **ping** command to verify IP connectivity between the Prime Optical server and an NE. If successful, the ping results include the NE's IP address, round-trip time, and packet loss statistics. A response of "Request timed out" means there was no response to the ping attempt. If the ping is unsuccessful, verify that the NE's IP address and SNMP settings are configured correctly.
Test NE connectivity	The Test NE Connectivity operation uses the appropriate management protocol (SNMP, TL1, or CORBA) to run the **ping** command to verify the server's IP connectivity to an NE. If the ping is successful, the Test NE Connectivity operation verifies that the management protocol is configured correctly. The results show whether the connection state of the NE is Available or Unavailable. If Available, the connection state of an NE is updated to Available in the Prime Optical database. If the connection state of an NE is listed as Unavailable, a connectivity or configuration problem exists. Complete the steps in G.5.5 NE Connection State Is Listed as Unavailable, page G-11 to resolve the problem and retest NE connectivity.

3.11.1 Pinging an NE

Step 1 In the Domain Explorer tree, select the NE to ping.

Step 2 Choose **Fault > Ping NE**. The ping results include round-trip time and packet loss statistics.

Step 3 Click **OK** in the dialog box.

Note This function is enabled if the operational state of the NE is In Service or Under Maintenance. It is disabled if the operational state of the NE is Out of Service or Preprovisioned.

Note A link to the ping utility must be present in your PATH variable on the Prime Optical server. The default location is /usr/sbin/ping. If a link to the ping utility is not present in your PATH variable, configure your PATH settings to include it.

3.11.2 Testing NE Connectivity

Step 1 In the Domain Explorer tree, select an NE.

Step 2 Choose **Fault > Test NE Connectivity**. The Test NE Connectivity operation runs the **ping** command to check the NE communication state. The results show whether the NE is available or unavailable:

- Available—If the Prime Optical client can reach the NE through its management protocol, the communication state of the NE in the database is checked. If the NE communication state is Unavailable, it is changed to Available and an event is sent to the Prime Optical client, stating that the communication state was changed. If the NE communication state is Available, there are no changes.
- Unavailable—If the Prime Optical client cannot reach the NE through its management protocol, the communication state of the NE in the database is checked. If the NE communication state is Available, it is changed to Unavailable and an event is sent to the Prime Optical client, stating that the communication state was changed. If the NE communication state is Unavailable, there are no changes.

Step 3 Click **OK** in the dialog box.

Maintaining an Efficient Network

This topic contains the following information to help you maintain an efficient network:

- 4.1 Overview, page 4-1
- 4.2 How Do I Manage the Database?, page 4-2
- 4.3 How Do I Manage the Network Software?, page 4-27
- 4.4 How Do I Modify the Network?, page 4-42
- 4.5 How Do I Manage Redundancy and Failover?, page 4-58
- 4.6 How Do I Monitor the Network?, page 4-87
- 4.7 How Do I Manage CTC Operations?, page 4-96

Note For information about configuring users and user-related parameters, creating and modifying advisory messages, and accessing logs, see Chapter 8, "Managing Security."

4.1 Overview

Maintaining your network focuses on tasks that will keep your network running smoothly. Examples include:

- Backing up and restoring memory and the database
- Creating and maintaining protection groups
- Restoring default settings when necessary
- Monitoring tasks and jobs
- Modifying basic server and NE information
- Finding modules or boards
- Updating software images and versions
- Exporting data and generating reports
- Performing administrative database operations

4.2 How Do I Manage the Database?

This section describes procedures for managing the Oracle database and deals specifically with Cisco Prime Optical data stored in the database. For a complete description, refer to the Oracle documentation.

A useful tool for managing the database is the Oracle Enterprise Manager, part of the Oracle 10g Client CD. The Oracle Enterprise Manager provides an integrated solution for managing heterogeneous environments and combines a graphical console, agents, common services, and tools to provide a comprehensive systems-management platform for managing Oracle products.

4.2.1 Viewing and Modifying Database Properties

The Database Properties pane in the Control Panel shows and defines database pruning parameters and the configuration that the Prime Optical server uses to connect to the Oracle database. The pane contains the following tabs:

- Configuration—Defines the values used by the Prime Optical server to log into the Oracle database. Fields are grouped into two columns: Activated After Restart and Active. The Activated After Restart column shows the values that the Prime Optical server uses after the server is restarted. The Active column displays the values currently used by the Prime Optical server.
- Pruning—Defines the Prime Optical database pruning frequency. Database pruning is enabled by default. You can configure the performance monitoring (PM) pruning interval for 5-minute, 10-minute, 15-minute, and 1-day data collection, giving you a finer level of control over the pruning of performance data from the system. Pruning frequency changes take effect as soon as you save them; you do not need to reboot the Prime Optical server.
- Database Operations—Allows you to start a database backup or export from the Control Panel. After entering the password, click Start to begin the database backup or export. The backup section is disabled if the database is not installed in ARCHIVELOG mode. The ARCHIVELOG mode is stored in the CTM_config_table by the server installer.

Complete the following steps to view and modify the database properties:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Database Properties** to open the Database Properties pane. The following table provides descriptions.

Step 3 (Optional) Modify the values in the Configuration, Pruning, or Database Operations tabs.

Step 4 Click **Save**.

Table 4-1 Field Descriptions for the Database Properties Pane

Field	Description
Configuration Tab	
Database Server Configuration	*Display only.* Displays the size of the database server.

Table 4-1 Field Descriptions for the Database Properties Pane (continued)

Field	Description

Enable ARCHIVELOG Mode	If checked, the ARCHIVELOG mode is enabled. When the database is in ARCHIVELOG mode, Prime Optical supports automatic pruning of the /db05 partition.
	Note When you check the Enable ARCHIVELOG Mode check box, the Archive Log Pruning Parameters check box (located in the Database Operations tab) is checked automatically.
	Caution To change the ARCHIVELOG mode in a high availability (HA) configuration, you must freeze the ctmgrp service group before making the change, and unfreeze the ctmgrp service group when the change is complete.
	Enter the following commands on all of the clusters to freeze the ctmgrp service group:
	`haconf -makerw`
	`hagrp -freeze ctmgrp -persistent`
	`haconf -dump -makero`
	After the Prime Optical server restarts, enter the following commands on all of the clusters to unfreeze the ctmgrp service group:
	`haconf -makerw`
	`hagrp -unfreeze ctmgrp -persistent`
	`haconf -dump -makero`

Configuration Mode	Configuration Mode tells the Prime Optical server the values to use to log into the Oracle database. When set to Auto, the Prime Optical server uses the configuration that was set when Prime Optical was installed. When set to Manual, the Password field can be changed, and the Prime Optical server uses the new password after the server is rebooted.
	Note If you change the configuration mode to Manual, enter the following commands to set the ORACLE_HOME and ORACLE_SID environment variables before logging into Prime Optical again. (The C-shell is assumed for all UNIX commands.)
	`setenv ORACLE_HOME` *`Oracle-home-directory`*
	`setenv ORACLE_SID CTM`
	`setenv LD_LIBRARY_PATH $ORACLE_HOME/lib`
	`setenv PATH $PATH:$ORACLE_HOME/bin`
	Restart the Prime Optical server after setting these environment variables. To do this, enter the **opticalctl stop** command to shut down the Prime Optical server. Then, enter the **opticalctl start** command to restart it.
	Caution If you set the configuration mode to Auto and restart the Prime Optical server, the CTMServer.cfg file does not change; the parameters retain their previous values.

Username	*Display only.* Displays the username that the Prime Optical server uses to access the Oracle database.

Table 4-1 Field Descriptions for the Database Properties Pane (continued)

Field	Description
Password	Displays the password that gives the username access to the Oracle database. You can change the database password only if the database is not embedded and if the configuration mode is set to Manual. If the configuration mode is set to Auto, the password is display only. **Note** The database password cannot contain the characters @, ", and /, because SQL*PLUS interprets them as special characters. **Note** After a Prime Optical server restart, the Prime Optical client attempts to log in automatically for 6 minutes before exiting. If the Prime Optical server initialization requires additional time to complete, you might need to restart the Prime Optical client. **Caution** The default password is *Ctm123!* and any changes are saved in the CTMServer.cfg file. If you change the default password, the following caution is displayed: "Changing the database password will restart the Prime Optical server. Are you sure you want to continue?" Click **Yes** to confirm the action. The password is validated and the following message is broadcast: "Caution: The database password has been changed by a user. The Prime Optical server will restart in 15 seconds." **Caution** To change the Oracle database password in an HA configuration, see "Changing the Oracle Database Password from the Prime Optical Client in an HA Configuration" in *Cisco Prime Optical Release 9.6 High Availability Installation Guide*.
Confirm Password	(Available when the configuration mode is set to Manual) Re-enter the database password to confirm it.
Location	*Display only.* Displays the IP address that the Prime Optical server uses to connect to the database.
Port	*Display only.* Displays the port number that is used to connect to the database.
System ID	*Display only.* Displays the Oracle system ID. The ORACLE_SID specifies the system identifier (SID) value of the database instance that you create with the Prime Optical installer. For a single-instance database, the SID value should be the same as the name of the database it manipulates (initialization parameter DB_NAME), and no more than four characters. **Note** During Prime Optical installation, the default system ID is *CTM*.

SQL Network Alias	*Display only.* Displays the SQL*Net listener alias set in the system listener.ora file. When the listener is running, entering the **ps** command displays the following output (not all systems display *listener_alias*):
	`tnslsnr [listener_alias] [-inherit]`
	Shadow processes (dedicated servers) spawned by the SQL*Net listener have the following syntax:
	`oracleSID [(LOCAL=NO)]`

Pruning Tab	
PM Data (5, 10, 15 min)	Specifies the number of days to save 5-, 10-, or 15-minute PM data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 30 days. You can also specify the time of day when the PM data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the PM data pruning.

Table 4-1 Field Descriptions for the Database Properties Pane (continued)

Field	Description
PM Data (1 day)	Specifies the number of days to save 1-day PM data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 30 days. You can also specify the time of day when the PM data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the PM data pruning.
FM Data	Specifies the number of days to save cleared and acknowledged alarms in the Alarm Log before Prime Optical prunes alarms from it. You can save from 1 to 1000 days of data. The default value is 7 days. You can also specify the time of day when alarms will be pruned by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate alarm pruning. **Note** Alarms shown in the Alarm Browser are not pruned. They are saved to the Alarm Log when they are cleared and acknowledged. Alarms can be acknowledged manually by a user, or acknowledged automatically if the automatic acknowledgement feature is enabled in the **Control Panel > UI Properties pane > Fault Management** area.
Audit Log Data	Specifies the number of days to save Audit Log data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 7 days. You can also specify the time of day when the Audit Log data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the Audit Log data pruning.
Error Log Data	Specifies the number of days to save Error Log data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 7 days. You can also specify the time of day when the Error Log data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the Error Log data pruning.
Audit Trail Data (*for CTC-based NEs*)	Specifies the number of days to save audit trail data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 7 days. You can also specify the time of day when the audit trail data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the audit trail data pruning.
Self Monitor Data	Specifies the number of days to save self-monitoring data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 7 days. You can also specify the time of day when the self-monitoring data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the self-monitoring data pruning.
Job Monitor Data	Specifies the number of days to save job monitoring data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 7 days. You can also specify the time of day when the job monitoring data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the job monitoring data pruning.
Database Operations Tab > Backup Area	
'sys' Password	The password for the sys user. The default Oracle password for the sys user is *change_on_install*.
Backup Status	The status of the database hot backup. The default is Unknown.
Oracle Installation	Check this check box to back up the entire Oracle installation directory.
Solaris Configuration	Check this check box to back up the common Solaris configuration files used by the Oracle installation.

Table 4-1 Field Descriptions for the Database Properties Pane (continued)

Field	Description
Database Configuration	Check this check box to back up the operating system configuration files.
All	Check this check box to back up all of the database components (Oracle installation, Solaris configuration, and database configuration).
Start button	Click the **Start** button to back up the selected database component(s).
Database Operations Tab > Archive Log Pruning Parameters Area	
Enable	Allows you to enable (default) or disable archive log pruning. **Caution** If ARCHIVELOG mode is enabled, the archive log pruning should never be disabled. If the archive log pruning is disabled, the /db05 partition might fill up and the Prime Optical database might shut down.
Threshold	Enter the pruning threshold. By default, when the archive log reaches 70 percent of capacity, pruning begins. **Caution** Do not set this threshold to a high value (such as 90 percent). If the threshold is too high, the /db05 partition could fill up before the archive log pruning makes space available.
Archive Log Backup Directory	Specify the location for the archive log backup files. The default directory is /ctm_backup. **Caution** Make sure that the archive log backup directory exists and has enough space to store the compressed archive log files. Check periodically to make sure that this directory is not full.
Database Operations Tab > Export Area	
Export Status	The status of the database export process. The default is Unknown.
Oracle Installation	Check this check box to export the entire Oracle installation directory. **Caution** This option requires a large amount of disk space (about 2.5 GB) in the /ctm_backup directory.
Solaris Configuration	Check this check box to export the common Solaris configuration files used by the Oracle installation.
Database Configuration	Check this check box to export the operating system configuration files.
All	Check this check box to export all of the database components (Oracle installation, Solaris configuration, and database configuration).
Start button	Click the **Start** button to export the selected database component(s).

4.2.2 Changing the Prime Optical Database Password

Complete the following procedure to change the password that gives the username access to the Oracle database. You can perform this operation only if the database is not embedded.

The following procedure applies to changing the Oracle database password in a non-HA environment. To change the database password in an HA configuration, see "Changing the Oracle Database Password from the Prime Optical Client in an HA Configuration" in *Cisco Prime Optical Release 9.6 High Availability Installation Guide*.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Database Properties** to open the Database Properties pane.

Step 3 Click the **Configuration** tab.

Step 4 Change the password in the Password field. The default password is *Ctm123!* and any changes are saved in the CTMServer.cfg file. You can change the database password if the configuration mode is set to Manual. If the configuration mode is set to Auto, the password is display only.

Note The database password cannot contain the characters @, ", and /, because SQL*PLUS interprets them as special characters.

Step 5 In the Confirm Password field, re-enter the database password to confirm it.

Step 6 After you change the default password, the following caution is displayed: "Changing the database password will restart the Prime Optical server. Are you sure you want to continue?" Click **Yes** to confirm the action. The password is validated and the following message is broadcast: "Caution: The database password has been changed by a user. The Prime Optical server will restart in 15 seconds."

Step 7 Click **Save**.

The Audit Log records the history of the database password change.

- If the Prime Optical server stops, the database password change procedure executes and all Prime Optical clients are shut down.

  To check whether the password change succeeded, view the Alarm Browser, which should not indicate a failure with the database password change. The CTMServer.cfg file in the /opt/CiscoTransportManagerServer/cfg directory should report *CHANGED* in the db-password-change-status section of the file. You can view the file with a system editor or with the command **cat CTMServer.cfg**.

  If the Alarm Browser reports a password-related alarm, view the following report logs in the /temp directory:

  - change_db_password_execute.log (the logger file)
  - change_db_password_execute.err (the file that contains the error)
  - change_db_password.out (the output of the opticalctl stop and opticalctl start scripts)

- If the Prime Optical server does not stop, a prerequisite check failed. View the Alarm Browser for an alarm that explains the failure. Also view the preceding log files to understand the error.

4.2.3 Overview of Backing Up the Prime Optical Database

This section provides guidelines for backing up the Prime Optical database. Various factors affect the database backup, including the type of installation and the Prime Optical system performance. Ultimately, your database administrator (DBA) must determine the best method of backing up the Prime Optical database.

Consider the following definitions:

- *Backing up the database* means safely storing the data in the Prime Optical database.
- *Restoring the database* means taking a specific image of a previous database backup and applying it to re-establish an earlier situation.
- *Recovering the database* means taking a specific image of a previous database backup and applying it to recover from data corruption or loss of data.

You can back up the Prime Optical database using the following methods, which are described in Table 4-2 and in the subsequent sections:

- Hot backup
- Cold backup
- Export

Table 4-2 Methods for Backing Up the Prime Optical Database

Method	Description	Prime Optical Status	Available from the GUI?	Available from the CLI?
Hot backup	A physical copy of the database	The Prime Optical server can be running; the Prime Optical database (Oracle) must be running.	Yes	Yes
Cold backup	A physical copy of the database	The Prime Optical server and the Prime Optical database (Oracle) must be shut down.	No	Yes[1]
Export	A logical copy of the database	If the database is exported from the CLI, the Prime Optical server must be shut down and the Prime Optical database (Oracle) must be running. If the database is exported from the GUI, both the Prime Optical server and database must be running. In this case, all NE and PM services must be shut down, and only one Prime Optical client can be connected.	Yes[2]	Yes

1. You can perform a cold backup manually by using Telnet or an SSH session (CLI) on the Prime Optical database server; however, there are no Prime Optical scripts available for this operation.
2. The exported image might contain inconsistencies when exporting from the GUI, because the Prime Optical server is running during the export.

4.2.3.1 Understanding Hot Backup, ARCHIVELOG Mode, and the /db05 Directory

You can perform a hot backup while the Prime Optical server is running. A hot backup requires no downtime, but your Prime Optical database must be running in ARCHIVELOG mode.

In ARCHIVELOG mode, the database saves a redo log whenever a log switch occurs in /db05/*.arc files. Redo logs are composed of a group of special files that are filled cyclically. Before rewriting an existing redo log, the archive process makes a copy of the log and produces the archive (.arc) files.

Oracle registers in the redo logs every activity that occurs in the database.

It is not possible to estimate the rate of production of archive files, because the rate depends on the number of log switches in the system. The number of log switches relates to the Prime Optical server workload: During an intensive session with multiple commits of active transactions, the number of log switches increases.

The archive files, in addition to the initial backup of the database, are part of the backup itself and must be kept in a safe place, such as on tape or on a similar storage device. Prime Optical uses the /db05 partition to store the archive files.

During normal system operation, the /db05 directory fills up. You can configure automatic pruning of the /db05 directory in the Control Panel. If automatic pruning is enabled, the archive files are zipped and moved to the /ctm_backup directory.

Prime Optical checks the /db05 partition once every 5 minutes. When archive log pruning for the /db05 partition exceeds the configured threshold, all archive files except for the most recent one are compressed and moved to the /ctm_backup directory. Therefore, make sure that /db05 is in its own partition and not under the root directory.

Set the archive log pruning threshold to a medium value, such as 60 or 70 percent. If you set the threshold to a very high value (such as 90 percent), you risk filling up the /db05 partition. If the /db05 partition fills while ARCHIVELOG mode is enabled, Oracle stops and Prime Optical hangs.

If you set the threshold to a very low value (such as 10 percent), the /db05 partition is pruned continuously, which slows down the system unnecessarily.

To view or change the archive log pruning threshold:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Database Properties** to open the Database Properties pane.

Step 3 Click the **Database Operations** tab. The Archive Log Pruning Parameters area shows the configured threshold.

Step 4 After modifying the Threshold value, click **Save**.

A database backup comprises two main groups of files:

- The files produced under the /ctm_backup directory, which contains a compressed dump of all of the data in the database, including the actual read logs.
- The archive (.arc) files produced during and after the backup.

You can perform a hot backup from the GUI (see 4.2.4 Backing Up the Prime Optical Database from the Prime Optical GUI, page 4-12). You can also perform a hot backup from the CLI, using the backupdb.sh script (see 4.2.6 Backing Up or Exporting the Prime Optical Database from the CLI, page 4-14).

The Prime Optical restore procedure manages all of the information required to restore the database; you provide only the location of the backup and archive files.

A hot backup has the following advantages:

- You can recover the database contents up to the last transaction that occurred before a crash, returning the lowest amount of lost data.
- There is no Oracle downtime.
- You can use Oracle's RMAN product to configure the backup.

A hot backup has the following disadvantages:

- It requires more disk space, because depending on database activity, the archive log function produces many snapshots.
- It requires planning to avoid filling up the archive log and the /db05 partition.

Use the following guidelines for performing a hot backup:

- By default, the files created by the hot backup are saved in the /ctm_backup directory. Make sure that the /ctm_backup directory exists and has the correct permissions and adequate space.
- Make sure that /ctm_backup is not under the root partition, because it could fill up.
- For optimal results, the Prime Optical server should perform limited activity on the database while the hot backup is running. Therefore, launch the hot backup when users are not working on the system.
- All of the changes performed by the Prime Optical server after the backup starts are logged to the archive files under /db05. These archive files contain required copies of redo logs that are overwritten by Oracle along with the backup files under /ctm_backup.
- Perform a hot backup regularly, especially after completing a significant amount of work. Regular backups reduce the number of archive files to save.
- In a stable network, it is recommended that you perform both a hot backup and a full export. Before the first backup, remove all nonessential files from the /ctm_backup and /db05 directories.
- After a hot backup, save all files in the /db05 and /ctm_backup directories in a safe place.

Use the following guidelines for restoring the database:

- After using a hot backup to restore or recover the database, all previous backups become obsolete. It is recommended that you perform a hot backup after a restore, when all previous backups can be safely removed.
- Restore the database on the same workstation where the backup was performed. This is particularly important in high availability configurations.

Use the following guidelines for managing the archive log:

- It is important to store safely the archive files that are produced *after* a hot backup.
- To avoid generating many archive files that must be saved on disk or tape, perform a hot backup on a regular basis. Regular backups facilitate the restore/recovery operation by reducing the number of archive files to save.

4.2.3.2 Monitoring the Growth of the /ctm_backup Directory

Because it is not possible to estimate the rate of production of archive files, the /ctm_backup directory might exhaust the available disk space. Without disk space, the Oracle archive process cannot archive the redo logs to be overwritten, and the database freezes. The archive redo logs, which are vital to restore and recover a database, should be saved in a safe place. You might want to create a cron job to save your data.

4.2.3.3 Understanding Cold Backup

A cold backup is the safest way to take a snapshot of the database. In a cold backup, the Prime Optical server is stopped; then, the Oracle database is shut down. The database contents and the directories /db01, /db02, /db03, /db04, and /db05 are copied to a tape or storage device.

A cold backup has the following advantages:

- Thorough, safe physical backup of the database.
- Simple to complete using basic operating system (OS) commands and by copying all of the files and the directory structure of /db01, /db02, /db03, /db04, and /db05.

A cold backup has the following disadvantages:

- Because you take a physical copy of the entire database at a specific time while Prime Optical and Oracle are down, the database image is not updated with subsequent modifications.
- A cold backup requires you to shut down Prime Optical, during which time network monitoring is unavailable.

There is no recommended procedure to perform a cold backup; instead, your database administrator determines the exact steps. Use the following guidelines:

- Take a cold backup before any activities that could cause problems with Prime Optical or your OS (for example, before installing an Oracle patch or upgrading your Prime Optical version).
- Take a cold backup after important changes.
- Create a .tar file of all of the structures in $ORACLE_HOME and include it with the cold backup files.

4.2.3.4 Understanding Export

An export is a logical copy of the database objects on a single *.dmp file. You can export the database from the GUI (see 4.2.5 Exporting the Prime Optical Database from the Prime Optical GUI, page 4-13). You can also export the database from the CLI, using the export_full_db.sh script (see 4.2.6 Backing Up or Exporting the Prime Optical Database from the CLI, page 4-14).

When exporting the database, all of the constraints are removed; then, the objects and constraints are recreated. It is recommended that the Prime Optical server be shut down during the export operation.

An export has the following advantages:

- It is relatively easy to take a logical snapshot of the database contents at a specific time.
- There is no Oracle downtime.
- The restore operation is simple and can be applied on different servers (with the correct database schema).

An export has the following disadvantages:

- It is not a complete backup. If you have database corruption that you cannot recover from, you must recreate the database and then repopulate it with a full export.
- To avoid inconsistencies, you must stop the Prime Optical server.

Use the following general guidelines when exporting the database:

- An export is useful to re-establish the previous contents of the database. Use an export when you plan a critical modification or to eliminate fragmentation.

  For example, export the database before migrating from a single-server Prime Optical configuration (where the Prime Optical server and database are on the same workstation) to a dual-server Prime Optical configuration (where the Prime Optical server and database are on separate workstations).

- If you want to restore a database backup that was exported before you migrated to a later Prime Optical version, you must reinstall the earlier Prime Optical version in order to maintain the earlier Prime Optical database schema. Whenever you restore a database, you must restore it on the same Prime Optical version from which it was created. Otherwise, the restored data does not match the current database schema and Oracle cannot interpret the data.
- Export the database only after the Prime Optical server is stable; for example, after the first network discovery is complete. Doing so ensure that you have an accurate snapshot of your entire network configuration.

4.2.4 Backing Up the Prime Optical Database from the Prime Optical GUI

If your database is in ARCHIVELOG mode, you can perform a hot database backup or a database export. If your database is not installed in ARCHIVELOG mode, you can only perform a database export.

Prime Optical uses the /ctm_backup directory as the default backup directory.

To perform a hot database backup, complete the following steps:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Database Properties** to open the Database Properties pane. Table 4-1 provides descriptions.

Step 3 Click the **Database Operations** tab.

Step 4 In the Backup area, enter the sys password in the 'sys' Password field.

Step 5 (Optional) To back up additional database components, check any of the following check boxes in the Backup area:

- Oracle Installation—Backs up the entire Oracle installation directory.
- Solaris Configuration—Backs up the common Solaris configuration files used by the Oracle installation.
- Database Configuration—Backs up the operating system configuration files.
- All—Backs up all of the database components.

Note If you do not check any of the preceding check boxes, only the Prime Optical database is backed up.

Step 6 In the Backup area, click **Start**.

The backup log file is saved to /oracle/admin/*ORACLE-SID*/udump/backup_db.log. The log file contains all of the files that have been backed up.

Note If the backup is interrupted, you cannot start a new backup from a Prime Optical client; you must use the CLI. Launch the script /setDbBackupStatus.sh from the server as root where the database is installed, at the following location:

cd/opt/CiscoTransportManagerServer/bin

Note It is recommended that you protect your data by backing it up regularly. Backups can be stored on a local or network-mounted, disk-based file system; on a local tape drive; or on a remote tape drive. Commercially available tools for Oracle and system-level backup include:

- Legato Networker (or "Solstice Backup" when purchased from Sun Microsystems)
- VERITAS NetBackup
- BMC Software SQL Backtrack
- GNU Oraback.sh

4.2.5 Exporting the Prime Optical Database from the Prime Optical GUI

Caution Using the Prime Optical GUI to export the database could result in invalid or inconsistent data when other operations are performed on the database (for example, NEs are in service, alarms are being reported, or PM data is being collected). Whenever possible, use the CLI to export the database. If you use the GUI to export the database, verify the following *before* exporting the database:
— Only one Prime Optical client is connected to the Prime Optical server
— All NE and PM services are stopped

To perform a database export, complete the following steps:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Database Properties** to open the Database Properties pane. Table 4-1 provides descriptions.

Step 3 Click the **Database Operations** tab.

Step 4 Check any of the following check boxes in the Export area:

- Oracle Installation—Exports the entire Oracle installation directory.
- Solaris Configuration—Exports the common Solaris configuration files used by the Oracle installation.
- Database Configuration—Exports the operating system configuration files.
- All—Exports all of the database components.

Note If you do not check any of the preceding check boxes, only the Prime Optical database is exported.

Step 5 In the Export area, click **Start**.

The file is exported to the /ctm_backup/export_dir directory using the filename export_CTM*time-stamp*.dmp. The log file is named export_CTM.log.

4.2.6 Backing Up or Exporting the Prime Optical Database from the CLI

Prime Optical uses the /ctm_backup directory as the default backup directory.

Step 1 To perform a logical database backup (export) from the CLI, enter the following commands as the root user:

Note You can perform a logical database backup whether your database is running in ARCHIVELOG mode or in non-ARCHIVELOG mode.

Performing an export_full_db operation from the CLI requires you to shut down the Prime Optical server.

```
cd /opt/CiscoTransportManagerServer/bin
./export_full_db.sh
```

The file is exported to the /ctm_backup/export_dir directory using the filename export_CTM*time-stamp*.dmp. The log file is named export_CTM.log.

Step 2 To export the database and back up selected components, enter any of the following commands as the root user:

- **export_full_db.sh ORA_INST**—Exports the database and backs up the entire Oracle installation.
- **export_full_db.sh ORA_CFG_FILE**—Exports the database and backs up the configuration files, including init.ora, tnsnames.ora, listener.ora, and sqlnet.ora.
- **export_full_db.sh OS_CFG_FILE**—Exports the database and backs up the OS configuration files, including /etc/passwd, /etc/group, /etc/system, and /var/opt/oracle/oratab.
- **export_full_db.sh ALL**—Exports the database and backs up all of the preceding configuration files.

Step 3 To perform a full database hot backup, enter the following commands as the root user:

Note You can perform a hot database backup only if your database is running in ARCHIVELOG mode.

```
cd /opt/CiscoTransportManagerServer/bin
./backupdb.sh
```

The backup log file is saved to /oracle/admin/*ORACLE-SID*/udump/backup_db.log. The log file contains all of the files that have been backed up. Detailed logs of the export operation are located in the /ctm_backup/export_dir directory.

Step 4 To back up selected components, enter any of the following commands as the root user:

- **backupdb.sh ORA_INST**—Backs up the entire Oracle installation.
- **backupdb.sh ORA_CFG_FILE**—Backs up the configuration files, including init.ora, tnsnames.ora, listener.ora, and sqlnet.ora.
- **backupdb.sh OS_CFG_FILE**—Backs up the OS configuration files, including /etc/passwd, /etc/group, /etc/system, and /var/opt/oracle/oratab.

- **backupdb.sh ALL**—Backs up the database and all of the preceding configuration files.

4.2.7 Restoring the Prime Optical Database from the Previous Backup

Complete the following steps to restore the Prime Optical database from a hot database backup set or from an export.

Note The revert procedure will result in loss of local database information stored after the upgrade. In other words, a reverse database migration is not supported; rather, a backup copy of the original database is used.

Step 1 (*For HA configurations only; for non-HA configurations, begin at Step 2*) Enter the following commands on all of the clusters to freeze the ctmgrp service group:

```
haconf -makerw
hagrp -freeze ctmgrp -persistent
haconf -dump -makero
```

Step 2 Disconnect all of the Prime Optical clients and enter the following command to shut down the Prime Optical server, if it is running:

```
opticalctl stop
```

Step 3 To restore the database from a hot backup, log into the Prime Optical database workstation as the root user and enter the following commands:

```
cd /opt/CiscoTransportManagerServer/bin
./restore_db.sh backup-file-location backup-configuration-file log-directory
```

Note The default *backup-configuration-file* location is /ctm_backup/backup_conf.cfg. The restore_db.sh script uses the latest backup to restore the database.

Step 4 Enter the following command to manually restart the Prime Optical server:

```
opticalctl start
```

Note The Prime Optical server does not restart automatically after restoring the database.

Step 5 (*For HA configurations only; for non-HA configurations, skip this step*) After the Prime Optical server restarts, enter the following commands on all of the clusters to unfreeze the ctmgrp service group:

```
haconf -makerw
hagrp -unfreeze ctmgrp -persistent
haconf -dump -makero
```

Step 6 To restore from an export dump file, enter the following commands to import the database:

Caution Be sure to disable ARCHIVELOG mode before you import the database. If you do not disable ARCHIVELOG mode, the /db05 directory could fill up.

```
cd /opt/CiscoTransportManagerServer/bin
./import_full_db.sh export-file-location export-configuration-file log-directory
```

The default location of the configuration file is /ctm_backup/export_conf.cfg.

4.2.8 Pruning the Prime Optical Database

Database pruning is critical to Oracle server performance. If the Prime Optical database files grow too large, it creates extra work for Oracle to insert or remove records from the middle of the database. This section describes how to set the time and date for automatic database pruning and how to use pruning scripts.

4.2.8.1 Setting the Time and Date for Automatic Pruning

Choosing to prune the database automatically prunes daily all PM, FM, Audit Log, Error Log, audit trail, self monitor, and job monitor data older than the specified retention period.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Database Properties** to open the Database Properties pane.

Step 3 Click the **Pruning** tab.

Step 4 Check the **Enable** check box for each field as desired, and set the number of days and time of pruning.

Consider scheduling database pruning for the middle of the night, when Prime Optical is least busy. It is helpful to schedule each pruning activity to start separately, with some time between each pruning script. For example, you might start pruning at midnight and allow 30 to 45 minutes for each pruning activity before starting the next one.

Note that the start time for pruning activities is set according to Greenwich Mean Time (GMT), not local time.

Step 5 After making the selections, click **Save**. Changes take effect immediately.

4.2.8.2 Using Pruning Scripts

Aside from automatic pruning, you can also prune Prime Optical data from the Oracle database at any given time by running database pruning scripts. Pruning scripts allow you to prune the following types of data:

- Audit Log data
- Audit trail data
- Error Log data
- FM data
- All PM data
- NEs and all related information
- Self Monitor table data

Complete the following steps to prune Prime Optical data using pruning scripts:

Step 1 Log in as the root user on the Sun Solaris workstation where the Prime Optical server is installed.

Step 2 Enter the following command to change directories to the Prime Optical server bin directory:

```
cd /opt/CiscoTransportManagerServer/bin
```

Step 3 Enter the following command to see a list of pruning scripts:

```
ls -al prune*
```

Step 4 Select a script and a parameter (based on database pruning) and enter the corresponding command on the UNIX shell.

For example, to prune Error Log data older than 25 days, enter:

```
./prune_errlog.sh 25
```

The following table lists parameters that can be passed to the following scripts, and the tables that are affected:

- Prune Audit Log data
- Prune Error Log data
- Prune FM data
- Prune audit trail data
- Prune Job Monitor table data
- Prune Self Monitor table data

Table 4-3 Parameters for Database Pruning: Multiple Scripts

Tables Affected	Input Parameters	Remarks
Prune Audit Log Data Script (prune_auditlog.sh)		
transaction_log_table	No. of days (1 to 1000)	Removes all Transaction Log entries that were created before *n* days.
Prune Error Log Data Script (prune_errlog.sh)		
error_log_table	No. of days (1 to 1000)	Removes all Error Log entries that were created before *n* days.
Prune FM Data Script (prune_fm.sh)		
alarm_event_table	No. of days (1 to 1000)	Removes all alarm and event entries that were created before *n* days.
active_alarm_table	No. of days (1 to 1000)	
Prune Audit Trail Data Script (prune_audittrail.sh)		
ne_audit_trail_table	No. of days (1 to 1000)	Removes all NE audit trail entries that were created before *n* days.
PruneJob Monitor Table Script (prune_admin_job_table.sh)		
admin_job_table	No. of days (1 to 1000)	Removes all job monitor entries that were created before *n* days.

Table 4-3 Parameters for Database Pruning: Multiple Scripts (continued)

Tables Affected	Input Parameters	Remarks
Prune Self Monitor Table Script (prune_server_monitor.sh)		
server_monitor_table	No. of days (1 to 1000)	Removes all self monitor entries that were created before *n* days.

Table 4-4 lists parameters that can be passed to the prune_pm.sh script, and the tables that are affected. The prune_PM.sh script removes all PM entries that were created before *n* days.

Note Based on the value of "Is 24 flag," Prime Optical prunes 15-minute data, 1-day data, or both 15-minute and 1-day data. If the "Is 24 flag" value is blank, Prime Optical prunes both 15-minute and 1-day data.

Table 4-4 Parameters for Database Pruning: Prune PM Data Script (prune_pm.sh)

Tables Affected	Input Parameters
ONS15454_DS3_PM_TABLE	• No. of days (1 to 1000) • Is 24 flag (where 0 = 15 min, 1 = 1 day, and 2 = both 15 min and 1 day)
ONS15454_SONET_PATH_PM_TABLE	
ONS15454_SONET_LINE_PM_TABLE	
ONS15454_SONET_SEC_PM_TABLE	
ONS15454_ENET_PM_TABLE	
ONS15454_DS1_PM_TABLE	
ONS15454_Sonet_VT_PM_Table	
ONS15454SDH_RS_PM_Table	
ONS15454SDH_MS_PM_Table	
ONS15454SDH_HO_PM_Table	
ONS15454SDH_LO_PM_Table	
ONS15454SDH_E1_PM_Table	
ONS15454SDH_E3_PM_Table	
ONS15454SDH_E4_PM_Table	
ONS155XX_SONET_SEC_PM_TABLE	
ONS155xx_Phy_PM_Table	
ONS155xx_Opt_Power_PM_Table	
ONS155xx_CDL_PM_Table	
ONS155xx_Ether_Hist_PM_Table	
ONS155xx_FCM_PE_PM_Table	
ONS15600_Sonet_Sec_PM_TABLE	
ONS15600_Sonet_Line_PM_Table	
ONS15600_Sonet_Path_PM_Table	
ONS15454_PHY_LAYER_PM_Table	
ONS15454_POS_PM_Table	
ONS15454_OTN_SEC_PM_Table	
ONS15454_OTN_PATH_PM_Table	
ONS15454_OTN_FEC_PM_Table	
ONS15600SDH_RS_PM_Table	
ONS15600SDH_MS_PM_Table	
ONS15600SDH_HO_PM_Table	
ONS1530x_RS_PM_TABLE	
ONS1530x_MS_PM_TABLE	
ONS1530x_HO_PM_TABLE	
ONS1530x_LO_PM_TABLE	
ONS1530x_IP_PM_TABLE	

Table 4-5 lists parameters that can be passed to the prune_ne.sh script, and the tables that are affected. The prune_ne.sh script removes all information about the NE from the database. Use this script with extreme caution.

Caution Before running the script, shut down all Prime Optical clients and the Prime Optical server.

Table 4-5 Parameters for Database Pruning: Remove an NE Script (prune_ne.sh)

Tables Affected	Input Parameter
ACTIVE_ALARM_TABLE	NE SYS ID
ADDITIONAL_DEVICE_INFO	NE SYS ID
ADMIN_JOB_TABLE	NE SYS ID
ALARM_COUNT_TABLE	NE SYS ID
ALARM_EVENT_TABLE	NE SYS ID
APS_GROUP_TABLE	NE SYS ID
AUDIT_LOG_TABLE	NE SYS ID
CERENT_NE_GROUP_TABLE	NE SYS ID
CIRCUIT_DEST_TBL	NE SYS ID
CIRCUIT_SPAN_TBL	NE SYS ID
CIRCUIT_TBL	NE SYS ID
CIRCUIT_VCG_TBL	NE SYS ID
CIRCUIT_VLAN_TBL	NE SYS ID
DOMAIN_TABLE	NE SYS ID
EQPT_INFO_TABLE	NE SYS ID
EQPT_RELATIONSHIP_TABLE	NE SYS ID
IF_CROSS_CONNECT	NE SYS ID
IF_DWDM_CHANNEL_GROUP	NE SYS ID
IF_OPTICAL_PHY_CONFIG_TABLE	NE SYS ID
INTERFACE_APS_INFO	NE SYS ID
INTERFACE_DWDM_FREQUENCY	NE SYS ID
INTERFACE_STACK_TABLE	NE SYS ID
LINK_TABLE	NE SYS ID
MANAGED_ET_TAB	NE SYS ID
MAP_CUST_TABLE	NE SYS ID
MIB2_INTERFACE_TABLE	NE SYS ID
NE_AUDIT_TRAIL_TABLE	NE SYS ID
NE_INFO_TABLE	NE SYS ID
NE_INVENTORY_TABLE	NE SYS ID
NE_PORT_STATUS_TABLE	NE SYS ID
NE_SWIMAGE_TABLE	NE SYS ID

Table 4-5 Parameters for Database Pruning: Remove an NE Script (prune_ne.sh) (continued)

Tables Affected	Input Parameter
ONS15216_ACTIVE_USER_TABLE	NE SYS ID
ONS15216_NE_INVENTORY_TABLE	NE SYS ID
ONS15216_USER_TABLE	NE SYS ID
ONS1530X_HO_PM_TABLE	NE SYS ID
ONS1530X_IP_PM_TABLE	NE SYS ID
ONS1530X_LO_PM_TABLE	NE SYS ID
ONS1530X_MS_PM_TABLE	NE SYS ID
ONS1530X_NE_INVENTORY_TABLE	NE SYS ID
ONS1530X_RS_PM_TABLE	NE SYS ID
ONS15454SDH_E1_PM_TABLE	NE SYS ID
ONS15454SDH_E3_PM_TABLE	NE SYS ID
ONS15454SDH_E4_PM_TABLE	NE SYS ID
ONS15454SDH_HO_PM_TABLE	NE SYS ID
ONS15454SDH_LO_PM_TABLE	NE SYS ID
ONS15454SDH_MS_PM_TABLE	NE SYS ID
ONS15454SDH_RS_PM_TABLE	NE SYS ID
ONS15454_327_NE_TABLE	NE SYS ID
ONS15454_8B10B_PM_TABLE	NE SYS ID
ONS15454_ACTIVE_USER_TABLE	NE SYS ID
ONS15454_CBQOS_INFO_TABLE	NE SYS ID
ONS15454_CLASSMAP_PM_TABLE	NE SYS ID
ONS15454_COS_PM_TABLE	NE SYS ID
ONS15454_DS1_PM_TABLE	NE SYS ID
ONS15454_DS3_PM_TABLE	NE SYS ID
ONS15454_ENET_PM_TABLE	NE SYS ID
ONS15454_FC_PM_TABLE	NE SYS ID
ONS15454_IFX_PM_TABLE	NE SYS ID
ONS15454_MATCH_STMT_PM_TABLE	NE SYS ID
ONS15454_NE_INVENTORY_TABLE	NE SYS ID
ONS15454_OTN_FEC_PM_TABLE	NE SYS ID
ONS15454_OTN_PATH_PM_TABLE	NE SYS ID
ONS15454_OTN_SEC_PM_TABLE	NE SYS ID
ONS15454_PHY_LAYER_PM_TABLE	NE SYS ID
ONS15454_POLICE_PM_TABLE	NE SYS ID
ONS15454_POS_PM_TABLE	NE SYS ID
ONS15454_SONET_LINE_PM_TABLE	NE SYS ID

Table 4-5 Parameters for Database Pruning: Remove an NE Script (prune_ne.sh) (continued)

Tables Affected	Input Parameter
ONS15454_SONET_PATH_PM_TABLE	NE SYS ID
ONS15454_SONET_SEC_PM_TABLE	NE SYS ID
ONS15454_SONET_VT_PM_TABLE	NE SYS ID
ONS15454_USER_TABLE	NE SYS ID
ONS155XX_CDL_FLOW_CONFIG	NE SYS ID
ONS155XX_CDL_IF_CONFIG	NE SYS ID
ONS155XX_CDL_PM_TABLE	NE SYS ID
ONS155XX_CIRCUIT_CC_TBL	NE SYS ID
ONS155XX_CIRCUIT_PATH_TBL	NE SYS ID
ONS155XX_DCRP_TABLE	NE SYS ID
ONS155XX_DCRP_TABLE	NE SYS ID
ONS155XX_DISCOVERY_INFO_TABLE	NE SYS ID
ONS155XX_ETHER_HIST_PM_TABLE	NE SYS ID
ONS155XX_FCM_PE_PM_TABLE	NE SYS ID
ONS155XX_FLASH_DEVICE_TABLE	NE SYS ID
ONS155XX_GRANULAR_CC_TBL	NE SYS ID
ONS155XX_IF_CIRCUIT_PARAMS_TBL	NE SYS ID
ONS155XX_IF_OPTICAL_POWER	NE SYS ID
ONS155XX_IF_PHY_INFO_TABLE	NE SYS ID
ONS155XX_NE_INFO_TABLE	NE SYS ID
ONS155XX_OPT_POWER_PM_TABLE	NE SYS ID
ONS155XX_PATH_TBL	NE SYS ID
ONS155XX_PHY_PM_TABLE	NE SYS ID
ONS155XX_SONET_SEC_PM_TABLE	NE SYS ID
ONS15600SDH_HO_PM_TABLE	NE SYS ID
ONS15600SDH_MS_PM_TABLE	NE SYS ID
ONS15600SDH_RS_PM_TABLE	NE SYS ID
ONS15600_ENET_PM_TABLE	NE SYS ID
ONS15600_POS_PM_TABLE	NE SYS ID
ONS15600_SONET_LINE_PM_TABLE	NE SYS ID
ONS15600_SONET_PATH_PM_TABLE	NE SYS ID
ONS15600_SONET_SEC_PM_TABLE	NE SYS ID
OSS_ALARM_FLTR_TID_DENY_TBL	NE SYS ID
PM_HISTORICAL_APPOINTMENTS	NE SYS ID
PROXY_SERVER_TABLE	NE SYS ID
ROUTER_SONETAPS	NE SYS ID

Table 4-5 Parameters for Database Pruning: Remove an NE Script (prune_ne.sh) (continued)

Tables Affected	Input Parameter
ROUTER_SONETAPS_CHANNEL	NE SYS ID
SERVER_MONITOR_TABLE	NE SYS ID
SWAY_USER_PORT_TABLE	NE SYS ID
TCA_EVENT_TABLE	NE SYS ID
TRANSACTION_LOG_TABLE	NE SYS ID
UNMANAGED_NE_INVENTORY_TABLE	NE SYS ID
USER_MAP_TABLE	NE SYS ID
USER_MAP_TABLE_TEMP	NE SYS ID

4.2.9 Using the SQL*PLUS Client to Manage the Database

To access the database and Prime Optical schema objects, use the SQL*PLUS client that ships with Oracle products. The SQL*PLUS client is available for Microsoft Windows 2000 or NT 4.0 PCs or Sun Solaris workstations. Refer to the Oracle documentation to install and run the SQL*PLUS client on a Windows 2000 or NT 4.0 PC.

On a Sun Solaris workstation, the SQL*PLUS client is installed as part of the Oracle server installation. The following guidelines are for logging into SQL*PLUS as a Prime Optical user and managing Prime Optical schema objects and data. Refer to Oracle's *SQL*PLUS User's Guide and Reference* for a complete description.

Step 1 On the Sun Solaris workstation running Oracle, log in as the Oracle owner user. Use the username that was used when installing Oracle 10g.

Note To verify the username, enter the **id** command on the shell.

Step 2 Verify that the following UNIX environment variables for the Oracle user are set correctly:

- ORACLE_HOME
- ORACLE_SID
- PATH variable has $ORACLE_HOME/bin in the path
- LD_LIBRARY_PATH

Step 3 On the command line, enter the following command:

```
sqlplus ctmanager/password
```

Caution The default password is *Ctm123!* and any changes are saved in the CTMServer.cfg file. If you change the default password, the following caution is displayed: "Changing the database password will restart the Prime Optical server. Are you sure you want to continue?" Click **Yes** to confirm the action. The password is validated and the following message is broadcast: "Caution: The database password has been changed by a user. The Prime Optical server will restart in 15 seconds."

The message "Connected to: Oracle10g..." and the SQL> prompt should appear. If not, enter the username and password again.

Step 4 Upon connection to SQL*PLUS, enter any SQL command supported by Oracle. For a list of SQL commands supported by Oracle, refer to the *SQL*PLUS User Guide*.

4.2.10 Understanding Basic SQL Commands for Prime Optical Schema Objects

The following table lists commands that display, update, or modify Prime Optical schema objects. Run each command in SQL*PLUS by entering the command at the SQL> prompt.

Table 4-6 SQL Commands for Prime Optical Schema Objects

SQL Command	Description
`select * from user_tables;`	Returns a list of all table names owned by the ctmanager user.
`select * from user_views;`	Returns a list of all views owned by the Prime Optical user.
`describe ;`	Takes a *table-name* as a parameter (valid table names are those returned by the first two commands) and lists the name, type, and size of columns in the table.
`describe ;`	Takes a *view-name* as a parameter (valid view names are those returned by the first two commands) and lists the name, type, and size of columns in the view.
`select col1, col2… coln from table-name;`	Takes *col1….coln* and *table-name* as parameters and displays data for all the columns listed. To display data for all columns, use an asterisk (*) instead of col1, col2, and so on.
`select col1, col2... coln from table-name where col1 = value1 and col2 = value2...`	Takes *col1...coln* and *table-name* as parameters and displays data for all the columns listed that meet the condition specified in the "where" clause. For example, the command: `select nedbaccessid from ne_info_table where nesysid = 'ANGEL';` returns the value of column nedbaccessid from table ne_info_table for all rows for which nesysid = ANGEL.
`select col1, col2... coln from view-name where col1 = value1 and col2 = value2...`	Takes *col1...coln* and *view-name* as parameters and displays data for all the columns listed that meet the condition specified in the "where" clause.
`delete table-name;`	Takes *table-name* as a parameter and deletes the entire contents of the table. To make the change permanent, enter **commit;** at the SQL> prompt.

4.2.11 Using the Prime Optical Interactive Database Console to Manage the Database

To access the database and Prime Optical schema objects, use the Prime Optical Interactive Database Console. The database console is used when the server is installed with an embedded database.

Get the Prime Optical Interactive Database Console from the Prime Optical Client service folder at one of the following locations (where xxx is the build number):

- Under the Windows folder at C:\Cisco\PrimeOptical_9.6_xxx\DB_Console
- Under the Solaris/Linux folder at C:\Cisco\PrimeOptical_9.6_xxx/DB_Console

4.2.11.1 Executing the Prime Optical Interactive Database Console

The Prime Optical Interactive Database Console tool is a Java application that you execute by running runme.bat (Windows) or runme.sh (Solaris/Linux). JRE 1.6 or higher is required to execute DB Console. Go to the Java website to obtain the latest version of Java Runtime Environment for your operating system.

4.2.11.2 Connecting to the Database

Complete the following steps to connect to the database:

Step 1 Choose **Session > Connect**.

Step 2 In the Hostname field, enter the hostname of the server or the IP address.

Step 3 Click **Connect**.

Note You must connect to the database through a special database user login. Using this login, you will only be able to view tables and other objects in the embedded database. You will not have read/write access.

4.2.11.3 Managing the Database Using the Prime Optical Interactive Database Console

Interactive Database Console is a command-line interface (CLI) that allows you to browse the database tables.

To get a list of allowed commands, execute the following command in the CLI:

```
help
```

To get the detailed synopsis and description of a specific command, execute the following command in the CLI:

```
help <command>
```

The following example shows output for the **import** command:

```
ctmreadonly@oracle:jeeg#1> help import
SYNOPSIS
```

```
    import from <filename> into <tablename> columns (col1[:type][,col2[:type]])
[column-delim "\t"] [row-delim "\n"] [encoding <encoding>] [start-row <number>]
[row-count|end-row <number>]
    col could be a column name or '-' if the column is to be ignored
    the optional type can be one of [string,number,date]

DESCRIPTION
    Import the content of the file into table according to the format
    If the filename ends with '.gz', the
    content is unzipped automatically
```

Table 4-44 lists the aliases that already exist to enable you to check the status of the Prime Optical database:

Table 4-7 Aliases for Checking the Prime Optical Database

Alias	Description
export <table>	Export the contents of a given table.
list_indexes	List all the indexes that Prime Optical DB uses.
list_jobs	List all the Prime Optical scheduled jobs with scheduling details.
list_nes	List all the NEs present in Prime Optical DB.
list_objects	List all the DB objects (tables, views, indexes, and so on.)
list_sequences	List all the DB sequences.
list_tasks	List all the DB tasks.
ls	List all the DB table names.
search_invalid_indexes	Search the DB for invalid indexes.
search_invalid_objects	Search the DB for invalid objects.
search_property	Search the CTM_CONFIG_TABLE.
size <table>	Count the number of rows in a given table.

The Database Interactive Console supports automatic command completion (Tab key), and command history (up/down arrow). To clear command history, choose **Edit > Clear History**.

4.2.11.4 Launching Batch Scripts

To launch automatic scripts, choose **File > Load Script**.

A batch script can contain any number of allowed commands. DB_Console includes an example script named report.txt that collects information on the status of the Prime Optical database.

4.2.11.5 Setting Preferences for the Prime Optical Interactive Database Console

Complete the following steps to set the preferences for the Interactive Database Console:

Step 1 Choose **Edit > Preferences.**

Step 2 In the General tab, set preference for the following:

- Default Hostname or IP Address
- Database Schema ID (SID)

- Screen Buffer Size

Step 3 In the Font and Color tab, set preferences for the following:

- Font color
- Background color
- Foreground color

Step 4 Click **Apply**. For some changes (for example, default host or screen buffer) to take effect, you must restart the application.

4.2.12 Regenerating Statistics in the Database

Internal Oracle statistics allow Oracle to work efficiently, especially during data query operations. If there is Prime Optical system performance degradation during normal database activities, the database might be using stale statistics. The database statistics should be regenerated to improve system performance, either before or after a significant system workload.

In Oracle 10g, the statistics are automatically regenerated every night. The Prime Optical installation uses the default settings of Oracle 10g. If you need to change the statistics regeneration schedule, refer to the official Oracle 10g documentation for instructions on how to change the settings.

4.2.13 Cleaning Up the Disk and Maintaining Disk Space on the Prime Optical Server

It is important to clean up the disk and maintain disk space on the Prime Optical server. To maintain an efficient server and maximize performance, you must delete unnecessary files and retain only the minimum number of files. For detailed information, see Clean Up the Disk and Maintain Disk Space on the CTM Server.

4.3 How Do I Manage the Network Software?

Follow the procedures described in this section to upgrade the Cisco Transport Controller (CTC) binary file and download new or modified images to supported NEs.

4.3.1 Transferring Images

You can transfer NE binary software images from the client file system into an appropriate NE software repository in the Prime Optical server, to make the images available for selection when requesting a software download.

Use the Image Transfer dialog box to transfer software images to the following NEs:

- ONS 15216 EDFA
- ONS 15216 EDFA2
- ONS 15216 EDFA3
- ONS 15305 (including the CTC-based ONS 15305 R3.0)

- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH
- ONS 15327
- ONS 15454 SONET
- ONS 15454 SDH
- ONS 15530
- ONS 15540 ESP and ESPx
- ONS 15600 SONET
- ONS 15600 SDH

To transfer images into an appropriate NE software repository:

Step 1 In the Domain Explorer, select an NE and choose **Administration > Image Transfer**. The Image Transfer dialog box opens.

Step 2 Select the source files from the Local File Selection list.

Step 3 Click **Browse** to locate files that are not visible in the field. You can select multiple files from the local machine for the upload process.

Step 4 To remove a file from the Local File Selection list, select the file from the list and click **Delete**.

Step 5 Select the NE-specific folder from the Prime Optical server drop-down list to choose where to transfer the image.

Step 6 To remove a file that is already present on the Prime Optical server, select the file from the list and click **Delete**.

Step 7 Click **Upload**.

Note If you cancel the image transfer process while it is in progress, only the files that have already been transferred at the time of cancellation are retained. The current file being transferred and other pending files are canceled.

4.3.2 Software Management

Use the Software Management wizard to download software images to the following NEs:

- ONS 15216 EDFA2 (R2.3.0 and later)
- ONS 15216 EDFA3
- ONS 15305 (not supported for the ONS 15305 R3.0)
- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH

- ONS 15327
- ONS 15454 SONET
- ONS 15454 SDH
- ONS 15530
- ONS 15540 ESP
- ONS 15540 ESPx
- ONS 15600 SONET
- ONS 15600 SDH

Follow the procedures described in this section to download new or modified images to NEs.

Usage Notes:

- Refer to the appropriate NE documentation for precautions and guidelines before performing an NE software upgrade.
- Before updating the software image on an NE, check the Prime Optical release notes to verify whether the NE software release is supported by Prime Optical. See the "Prime Optical-Supported NE Software Releases" table in the release notes at *http://www.cisco.com/en/US/products/ps11670/tsd_products_support_series_home.html*.
- If a software download has a status of Queued, and if it has a task in the running list, the download cannot be canceled.
- If you mark an NE as an Out of Service while a software download is in progress on that NE, the software download might not complete successfully.
- To download software images to NEs, it is recommended that the data communications network (DCN) bandwidth be 56 kb/s or higher. If DCN bandwidth is less than 56 kb/s, software download might take an extended period of time. For example, a typical ONS 15327 software image is approximately 2.5 MB. If a 2.5-MB file is downloaded to a single NE over a 19.2-kb/s link, it will take 15 to 30 minutes depending on the volume of traffic. Performing software downloads in parallel increases the length of time by a multiple of the number of NEs targeted.
- The latest ONS 15216 EDFA2 R2.4 hardware does not support software download to a software release other than 2.4.0. The ONS 15216 EDFA2 R2.3 hardware supports software download for NE software releases 2.3 and 2.4.

4.3.2.1 Downloading Software Images to ONS 15216, ONS 153xx, ONS 15454, and ONS 15600 NEs

Step 1 In the Domain Explorer tree, select a management domain or group that contains NEs that are assigned an In Service or Under Maintenance operational state. Alternatively, select an NE that is assigned an In Service or Under Maintenance state.

Note Only one software download can occur on a specific NE at any given time.

Step 2 Choose **Administration > Software Management > Optical**. The Software Management wizard opens. Table 4-8 provides descriptions.

Step 3 Enter the following information:

- NE model

- NEs
- Source
- Job comments
- Time

Caution If the Prime Optical client and server run on the same machine and thus the local source directory is the same as the default destination directory, an error message is generated. To retrieve the software image selected from the local source directory, navigate to the appropriate path and restore it from the *software-image-name.old* file.

Step 4 Click **Finish** to initiate the software download to the standby memory on the NE.

Step 5 To activate the new image automatically, select **Reboot and Activate**. If Reboot and Activate is selected, the NE is rebooted with the newly downloaded image. If Reboot and Activate is not selected, you can activate the image later from the Flash File table.

Step 6 Select the following information:

- NEs
- Flash banks

Note To view information about the files stored in the flash bank of the NE, click **Flash File Table** at the bottom of the wizard. The Flash File table shows the flash bank names and the name and status for each stored file.

Note The currently active flash bank is unavailable; users cannot download to the active flash bank.

Step 7 Click **Finish**. The image will be downloaded to all of the NEs in the Selected Downloads list.

Prime Optical stores two software versions: active and standby. When you download software, it is saved as the standby version.

Step 8 To check the status of the download job or verify that the download job was successful:

a. Check the Job Monitor table (**Administration > Job Monitor**).

b. Select the NE and check the Software Version field of the Equipment Inventory table (**Configuration >** *NE-model* **> Equipment Inventory Table**).

c. Select the NE and check the Active Software Filename field in the NE Software table (**Administration > NE Software Table**) for the software image version.

Note To download software to an ONS 15216 EDFA3 NE using the Server option, first choose **Administration > Image Transfer**. The Image Transfer dialog box opens. The image will be copied from the local file system in the directory specified in the Prime Optical Server area. Choose **Cisco ONS 15216 EDFA3** from the drop-down list; then, click **Upload**. Then, choose **Administration > Software Management > Optical**. The Software Management wizard opens with the Server radio button enabled.

Table 4-8 Field Descriptions for the Software Management Wizard

Field	Description
NE Model	Select the NE type to which you want to download software. The type you select determines the NEs that are displayed under Network Elements.
Network Elements	Use the **Add** and **Remove** buttons to move NEs to the Selected NEs list or remove NEs from the list. Software will be downloaded to NEs in the Selected NEs list.
Source	Specify the location of the software: • **Local** allows you to select an image on the current client system. • **Server** allows you to select an image on the Prime Optical server to which your client is connected. The Server radio button is not active unless an image file exists on the server. • **Remote** allows you to select an image on another network server that has TFTP or FTP configured and running. Specify the IP address of the server and the fully qualified pathname of the image, relative to the tftpboot directory. Remote is the only selectable source option for the ONS 15305 (earlier than R3.0). **Note** If the Remote TFTP Server option is selected for ONS 15216 EDFA2, the software image that you are downloading must have been saved in the default directory, such as the tftpboot directory on the remote TFTP server. **Note** The tftpboot directory must have read-write access, or the software download will fail. See Chapter 3, "Building the Network" for information about how to configure the TFTP directory with read-write access.
Job Comments	Enter comments about the software download.
Time *(time zone)*	Set a time for the download. Click **Now** to begin downloading immediately, or click **At Time** and specify when to begin downloading, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.
Software Download Pane 2 for ONS 15530 and ONS 15540 NEs	
Image File Size	The size of the image file. If you are downloading from a remote TFTP server, the size of the image file is not available.
Cancel job if CPU state changes	Allows you to cancel the job if the CPU state changes between the time the job is scheduled and the time the job is executed.
Activate image on next reload	Activates the image the next time the NE is rebooted.
Reload	Reboots the NE right after activation so the new image takes effect immediately. If an active CPU is reloaded, this option will cause a switchover if a standby CPU is present. Otherwise, service might be disrupted until the CPU reboots.
Switchover after downloading and reloading standby	(Available only when you choose the "Activate image on next reload" and "Reload" options.) This option applies only when downloading to the standby CPU. Switchover to standby occurs after downloading to and reloading the standby CPU; the standby CPU becomes active and runs the newly downloaded image.
Selected NEs	NEs that will receive downloaded software. When you select an NE from this list, information about the available flash partitions on the NE is displayed in the Flash Partition Data area, and you can select a partition.

Table 4-8 Field Descriptions for the Software Management Wizard (continued)

Field	Description
Flash Partition Data	The flash partitions available for storing the downloaded image on the selected NE: • CPU Slot No.—Slot number of the CPU that contains the flash device. • Status—Status of the CPU (active or standby). • Name—Name of the flash partition; partitions on the standby CPU are indicated by *sby*. • Total Size—Total size of the partition, in bytes. • Available—Number of free bytes in the partition. If you select a partition that does not have enough space to store the image, a warning message is displayed.
Selected Downloads	The NEs selected for image download and the flash bank you selected for each NE. To see details about flash memory, select an NE and click **Flash File Table**. To remove an NE from the Selected Downloads list, select the NE and click **Drop**.

4.3.2.2 Downloading Software Images for ONS 15530 and ONS 15540 NEs

This section contains procedures for:

- Downloading software images on single-CPU NEs
- Downloading software images for dual-CPU NEs

Note Before downloading software on an ONS 155xx NE, verify that a read-write community string is available for the NE in the ONS 155xx SNMP Settings table. If there is no read-write community string available, the software download fails with a “No write access” or “Request timed out” error message.

4.3.2.2.1 Downloading Software Images on Single-CPU NEs

Step 1 In the Domain Explorer tree, select one of the following:

- A management domain or group that contains ONS 15530 or ONS 15540 NEs that are in service or under maintenance.
- An ONS 15530 or ONS 15540 NE that is in service or under maintenance.

Step 2 Choose **Administration > Software Management > Optical**. The Software Management wizard opens (see Table 4-8). Enter the following information:

- NE model
- NEs
- Source
- Job comments
- Time

Note The **Server** radio button is not active unless the relevant subdirectory in the /$CTMHOME/images/ directory contains an image file. The subdirectories are named Cisco_ONS15530, Cisco_ONS_15540_ESP, and Cisco_ONS_15540ESPx.

Caution If the Prime Optical client and server run on the same machine and thus the local source directory is the same as the default destination directory, an error message is generated. To retrieve the software image selected from the local source directory, navigate to the appropriate path and restore it from the *software-image-name.old* file.

Step 3 Click **Next**.

Step 4 Use the Image File Size field to determine which flash partition has enough free space to hold the image.

Step 5 Select desired image download options.

Step 6 Select the following information:

- NEs
- Flash partitions

Note If a flash partition is selected before displaying the Flash File table, information is shown about the files on that partition only.

Step 7 Click **Finish**. Downloads will be performed for all the NEs in the Selected Downloads list.

Note If a partition that has insufficient space is selected, a warning message appears when the **Finish** button is clicked. Decide whether or not to proceed with the download. This check for free space is not performed for the remote server option.

After validating the image, the Prime Optical server transfers the image to the selected flash partition through TFTP. When the transfer is completed, the configuration register value is set to 0x02 for automatic booting and the boot command is modified to put the downloaded image first on the list.

If the reload option is selected, the NE is rebooted with the newly downloaded image.

If the image option is activated, the new software image is activated. If this option is not selected, activate the image from the Flash File table. (See 4.3.4 Using the Flash File Table, page 4-36.)

Step 8 To check the status of the download job or verify that the download job was successful:

a. Check the Job Monitor table (**Administration > Job Monitor**).

b. Select the NE and check the Software Version field of the Equipment Inventory table (**Configuration > ONS 155XX > Equipment Inventory Table**).

c. Select the NE and check the Active Software Filename field in the NE Software table (**Administration > NE Software Table**) for the software image version.

4.3.2.2.2 Downloading Software Images for Dual-CPU NEs

Consider the following recommendations when downloading software images for dual CPUs:

- Update the standby CPU first and choose the switchover option. This ensures that the new image will run on an active CPU with minimum system interruption.
- Either update the second CPU immediately after updating the first one, or schedule the second CPU for downloading after the image has run successfully for some time on the first CPU.

Complete the following steps to download software images for dual CPUs:

Step 1 In the Domain Explorer tree, select one of the following:

- A management domain or group that contains ONS 15530 or ONS 15540 NEs that are in service or under maintenance.
- An NE that is in service or under maintenance.

Step 2 Select **Administration > Software Management > Optical**. The Software Management wizard opens. Enter the following information:

- NE model
- NEs
- Job comments
- Source
- Time

Note The **Server** radio button is not active unless the relevant subdirectory in the /$CTMHOME/images/ directory contains an image file. The subdirectories are named Cisco_ONS15530, Cisco_ONS_15540_ESP, and Cisco_ONS_15540ESPx.

Caution If the Prime Optical client and server run on the same machine and thus the local source directory is the same as the default destination directory, an error message is generated. To retrieve the software image selected from the local source directory, navigate to the appropriate path and restore it from the *software-image-name.old* file.

Step 3 Click **Next**.

Step 4 Check the Image File Size field against the list of flash partitions to determine which flash partition has enough free space to hold the image.

Step 5 Select desired image download options.

Note Before the image is activated, the Prime Optical server checks the state of the standby CPU. If the standby CPU is not in hot standby mode, the update operation is aborted after the image is downloaded. For more information, refer to the hardware documentation for information about updating with system images that are not hot-standby compatible.

Note If the “Switchover after downloading and reloading standby” option is selected, the image will always be downloaded to the selected CPU slot number. For example, assume that slot 6 is standby and the sby-bootflash (standby) partition is chosen. If a switchover occurs between job scheduling and job execution and slot 6 becomes active, the image will be downloaded to the slot 6 bootflash partition.

Step 6 Select the following information:

- NEs
- Flash partitions

Note If a flash partition is selected before displaying the Flash File table, information is shown about the files on that partition only.

Step 7 Click **Finish**. Downloads will be performed for all the NEs in the Selected Downloads list.

Note If a partition that has insufficient free space is selected, a warning message appears. Decide whether or not to proceed with the download. This check for free space is not performed for the remote server option.

After validating the image, the Prime Optical server transfers the image to the selected flash partition through TFTP. When the transfer is completed and the standby CPU is in hot standby mode, the configuration register value is set to 0x02 for automatic booting and the boot command is modified to put the downloaded image first on the list. If the reload option is chosen, the standby CPU is reloaded.

If the switchover option is selected, a switchover from the active CPU to the standby CPU is performed after reloading the standby CPU. The former standby CPU, which is now the active CPU, will run the newly downloaded image.

If the Activate option is not selected, activate the new image from the Flash File table. (See 4.3.4 Using the Flash File Table, page 4-36.)

Step 8 After updating the standby CPU (which is now the active CPU), use the same procedure to update the formerly active CPU (which is now the standby CPU), with one difference: there is no need to select the switchover option because the current active CPU is already running the new image.

Step 9 To check the status of the download job or verify that the download job was successful:

a. Check the Job Monitor table (**Administration > Job Monitor**).

b. Select the NE and check the Software Version field of the Equipment Inventory table (**Configuration > ONS 155XX > Equipment Inventory Table**).

c. Select the NE and check the Active Software Filename field in the NE Software table (**Administration > NE Software Table**) for the software image version.

4.3.3 Scheduling Bulk Software Activation

Use the Bulk Software Activation dialog box to schedule software activation for multiple NEs simultaneously. Bulk software activation is supported on NEs that support the Revert/Switch operation: ONS 15216 EDFA2, ONS 15216 EDFA3, ONS 15305, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, ONS 15600 SDH.

Step 1 In the Domain Explorer tree, select a management domain or group that contains NEs that are assigned an In Service or Under Maintenance operational state. Alternatively, select one or more NEs that are assigned an In Service or Under Maintenance state.

Step 2 Choose **Administration > Bulk Software Activation**. The Bulk Software Activation dialog box opens. The following table provides descriptions.

Note You can also launch the dialog box by selecting one or more rows in the NE Software table and choosing **Edit > Commit**.

Step 3 In the dialog box, select the NEs for which you want to activate software, enter any comments about the job, and specify the time for the software activation to occur.

Caution If you try to activate a software version that Prime Optical does not support, the following caution is displayed: "Caution: You are about to revert to an unsupported software version for the following NEs: *NE-versions*. Do you want to continue?"

If you activate an unsupported NE software version, the Prime Optical server might not communicate with one or more NEs in the domain, causing erroneous behavior.

Step 4 Click **OK**.

To view the results of the bulk software activation, check the Job Monitor table (**Administration > Job Monitor**).

Table 4-9 Field Descriptions for the Bulk Software Activation Dialog Box

Field	Description
Network Elements	Use the **Add** and **Remove** buttons to move the NEs for which you want to activate software to the Selected NEs list, or to remove NEs from the list.
Job Comments	Enter comments about the software activation, if needed.
Time *(time zone)*	Set a time for the bulk software activation. Click **Now** to begin software activation immediately, or click **At Time** and specify when to begin software activation, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

4.3.4 Using the Flash File Table

Use the Flash File table to activate a downloaded image and manipulate the files in the ONS 155xx NE flash memory.

Step 1 From the Domain Explorer, select an NE; then, select **Administration > ONS 155XX > Flash File Table**. The following table describes the fields in the Flash File table.

Step 2 Perform any of the functions listed in Table 4-11.

Table 4-10 Field Descriptions for the Flash File Table

Field	Description
Flash Partition Name	Name of the flash partition that contains the flash file.
Filename	Name of the flash file.
File Status	Status of the flash file: • Deleted—The file is marked as deleted. • Invalid Checksum—The file has an invalid checksum. • Valid—The file is valid.
File Size	Size of the file, in bytes.
File Checksum	File checksum stored in the file header. The checksum is computed and stored when the file is written into the flash partition and serves to validate the data in the file. A file is marked as having an invalid checksum if any checksum mismatch was detected while writing or reading the file. Incomplete files (files truncated because of either a lack of free space or a network download failure) are also written with a bad checksum and marked as invalid.

Table 4-11 Flash File Table Functions and Supported ONS 15530 and ONS 15540 NEs

Function	Procedure	Supported on ONS 15530?	Supported on ONS 15540 ESP and ONS 15540 ESPx?
Activate an image	Select the file and choose **Edit > Activate**. The image is activated, and the NE reboots.	Yes	Yes
Verify file checksum	Select the file and choose **Edit > Verify**.	Yes	Yes
Mark a file as deleted	Select the file and choose **Edit > Delete**. The status of the file changes to Deleted. The file is not actually deleted until the Squeeze function is used.	Yes	Yes
Mark a file as undeleted	Select a file that is marked Deleted and choose **Edit > Undelete**.	Yes	Yes
Physically remove a file	Select a file that is marked Deleted and choose **Edit > Squeeze**.	Yes	Yes

4.3.5 Viewing Software Versions and Restarting the NE with a New Software Image

The NE Software table lists the software that is installed on an NE. Use the Edit menu options to restart an NE with a new software image.

Tip Back up the NE database before activating or reverting to the standby software image on the NE.

Caution If you try to activate, revert, or switch to a software version that Prime Optical does not support, the following caution is displayed: "Caution: You are about to revert to an unsupported software version: *version-number*. Do you want to continue?"

If you activate, revert, or switch to an unsupported NE software version, the Prime Optical server might not communicate with one or more NEs in the domain, causing erroneous behavior.

Step 1 In the Domain Explorer tree, select an NE and choose **Administration > NE Software Table**. Table 4-12 provides descriptions.

- For NEs other than the ONS 15216 EDFA, the NE Software table displays the active and standby software versions for the NE.
- For ONS 15216 EDFA NEs, the NE Software table displays the active, standby, and running software versions.

Note The NE Software table can also be launched from the Job Monitor table. From the Job Monitor table, choose **Edit > NE Software Table** (or click the **NE Software Table** tool).

Step 2 To activate new software on an NE, select the NE in the table and choose **Edit > Commit** (or click the **Commit** tool). At the confirmation prompt, click **OK**.

For the ONS 15305 (non-CTC-based) and CTC-based NEs, this makes the standby software version the active version (if the standby version is newer than the active version) and restarts the NE with the newer version.

Note The Commit feature is not available for ONS 15216 EDFA NEs.

Step 3 To revert to the standby software version on an NE, select the NE and choose **Edit > Revert/Switch** (or click the **Revert/Switch** tool). At the confirmation prompt, click **OK**.

- For the ONS 15216 EDFA, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, and ONS 15454 SDH, this reverts the active software version back to the standby version (if the standby version is older than the active version) and restarts the NE with the newer version.
- For the ONS 15600 SONET and ONS 15600 SDH, the Revert operation opens the Memory Restore dialog box, and you will need to provide a compatible database. For example, if the NE is running software release 1.1 and you want to download a release 1.0 package, you must provide a release 1.0 database after downloading the software release 1.0 package.

Step 4 To accept the software version of an NE, select the NE and choose **Edit > Accept** (or click the **Accept** tool). The Accept command copies the downloaded software onto the standby Timing & Shelf Controller (TSC) and activates it.

Note The Accept feature is only available for the ONS 15600 SONET and ONS 15600 SDH.

Table 4-12 Field Descriptions for the NE Software Table

Field	Description
NE Model Name	Displays the model of the selected NE.
Alias ID	Displays the alias name of the NE.
Physical Location	Displays the location where the software is running.
NE Type	For ONS 15454 NEs, displays the NE type. Values are: • DWDM—For ONS 15454 MSTP R9.2 or later NEs. • TDM—For ONS 15454 MSPP R9.2 or later NEs. • Not Available—For all other NE versions.
Active Software Filename	Displays the active software version. For the ONS 15530 and ONS 15540, displays the software version on the active CPU.
Standby Software Filename	Displays the standby software version. For the ONS 15305 (non-CTC-based), it is the NE software version that has been downloaded. For the ONS 15530 and ONS 15540, displays the software version on the standby processor if a standby processor is present. **Note** The standby software version is not available for the ONS 15305 R3.0.
Running Software Filename	For the ONS 15216 EDFA, displays the running software version.
Busy Flag	Indicates whether the NE is rebooting to perform a software commit or revert. While the NE is rebooting, the value is True; when the NE has finished rebooting, the value is False.
Partial Upgrade	Possible values are: • True • False • N/A
NE ID	Displays the ID name of the selected NE.

4.3.6 Activating a New NE Software Version on One or More ML-Series Cards

When an ONS 15310 CL, ONS 15454 SONET, or ONS 15454 SDH NE is partially upgraded to a new software version, you can choose to activate the new NE software version on one or more ML-series cards.

Note If the Partial Upgrade field in the NE Software Table is set to False, it means that the NE and all its cards are upgraded to the new NE software version. If set to True, it means that one or more cards are still running an older software version.

Step 1 In the Domain Explorer, select a group or an ONS 15310 CL, ONS 15454 SONET, or ONS 15454 SDH NE that contains ML-series cards, and choose **Administration > NE Software Table**.

Step 2 In the NE Software Table, select one or more NEs that are in Partial Upgrade mode and choose **Edit > Reset ML Cards** (or click the **Reset specific ML Cards** tool).

Step 3 In the Reset ML Cards dialog box, select the ML-series cards on which to activate the new software. Use the **Add** button to move the ML-series cards to the Selected list. Use the **Remove** button to move the ML-series cards to the Available list.

Step 4 Click **OK**.

4.3.7 Delaying Software Activation on the ML-Series Cards

You can delay software activation on an ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, or ONS 15454 SDH NE's ML-series cards when the NE is partially upgraded to a new software version and the NODE.software.AllowDelayedUpgrades parameter is set to TRUE.

Note You can change the value of the NODE.software.AllowDelayedUpgrades parameter in the NE Defaults tab of the NE Explorer.

Step 1 In the Domain Explorer, select a group or an ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, or ONS 15454 SDH NE that contains ML-series cards, and choose **Administration > NE Software Table**.

Step 2 In the NE Software table, select an NE that is in Partial Upgrade mode and choose **Edit > Commit** (or click the **Commit** tool). The Bulk Software Activation wizard opens.

Step 3 Do the following:

- **a.** Select the NE for which you want to activate software
- **b.** Enter any comments about the job.
- **c.** Specify the time for the software activation to occur.

Step 4 Click **OK**. The Software Activation dialog box opens.

Step 5 Check the **Delay automatic activation on the ML cards** check box to delay software activation. Uncheck the check box if you do not want to delay software activation.

Note The Delay automatic activation on ML cards check box is checked by default if the NODE.software.DefaultDelayedUpgrades parameter is set to TRUE.

Step 6 Click **OK** in the Software Activation dialog box.

Step 7 Click **OK** in the Confirm commit message box.

Step 8 Click **OK** in the Prime Optical Progress message box.

4.3.8 Adding a New NE Software Version to the Prime Optical Domain

The Supported NE table provides information about the software version that is currently supported on a selected NE.

Use this procedure only to apply a minor upgrade to the default, Prime Optical-supported software on the supported NE. Major upgrades to NE software might require you to update Prime Optical.

Caution It is recommended that this feature be used only at the advice of a Cisco technical support engineer. If incorrect modifications to data in the Supported NE table are made, the Prime Optical server might not communicate with one or more NEs in the domain.

Complete the following steps to add a new NE software version to the Prime Optical domain:

Step 1 In the Domain Explorer window, choose **Administration > Supported NE Table**. Table 4-13 provides descriptions.

Step 2 Select an NE.

Caution Make sure to select the correct NE row in the Supported NE table before proceeding. If the new software version is added to the wrong NE, the updated NE in the Prime Optical domain will show erroneous behavior.

Step 3 Choose **Edit > Add** (or click the **Add Device Maintenance Version** tool).

The Add Device Maintenance Version dialog box opens.

Step 4 From the NE Model drop-down list, select the NE model.

Step 5 In the Software Version field, enter the software version.

Step 6 Click **Submit**.

Note You cannot customize the Version Name field. Prime Optical retrieves the version name from the Version Name field of the base version.

A message appears, displaying the version name.

Step 7 Click **OK**.

The new NE is added and the newly added NE displays an icon in the Software Version column.

Table 4-13 Field Descriptions for the Supported NE Table

Field	Description
NE Model	Displays the model of the selected NE. **Note** The Supported NE table includes passive NEs, such as the ONS 15216 DCU and OSC. Passive NEs are shown in the Supported NE table for informational purposes only. The Prime Optical server does not check the software validity of passive NEs.

Table 4-13 Field Descriptions for the Supported NE Table (continued)

Field	Description
Software Version	Specifies the software version that is supported on the selected NE. **Note** You cannot delete the default NE software version. The default software version rows are created when the Prime Optical server is installed. These rows are the factory-default settings and cannot be deleted.
Version Name	Specifies the software version name. For example, "15454 7.00" represents ONS 15454 SONET R7.0. **Note** If the software version is manually added, the version name displays the value used by Prime Optical to manage the software version.

4.3.9 Deleting an NE Software Version from the Prime Optical Domain

Step 1 In the Domain Explorer window, choose **Administration > Supported NE Table**.

Step 2 Select the NE for which you want to delete the software version; then, choose **Edit > Delete** (or click the **Delete Supported NE Version** tool).

Note NE images that were manually added can be deleted. Default NE images cannot be deleted.

Step 3 Click **OK** in the confirmation dialog box.

4.4 How Do I Modify the Network?

Follow the procedures described in this section to change IP, subnet, and network addresses; configure proxy settings; change the operational state of an NE; set the date, time, and location on CTC-based NEs; and configure SNTP and application-specific parameters.

Note For information about setting up routing protocols, see 5.3 Configuring Routing Protocols on Optical NEs, page 5-2.

4.4.1 Changing IP Addresses for NEs

Prime Optical displays the active IP address of the selected NE. The active IP address field for end NEs (ENEs) is the IP address of the gateway NE (GNE) that the NE is using. This information is calculated on a theoretical projection, which does not necessarily equate to a real network situation.

4.4.1.1 Changing the NE IP Address on CTC-Based NEs

Step 1 In the Domain Explorer window, click the NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the property sheet of the NE Explorer, click the **Network** tab > **Address** subtab.

Step 3 Change the IP address in the IP Address field. (For an IPv6 node, change the address in the IPv6 Config > IPv6 Address field.)

Note If you enter an IP address that is already in use, you receive the error message "A network element with this IP address already exists in the database, or this is a secure IP address." You must enter a unique IP address.

Step 4 If necessary, change the following fields:

- Default Router (for an IPv4 node)
- Subnet Mask (for an IPv4 node)
- IPv6 Config > Default IPv6 Router (for an IPv6 node)
- IPv6 Config > IPv6 Subnet Mask (for an IPv6 node)

Step 5 Click **Apply**.

Step 6 A confirmation dialog box informs you that the NE will reboot. Click **Yes**. Prime Optical will lose connectivity to the NE. After several minutes, the NE will be back in service with the new IP address.

4.4.1.2 Changing the NE IP Address in a GNE/ENE Environment

When changing NE IP addresses in a GNE/ENE environment, change the IP address on the ENE node first; then, change the IP address on the GNE node. You do not need to remove NEs from Prime Optical.

Note This procedure applies only to NE releases 5.0 and later.

To change the IP address of a GNE and then convert all GNE/ENE settings to LAN-connected NE (LNE) in Prime Optical:

Step 1 Remove the ENE settings on the ENE. In the Network Explorer, click the **Network** tab > **Firewall/Proxy** subtab; then, uncheck the **Enable Proxy Server on Port** check box.

Step 2 Launch the NE Explorer for the ENE and click the **Network** tab > **Address** subtab. Change the IP address of the ENE. The NE reboots and does not come back up until the cable connections are correct in the network.

Step 3 Make the necessary cable connections to all NEs in the topology. (In this case, make all the NEs LAN-cable connected.)

Step 4 Remove the GNE settings on the GNE. In the Network Explorer, click the **Network** tab > **Firewall/Proxy** subtab; then, uncheck the **Enable Proxy Server on Port** check box.

The GNE becomes unavailable in Prime Optical. After some time, the GNE comes up as an LNE in Prime Optical.

Step 5 Wait until all the NEs come up as LNEs in Prime Optical.

4.4.1.3 Switching Connectivity from IPv4 to IPv6

Prime Optical provides IPv6 support for the following NE releases: ONS 15310 MA SDH R9.3, ONS 15310 MA SONET R9.3, ONS 15454 SDH R9.3, and ONS 15454 SONET R9.3.

Note IPv6 loopback address must be configured on the server in order for Prime Optical to work with IPv6.

Prime Optical tries to connect to an NE using its preferred IP address: IPv4 or IPv6, depending on how the NE was added or discovered by Prime Optical.

- For a user-added NE, the preferred IP address is the one that was entered when the NE was added.
- For a discovered NE, the preferred IP address depends on the IP connectivity of the GNE that discovered it.

If the preferred IP address is not reachable, Prime Optical tries to connect to the NE with the other IP address.

To enable IPv6 on an NE that supports this feature, complete the following steps:

Step 1 In the Domain Explorer tree, select the NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the property sheet of the NE Explorer, click the **Network** tab > **Address** subtab.

Step 3 In the IPv6 Config area, check the **Enable IPv6** check box and configure the following fields:

- IPv6 Address
- Default IPv6 Router
- IPv6 Subnet Mask

Step 4 Click **Apply**.

Note If the IPv4 address is unavailable or disabled on the NE, Prime Optical uses the IPv6 address. If the NE is reachable through its IPv4 address, Prime Optical uses that address.

4.4.1.4 Changing the NE IP Address in Prime Optical Only

Note If the IP address is changed in Prime Optical, the change is made only in Prime Optical. Use the CLI if changes in the IP address need to be applied to the ONS 155xx NEs. In the Domain Explorer, choose **Configuration > ONS 155XX > Launch CLI**.

Complete the following steps to change the IP address in Prime Optical only:

Step 1 In the Domain Explorer tree, select the NE that will be changed.

Step 2 Click the **Address** tab. In the Active IP Address field, enter the new IP address.

Step 3 Click **Save**.

4.4.2 Changing the Internal Subnet Address—ONS 15600 SONET and ONS 15600 SDH

To avoid IP address conflicts, change the class B subnet address if your internal network uses the same address range as the default subnet address. To change class B subnet address for the TSC cards, complete the following steps.

Caution All network changes should be approved by your network administrator.

Complete the following steps to change the internal subnet address:

Step 1 In the Domain Explorer tree, select an ONS 15600 SONET or ONS 15600 SDH NE.

Step 2 Choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 3 In the node properties pane of the NE Explorer, click the **Network** tab > **Internal Subnet** subtab.

Step 4 Specify the following values in the TSC section:

- TSC1—Class B subnet address for the first TSC.
- TSC2—If there are two TSCs are installed, enter the class B subnet address for the second TSC.

Step 5 Click **Apply**.

4.4.3 Viewing and Changing the Network Address—CTC-Based NEs

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane of the NE Explorer, click the **Network** tab > **Address** subtab.

Step 3 Complete the following information:

- IP Address—IP address of the NE.
- Default Router—IP address of the default router.
- Subnet Mask—Subnetwork mask ID of the NE.
- MAC Address—*Display only.* Address as identified in the IEEE 802 MAC layer.
- LCD IP Setting—(ONS 15454 SONET and SDH only) Select one of the following:
  - Allow Configuration—Allows users to change the shelf IP address from the LCD screen.
  - Display Only—Displays the shelf IP address in the LCD screen and does not allow any configuration.
  - Suppress Display—Shelf IP address is not displayed in, and cannot be configured from, the LCD screen.

- Forward DHCP Requests—When checked, forwards the Dynamic Host Configuration Protocol (DHCP) requests to the IP address.
- DHCP Server—IP address of the DHCP server.

Step 4 In the node properties pane of the NE Explorer, click the **Security** tab > **Access** subtab.

Step 5 In the CORBA (IIOP) Listener Port field, select one of the following values to allow communication with the NE through firewalls:

- Default-Fixed
- Standard Constant (683)
- Other Constant

Step 6 Click **Apply**.

4.4.4 Configuring Proxy Server Settings—CTC-Based NEs

CTC-based NEs have a proxy server feature set that allows networking these NEs in environments where visibility and accessibility are restricted. In the proxy server environment, CTC-based NEs are designated as either GNEs, ENEs, or tunnel NEs (TNEs). The GNE is LAN-connected to the DCN, while the ENE is accessed through the proxy server feature on the GNE over the SDCC. The ENE is not directly accessible through the IP address, while the GNE has an IP address that is valid for the DCN LAN. Prime Optical connects to TNEs that belong to an OSI network behind a non-Cisco GNE. Also, if an NE is LAN-connected and its proxy is disabled, the NE is shown as a LAN-connected NE (LNE).

4.4.4.1 Enabling Proxy

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the Properties pane of the NE Explorer, select the **Network** tab > **Firewall/Proxy** subtab.

Step 3 Check the **Enable Proxy Server on Port** check box. When enabled, the NE serves as a proxy for connections between CTC clients and the NEs that are DCC-connected to proxy NEs. Uncheck the check box to disable the proxy. The **on port** field has a default value of 1080.

Step 4 You can enable the proxy on one of the following:

- ENE
- GNE
- Proxy-only

If the ENE and GNE are in different IP subnets, or if the ENE and GNE are in different Ethernet segments, the proxy should be enabled on the GNE. If the firewall is enabled on the GNE, it prevents communication between the laptop connected to the LAN port of the ENE and the network operations center (NOC), even if the proxy is enabled on both the ENE and GNE. Whenever the firewall is enabled on a GNE, the proxy should be enabled on the GNE as well.

Step 5 Click **Apply**.

4.4.4.2 Notes on Configuring Proxy Server Settings

Note the following when configuring proxy server settings:

- In a proxy environment, you can launch CTC from Prime Optical for a proxy GNE if you are launching CTC for an ENE. CTC cannot be launched for a non-GNE if the proxy GNE is marked as Out of Service or is not reachable from Prime Optical. Launching CTC for NEs that are not reachable before Prime Optical can determine whether they are reachable displays the error messages "Error in launching CTC node view for *NE*" and "Initializing Class Loaders Failed–Timeout opening *NE IP*:*Port*."
- In a proxy environment, you cannot launch a TL1 Telnet session directly for an NE. You can launch the Telnet window for the GNE and then enter the **ACT-USER** command, specifying the ENE as the TID.
- Prime Optical can configure multiple GNEs but it can only associate a single GNE for a given ENE. If the GNE becomes inaccessible, Prime Optical can automatically use one of the other available GNEs to reach the ENE.
- When a proxy-enabled GNE (named GNE1) is first added to Prime Optical, Prime Optical automatically discovers all associated NEs (through the topology discovery feature) and identifies them as ENEs associated with GNE1. If there are other proxy-enabled GNEs that are discovered from GNE1, Prime Optical will mark them as GNEs. When proxy is enabled on any GNE, all ENEs lose connectivity and eventually regain it. In a multiple DCC-connected GNE scenario, NEs that do not regain connectivity should be marked as Out of Service, then marked as In Service again.
- If both LAN and DCC connections exist between the GNE and ENEs, the DCC connection takes precedence.

4.4.4.3 Configuring Proxy Server Settings for NEs Equipped with ML-Series Cards

Prime Optical supports only the following configurations for NEs that are equipped with ML-series cards:

- GNE with SNMPv1, v2, and v3.

  Note Prime Optical considers an NE to be a GNE if proxy-only is enabled, or if proxy with firewall is enabled.

- ENE with SNMPv1, v2, and v3.

  Note Prime Optical considers an NE to be an ENE if proxy is not enabled, or if proxy/firewall and craft access are enabled.

For NE release 4.6 and earlier, see Table 4-14. For NE release 5.0 and later, see Table 4-15. In order for Prime Optical to support a proxy/firewall scenario, the scenario must have a "Yes" in all four columns of the table, and CLI launch must be supported.

For an explanation of proxy server settings on the NEs, refer to the NE hardware documentation.

The following table describes the proxy server settings for release 4.6 and earlier NEs.

Table 4-14 Proxy Server Settings for R4.6 and Earlier NEs

Proxy Scenario	FM	CM	PM	RMON Threshold
Proxy only, GNE (CLI launch is supported)[1]				
SNMPv1	No	Yes	Yes	Yes
SNMPv2	Yes	Yes	Yes	Yes
Proxy only, ENE (CLI launch is not supported)[2]				
SNMPv1	No	Yes	Yes	No
SNMPv2	No	Yes	Yes	No
Proxy and internal firewall, GNE (CLI launch is supported)[3]				
SNMPv1	No	Yes	Yes	Yes
SNMPv2	Yes	Yes	Yes	Yes
Proxy and internal firewall, ENE (CLI launch is not supported)[4]				
SNMPv1	No	Yes	Yes	No
SNMPv2	No	Yes	Yes	No
Proxy only, GNE, with external firewall and NAT (CLI launch is not supported)[5]				
SNMPv1	No	Yes	Yes	No
SNMPv2	Yes	Yes	Yes	No
Proxy only, GNE, with internal firewall, external firewall, and NAT (CLI launch is not supported)[6]				
SNMPv1	No	Yes	Yes	No
SNMPv2	No	Yes	Yes	No
Proxy only, ENE, with internal firewall, external firewall, and NAT (CLI launch is not supported)[7]				
SNMPv1	No	Yes	Yes	No
SNMPv2	No	Yes	Yes	No
External firewall and PAT[8] (CLI launch is not supported)[9]				
SNMPv1	No	No	No	No
SNMPv2	No	No	No	No

1. In this scenario, the NE is set up as a GNE with proxy enabled. The internal firewall is not turned on and there is no external firewall between the server and the NEs.
2. In this scenario, the NE is set up as an ENE with proxy enabled. The internal firewall is not turned on and there is no external firewall between the server and the NEs.
3. In this scenario, the NE is set up as a GNE with proxy and internal firewall enabled. There is no external firewall between the server and the NEs.
4. In this scenario, the NE is set up as an ENE with proxy and internal firewall enabled. There is no external firewall between the server and the NEs.
5. In this scenario, the NE is set up as a GNE with proxy enabled. The internal firewall is not turned on. There is an external firewall between the server and the NEs that is using NAT.
6. In this scenario, the NE is set up as a GNE with proxy and internal firewall enabled. There is an external firewall between the server and the NEs that is using NAT.
7. In this scenario, the NE is set up as an ENE with proxy and internal firewall enabled. There is an external firewall between the server and the NEs that is using NAT.
8. PAT = Port Address Translation.
9. There is an external firewall between the server and the NEs that is using PAT. The NE and Prime Optical do not support this configuration.

The following table describes the proxy server settings for release 5.0 and later NEs.

Table 4-15 Proxy Server Settings for R5.0 and Later NEs

Proxy Scenario	FM	CM	PM	RMON Threshold
Proxy only, GNE (CLI launch is supported)[1]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	Yes	Yes	Yes	Yes
Proxy only, ENE (CLI launch is not supported)[2]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	No	Yes	Yes	Yes
Proxy and internal firewall, GNE (CLI launch is supported)[3]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	Yes	Yes	Yes	Yes
Proxy and internal firewall, ENE (CLI launch is not supported)[4]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	No	Yes	Yes	Yes
Proxy only, GNE, with external firewall and NAT (CLI launch is not supported)[5]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	Yes	Yes	Yes	Yes
Proxy only, GNE, with internal firewall, external firewall, and NAT (CLI launch is not supported)[6]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	Yes	Yes	Yes	Yes
Proxy only, ENE, with internal firewall, external firewall, and NAT (CLI launch is not supported)[7]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	No	Yes	Yes	Yes
External firewall and PAT (CLI launch is not supported)[8]				
SNMPv1	No	No	No	No
SNMPv2/v3	No	No	No	No

1. In this scenario, the NE is set up as a GNE with proxy enabled. The internal firewall is not turned on and there is no external firewall between the server and the NEs.
2. In this scenario, the NE is set up as an ENE with proxy enabled. The internal firewall is not turned on and there is no external firewall between the server and the NEs.
3. In this scenario, the NE is set up as a GNE with proxy and internal firewall enabled. There is no external firewall between the server and the NEs.
4. In this scenario, the NE is set up as an ENE with proxy and internal firewall enabled. There is no external firewall between the server and the NEs.
5. In this scenario, the NE is set up as a GNE with proxy enabled. The internal firewall is not turned on. There is an external firewall between the server and the NEs that is using NAT.
6. In this scenario, the NE is set up as a GNE with proxy and internal firewall enabled. There is an external firewall between the server and the NEs that is using NAT.
7. In this scenario, the NE is set up as an ENE with proxy and internal firewall enabled. There is an external firewall between the server and the NEs that is using NAT.
8. There is an external firewall between the server and the NEs that is using PAT. The NE and Prime Optical do not support this configuration.

4.4.4.4 Conditions Under Which Prime Optical Recognizes an NE as an LNE, a GNE, a TNE, or an ENE

An NE in Prime Optical can show up as an LNE, a GNE, a TNE, or an ENE. The type is denoted in a small rectangle next to the corresponding NE in the Domain Explorer tree. The following tables document how Prime Optical determines whether an NE in the network is considered an LNE, GNE, TNE, or ENE.

NE terminology:

- *LAN Connected* denotes whether the NE is connected directly to the LAN.
- *Proxy Enabled* denotes whether the "Enable Proxy" option is checked for the NE (in the NE Explorer > Network > Firewall/Proxy subtab).
- *Firewall Enabled* denotes whether the "Enable Firewall" option is checked for the NE (in the NE Explorer > Network > Firewall/Proxy subtab).
- *Craft Access Enabled* denotes whether the "Craft-Access Only" option is checked for the NE (in the NE Explorer > Network > Firewall/Proxy subtab).
- *GNE* denotes whether the "Gateway Network Element (GNE)" option is selected for the NE (in the NE Explorer > Network > Firewall/Proxy subtab).
- *ENE* denotes whether the "External Network Element (ENE)" option is selected for the NE (in the NE Explorer > Network > Firewall/Proxy subtab).
- *Proxy-only* denotes whether the "Proxy-only" option is selected for the NE (in the NE Explorer > Network > Firewall/Proxy subtab).
- A value of *N/A* indicates that the setting for that column is irrelevant to the end result.

Prime Optical terminology:

- Prime Optical *GNE*—Gateway network element. A GNE is an NE that is LAN-connected and provides access to and proxies for other NEs that are otherwise unreachable.
- Prime Optical *ENE*—External network element. An ENE is an NE that is not directly reachable. These NEs can only be accessed via (proxied by) a GNE.
- Prime Optical *LNE*—LAN-connected NE. An LNE is connected on the LAN and does not proxy for and is not proxied by other NEs.
- Prime Optical *TNE*—Tunnel NE. Prime Optical can connect to a TNE that belongs to an OSI network behind a non-Cisco GNE. You can open a new TL1 tunnel on a selected TNE, close an existing TL1 tunnel, or modify the TL1 tunnel settings. TNEs do not support SNMP. The following NE models support TL1 tunnels: ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, and ONS 15454 SDH.

Note the following configuration restrictions:

- For all cases where the NE type is denoted as ENE, per current Prime Optical design, an ENE will not have connectivity in Prime Optical unless there is at least one GNE in the same ring as the ENE.
- All NEs on the same Ethernet segment must have the same value for craft access. Mixed values might leave some nodes unreachable through the shared Ethernet segment.
- All NEs on the same Ethernet segment must have the same value for the firewall. Mixed values might leave some nodes unreachable.
- All NEs in the same SDCC area must have the same value for the firewall. Mixed values might leave some nodes unreachable.
- If the firewall is enabled on an NE, the proxy server must also be enabled. If the proxy server is not enabled, CTC cannot see nodes on the DCC side of the NE.

- If Craft Access Only is enabled on an NE, the proxy server must also be enabled. If the proxy server is not enabled, CTC cannot see nodes on the DCC side of the NE.
- Only those NEs that have no LAN connectivity to the Prime Optical server can have Craft Access Only enabled or be set as an ENE.

Table 4-16 ONS 15327, ONS 15454 SONET/SDH R4.1.x

NE State Type	Proxy Enabled?	Craft Access Only?	Firewall Enabled?	LAN Connected?	DCC Connected?
GNE	Yes	No	Yes	Yes	N/A
GNE	Yes	No	No	Yes	N/A
ENE	Yes	N/A	N/A	No	Yes[1]
ENE	No	N/A	N/A	No	Yes[1]
ENE	No	N/A	N/A	Yes	Yes[1]
LNE	No	No	N/A	Yes	No
LNE	No	No	N/A	Yes	Yes[2]

1. Prime Optical discovers this NE as an ENE if there is at least one GNE on the same DCC domain with proxy server enabled.
2. Prime Optical discovers this NE as an LNE if all the NEs on the same DCC domain have proxy server disabled.

Table 4-17 ONS 15310, ONS 15327, ONS 15454 SONET/SDH R4.6 and Later

NE State Type	Proxy Enabled? (GNE, ENE, or Proxy-only Enabled on the NE)	LAN Connected?	DCC Connected?
GNE	Yes	Yes	Yes
GNE	Yes	Yes	No
ENE	Yes	No	Yes[1]
ENE	No	No	Yes[1]
ENE	No	Yes	Yes[1]
LNE	No	Yes	No
LNE	No	Yes	Yes[2]

1. Prime Optical discovers this NE as an ENE if there is at least one GNE on the same DCC domain with proxy server enabled.
2. Prime Optical discovers this NE as an LNE if all the NEs on the same DCC domain have proxy server disabled.

Table 4-18 ONS 15310 CL, ONS 15327, ONS 15454 SONET/SDH R6.0 and Later; ONS 15310 MA SONET R7.0 and Later; ONS 15310 MA SDH R9.1, R9.2, R9.3

NE State Type	Proxy Enabled?	Craft Access Only?	Firewall Enabled?	LAN Connected?	DCC Connected?
TNE	Yes	No	Yes	No	N/A
TNE	Yes	No	No	No	N/A

Table 4-19 ONS 15600 SONET R1.1.2, 1.1.3, 1.3.1; ONS 15600 SDH R1.4

NE State Type	Proxy Enabled?	Firewall Enabled?	LAN Connected?	DCC Connected?
GNE	Yes	Yes	Yes	N/A
GNE	Yes	No	Yes	N/A
ENE	Yes	N/A	No	Yes[1]
ENE	No	N/A	No	Yes[1]
ENE	No	N/A	Yes	Yes[1]
LNE	No	N/A	Yes	No
LNE	No	N/A	Yes	Yes[2]

1. Prime Optical discovers this NE as an ENE if there is at least one GNE on the same DCC domain with proxy server enabled.
2. Prime Optical discovers this NE as an LNE if all the NEs on the same DCC domain have proxy server disabled.

4.4.4.5 Creating a New Proxy Tunnel

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **Proxy Tunnels** subtab.

Step 4 Click **Create**. The Create New Proxy Tunnel dialog box opens. The following table provides descriptions.

Step 5 After making your selections, click **OK**.

Table 4-20 Field Descriptions for the Create New Proxy Tunnel Dialog Box

Field	Description
Source Address	Enter the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask Length	Specify the length of the source mask (from 0 to 32).
Source Mask	Enter the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Enter the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask Length	Specify the length of the destination mask (from 0 to 32).
Destination Mask	Enter the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

4.4.4.6 Creating a New Firewall Tunnel

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **Firewall Tunnels** subtab.

Step 4 Click **Create**. The Create New Firewall Tunnel dialog box opens. The following table provides descriptions.

Step 5 After making your selections, click **OK**.

Table 4-21 Field Descriptions for the Create New Firewall Tunnel Dialog Box

Field	Description
Source Address	Enter the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask Length	Specify the length of the source mask (from 0 to 32).
Source Mask	Enter the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Enter the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask Length	Specify the length of the destination mask (from 0 to 32).
Destination Mask	Enter the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

4.4.5 Changing the Operational State of an NE

Step 1 In the Domain Explorer tree, select the NE that will be changed.

Step 2 In the Network Element Properties pane > Status tab > Operational State field, choose one of the following values:

- Preprovisioned—(Not available if already provisioned) The NE has been added to the database for provisioning but is not yet in service. Prime Optical does not manage preprovisioned NEs.
- In Service—The NE is deployed and requires monitoring. Prime Optical collects polling, fault management (FM), configuration management (CM), and PM data from in-service NEs and stores the data in the database.
- Out of Service—The NE has been marked Out of Service by a network administrator and does not require monitoring. The Prime Optical database records the last known state of the NE when it was in service.
- Under Maintenance—The NE is temporarily under maintenance but requires monitoring. This state is the same as In Service except that Prime Optical does not report alarms or events for under-maintenance NEs.

Tip You can also right-click an NE in the Domain Explorer tree or Subnetwork Explorer tree and choose **Mark Under Maintenance**, **Mark In Service**, or **Mark Out of Service** from the shortcut menu.

There are two additional states that you cannot choose. These operational states are changed by Prime Optical based on the initialization tasks that are completed:

- In Service–Initializing—The NE is marked as In Service–Initializing when Prime Optical reaches connectivity of the NE (Communication State is marked as Available) and the discovery process starts. The initialization process is completed when fault and inventory have been synchronized. The operational state changes from In Service–Initializing to In–Service Synch Configuration.
- In-Service Synch Configuration—The NE is marked as In–Service Synch Configuration when Prime Optical uploads a configuration for that NE. You can change the operational state of an NE from In-Service Synch Configuration to Out of Service.

Step 3 Click **Save**.

Step 4 Click **Yes** in the confirmation dialog box.

Timesaver If an NE is brought down, mark it as **Out of Service** to prevent unnecessary polling traffic on the DCN.

Note When you mark an NE as Out of Service and then mark it as In Service, the Prime Optical alarm time stamp in the Alarm Browser window is resynchronized with the time stamp when the NE is put back in service.

4.4.6 Setting Date, Time, and Location on CTC-Based NEs

Step 1 In the Domain Explorer, select an NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **General** tab > **Identification** subtab.

Step 3 In the Location area:

- Set the latitude of the NE by selecting North or South from the Latitude drop-down list; then, enter the degrees and minutes (or click the up or down arrow to increase or decrease each by 1 unit).
- Set the longitude of the NE by selecting East or West from the Longitude drop-down list; then, enter the degrees and minutes (or click the up or down arrow to increase or decrease each by 1 unit).

Step 4 In the Date and Time area:

- Time—Enter the date and time.
- Time Zone—From the drop-down list, select the time zone where the NE is located.
- Use Daylight Savings Time—When checked, Daylight Savings Time is observed.

Step 5 Click **Apply**.

4.4.6.1 Using the SNTP Server to Set the Date and Time

Simple Network Time Protocol (SNTP) is an internet protocol used to synchronize the clocks of computers to a time reference. Using the SNTP server ensures that all NEs use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. To use the SNTP server to set the date and time for CTC-based NEs, complete the following steps.

Note SNTP is not supported on the CTC-based ONS 15305 R3.0.

Step 1 In the Domain Explorer, select an NE and choose **Configuration > NE Explorer**.

Step 2 In the node properties pane, click the **General** tab > **Identification** subtab.

Step 3 In the SNTP Settings area, do one of the following:

- Set up the SNTP server and optional backup SNTP server, to set the date and time of the node:
  - Check the **Use NTP/SNTP Server** check box.
  - In the SNTP Server field, enter the SNTP server's IP address.
  - (Optional) In the Backup SNTP Server field, enter the backup SNTP server's IP address.
- If you do not use the SNTP server, in the Date and Time area, enter the date and time in the Time field (for more information, see 4.4.6 Setting Date, Time, and Location on CTC-Based NEs, page 4-54).

Step 4 Click **Apply**.

4.4.7 Configuring SNTP for Multiple NEs

Use the SNTP Configuration dialog box to provision a set of SNTP parameters on multiple NEs at the same time. You can provision primary and secondary NTP and SNTP server addresses. Both the primary and secondary NTP/SNTP address can have IPv4 or IPv6 format.

When the SNTP address setting on an NE fails, the reason for the failure is logged in the Error Log table. As part of a bulk SNTP operation, if the setting on an NE fails, Prime Optical continues to set the SNTP server address on the remaining NEs that are part of the operation.

Note SNTP configuration is not available for ONS 15216 NEs.

Step 1 In the Domain Explorer, choose **Administration > SNTP Configuration**. The SNTP Configuration dialog box opens. Table 4-22 provides descriptions.

Step 2 Enter the following information:

- NEs
- Job comments
- SNTP
- Time (*time zone*)

Step 3 Click **Finish**.

A job is scheduled for each NE that was assigned the SNTP server IP address. The job status is listed in the Job Monitor table. (For more details, see 4.6.1.1 Viewing the Job Monitor Table, page 4-88.) The status of each SNTP set operation is updated as the job progresses. Job status can be one of the following:

- Queued—The job has been scheduled but has not yet been processed.
- Running—The job is being processed.
- Succeeded—The SNTP server IP address is set on the NE.
- Failed—The SNTP server IP address was not set on the NE. The reason for the failure is logged in the Error Log table.
- Waiting—The job is waiting for the NE to be in service.

Table 4-22 Field Descriptions for the SNTP Configuration Dialog Box

Field	Description
Network Elements	Use the **Add** and **Remove** buttons to move NEs to the Selected NEs list, or to remove NEs from the list. The SNTP server address is set on the NE(s) in the Selected NEs list.
Job Comments	Enter comments about the SNTP server address setting, if needed.
SNTP	Use the Resync Time (min; ONS 15305 only) field if you want the ONS 15305 NE to use the SNTP server to synchronize time information. The Resync Time field is the time passed between two synchronization operations. The NE uses this information to know when to synchronize with the SNTP server. If you check the **Use NTP/SNTP Server** check box, Prime Optical uses the NTP or SNTP server to set the date and time of the node. Using the NTP or SNTP server ensures that all NEs use the same date and time reference. After checking the check box, enter the server IP address in the SNTP IP Address field. If you want to include a backup SNTP server, enter the backup SNTP server IP address in the Backup SNTP Server field. If you do not check the Use NTP/SNTP Server check box, the NE stores the NTP or SNTP address but does not use it to synchronize time information. **Note** In the SNTP IP Address field, enter the IP address of your active SNTP server. Do not enter the IP address of your Prime Optical server. The Prime Optical server is not an NTP/SNTP server. If you do not know your SNTP server IP address, contact your system administrator.
Time (*time zone*)	Set a time for the SNTP address setting. Click **Now** to begin immediately, or click **At Time** and specify when to begin the SNTP set, specifying the date, hour, and minute in 5-minute increments. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

4.4.8 Configuring Application-Specific Parameters

The UI Properties pane allows you to configure application-specific parameters.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **UI Properties** to open the UI Properties pane. The following table provides descriptions.

Step 3 After making your selections, click **Save**.

Table 4-23 Field Descriptions for the UI Properties Pane

Field	Description
Fault Management	• Alarm Acknowledgement—Allows you to specify automatic or manual alarm acknowledgement in the Alarm Browser window. If you choose manual alarm acknowledgment, you must manually acknowledge alarms. Cleared alarms move from the Alarm Browser to the Alarm Log. If you choose automatic alarm acknowledgment, the Prime Optical server automatically acknowledges alarms when they are cleared and moves them from the Alarm Browser to the Alarm Log. Before alarms move to the Alarm Log, they must be both cleared and acknowledged. **Note** You can still manually acknowledge alarms in automatic acknowledgement mode. • Overwrite Alarm Notes—Enables or disables the ability to overwrite alarm notes created by another user. • Alarm Unacknowledgement—Enables or disables the ability to unacknowledge alarms that have been acknowledged.
Circuit Management	• Overwrite Circuit Notes—Enables or disables the ability to overwrite circuit notes created by another user. • Automatically Route Internode Circuits—Enables or disables the ability to automatically route internode circuits. The default state is Enabled (that is, automatic routing is allowed). **Note** The Route Automatically option (located in the Routing Preferences pane in the Circuit Creation wizard) is disabled when the Automatically Route Internode Circuits radio button is set to Disable. **Note** When the Automatically Route Internode Circuits option is set to Enable/Disable, it is set for all client sessions logged into that Prime Optical server.
Job Management	Overwrite Job Notes: Enables or disables the ability to overwrite job notes created by another user.
Domain Management	Allows you to specify how node names longer than 25 characters are truncated in the Network Map. If a string is longer than 25 characters, the first 22 characters display followed by an ellipsis (...). You can choose to truncate the first or last characters of the node name.

Table 4-23 Field Descriptions for the UI Properties Pane (continued)

Field	Description
Subnetwork Grouping	Enables or disables the ability to automatically group NEs in subnetworks. If you check the **Automatically Group NEs in Subnetworks** check box, you cannot change the subnetwork of an NE, meaning: • The option of selecting a subnetwork in the Add New NE wizard is disabled and shows <System Default>. • The add NE process applies all automatic grouping rules. • Drag-and-drop functionality is disabled on the Subnetwork Explorer. • You cannot change the subnetwork assignment from the NE Properties pane. **Note** During the transient period when this option is changed, any current operations (such as dropping an NE in a subnetwork) are completed.
Network Discovery	Using the Allow Provisioning check box, you can allow or disallow the discovery mode that you have set to be changed later. • To allow a change of the mode later—Check the Allow Provisioning check box, and select a mode of discovery from the Default Discovery Mode drop-down list below. This lets you change the mode of discovery while creating a new NE service. • To disallow a change of the mode later—Uncheck the Allow Provisioning check box, and select a mode of discovery from the Default Discovery Mode drop-down list below. Using the Default Discovery Mode option, you can set the mode of discovery of the NEs; the mode of discovery can be manual or automatic. Set the discovery mode to one of the following: • Automatic—When a new NE is added, Prime Optical automatically discovers the NE and adds it to the network partition. • Manual—When a new NE is added to Prime Optical, the NE remains in the Undiscovered Network Elements group in the Domain Explorer. You can add the NE to the desired network partition. click **Add Undiscovered NEs** to add the NEs to a network partition. **Note** This option is available only for CTC-based NEs.
Audit Trail State	Allows you to enable or disable audit trails. NEs that are added or discovered will be assigned this setting.

4.5 How Do I Manage Redundancy and Failover?

Follow the procedures described in this section to back up and restore memory; modify NE service properties; back up client files; restore server configuration files; initialize a node resynchronization; manage protection groups; restore NE defaults; and configure card redundancy.

4.5.1 Backing Up NE Memory

Prime Optical allows you to back up and restore memory for selected NEs. For example, if you want to save your settings for a particular NE, you can back up the memory for only that NE.

Prime Optical backs up configuration and provisioning information residing in the flash memory of an NE. Prime Optical provides three methods by which to perform the configuration backup operation:

- Manually on demand

- Scheduling (one time only)
- Periodic, automatic scheduling based on a configurable time set by the operator

You can specify the number of backup configurations that should be kept at any given time. The default number is seven.

Note The maximum number of copies that can be saved is dictated by the amount of disk space available.

The oldest configuration that was backed up is replaced by the current backup depending on the configured number of copies you want to retain at any given time. The memory restore function in Prime Optical can then be used to roll back to any one of the previous configurations that was saved. Once the configuration is downloaded, you will need to enter CLI commands to activate the new configuration.

Note The restore operation is service affecting, because the node is rebooted to reflect the restored configuration.

Follow the procedures described in these sections to back up and restore memory (configuration data) on NEs. Prime Optical allows you to back up memory for the following NEs:

- ONS 15216 EDFA2 (R2.3.0 and later)
- ONS 15216 EDFA3
- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH
- ONS 15327
- ONS 15454 SONET
- ONS 15454 SDH
- ONS 15530
- ONS 15540 ESP and ESPx
- ONS 15600 SONET
- ONS 15600 SDH
- CPT 200
- CPT 200 SDH
- CPT 600
- CPT 600 SDH

Usage Notes:

- The latest ONS 15216 EDFA2 R2.4 hardware does not support memory backup to a software release other than 2.4.0. The ONS 15216 EDFA2 R2.3 hardware supports memory backup for NE software releases 2.3 and 2.4.
- For the ONS 15530 and ONS 15540, the SNMP Community String table must have a valid write community string for the NE before memory can be backed up or restored. For more information, see Chapter 3, “Building the Network.”

- Prime Optical does not support memory backup for the ONS 15305 or Not Managed/Other Vendor NEs.

The Memory Backup procedure backs up configuration and provisioning information residing in the flash memory of an NE. By default, the Prime Optical server automatically backs up memory for NEs once a day for seven days and stores the backup files on the Prime Optical server. After seven days, the oldest backup file is replaced by the current backup. For more information, see 4.5.3.4 Configuring Automatic NE Backup Parameters, page 4-73.

Step 1 In the Domain Explorer tree, select a management domain or group that contains an NE that is assigned an In Service or Under Maintenance operational state. Alternatively, select an NE that is assigned an In Service or Under Maintenance state.

Note Memory backup is not allowed for preprovisioned or out-of-service NEs.

Step 2 Choose **Administration > Memory Backup**.

Step 3 The Memory Backup dialog box opens. Enter the following information (see Table 4-24 for details):

- NE model
- Selected NEs
- Job comments
- Tag name
- Time (time zone)

Note For the ONS 15216 EDFA2, the backup file must be saved in the default directory, such as the tftpboot directory on the remote TFTP server, in case the file will be restored from the remote TFTP server. The tftpboot directory must have read-write access, or the backup job will fail. See Chapter 3, "Building the Network" for information about configuring the tftp directory with read-write access.

Note The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

Step 4 Depending on the type of NE, do one of the following:

- For ONS 15530 and ONS 15540 NEs, proceed to Step 5.
- For ONS 15600 NEs, proceed to Step 6.
- For ONS 15216, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NEs, click **Finish** to initiate the memory backup procedure.
- For the ONS 15216, the configuration file is copied to the $CTMHOME/admin/*NE-system-ID*/15216-*tag-name-time-stamp*-backup.cfg file.
- For the ONS 15310 CL, ONS 15310 MA SONET, or ONS 15310 MA SDH, the configuration file is copied to the $CTMHOME/admin/*NE-system-ID*/15310-*tag-name-time-stamp*-backup.cfg file.
- For the ONS 15327, the configuration file is copied to the $CTMHOME/admin/*NE-system-ID*/15327-*tag-name-time-stamp*-backup.cfg file.

- For the ONS 15454 SONET or ONS 15454 SDH, the configuration file is copied to the $CTMHOME/admin/*NE-system-ID*/15454-*tag-name-time-stamp*-backup.cfg file.

Note If **System Default** is chosen for the tag name, the tag is left blank and the filename is, for example, 15454--backup.cfg. If **User Specified** is chosen and **hello** is entered for the tag name, the filename is 15454-hello-*YYYYMMDDHHMM*-backup.cfg, where *YYYYMMDDHHMM* is the backup date, consisting of:

YYYY—Four-digit year
MM—Two-digit month
DD—Two-digit day
HH—Two-digit hour (in 24-hour format)
MM—Two-digit minute

Step 5 For ONS 15530 and ONS 15540 NEs:

a. Click **Next** to display memory backup options. Select an option (see Table 4-24 for details):

- Running Configuration
- Startup Configuration
- Save Running Config as Startup Config on NE

b. Click **Finish** to initiate the memory backup procedure.

The configuration file for each NE is copied to the $CTMHOME/admin/*NE-system-ID*/155*xx-tag-time-stamp-slot-number-of-active-CPU*-[running | startup].cfg file, where:

- $CTMHOME is the installation directory (by default, the installation directory is /opt/CiscoTransportManagerServer).
- *NE-system-ID* is the hostname of the ONS 15530 or ONS 15540.
- *tag-time-stamp* is the user-defined tag name and includes the time stamp. If **System Default** is selected, the tag is left blank and the filename is, for example, 15540-*time-stamp*-slot6-startup-backup.cfg. If **User Specified** is selected and **hello** is entered as the tag name, the filename is 15540-hello *YYYYMMDDHHMM*-slot6-startup.cfg, where *YYYYMMDDHHMM* is the time stamp.

The tag time stamp is ignored when the running configuration is saved as the startup configuration, because this operation is done on the NE itself and no backup file is saved on the Prime Optical server.

- *slot-number-of-active-CPU* is the slot number of the active CPU at the time of job execution. If the slot number cannot be obtained, the filename is 15540-*tag-time-stamp*-[running | startup].cfg.
- *running* or *startup* is the memory backup option chosen.

Note For the ONS 15530 and ONS 15540 NEs, the automatic backup files are named 155*xx-time-stamp-slot-number*-[running | startup].cfg.

Step 6 For ONS 15600 SONET and ONS 15600 SDH NEs:

a. Click **Next** to display memory backup options. Select the category of data to back up (see Table 4-24 for details):

- Provisioning data (is selected by default and is display only)

- Alarm data
- PM data

b. Click **Finish** to initiate the memory backup procedure.

The configuration file is copied to the $CTMHOME/admin/*NE-system-ID*/15600-*tag-name-time-stamp*-backup.cfg file.

After scheduling the backup, look at the Job Monitor table (**Administration > Job Monitor**) to see the job status. If the job fails, the Additional Information field in the Job Monitor table provides more information.

If a memory backup job fails, the EMS raises an alarm. All prior memory backup failure EMS-generated alarms on an NE are cleared under the following conditions:

- After a successful memory backup operation on the NE
- When the operational state of the NE changes to Out of Service

Table 4-24 Field Descriptions for the Memory Backup Dialog Box

Field	Description
NE Model	Select the NE type that you want to back up. The type you select determines the NEs that are displayed in the Network Elements area.
Network Elements	Use the **Add** and **Remove** buttons to move the NEs that you want to back up to the Selected NEs list, or to remove NEs from the list.
Job Comments	Enter comments about the backup, if needed.
Tag Name	Add a tag to the system-generated filename. If you select System Default, no tag name is added. If you select User Specified, you can enter a tag name.
Time *(time zone)*	Set a time for the backup. Click **Now** to begin backup immediately, or click **At Time** and specify when to begin backup, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.
Memory Backup Dialog Box 2 for ONS 15530 and ONS 15540 NEs	
Running Configuration	Copies the running configuration of the active CPU to the backup file. The backup file is saved in the $CTMHOME/admin/*NE-system-ID* directory. The CPU slot number is included in the filename. If you selected a tag name, the tag and time stamp are included in the filename. For example, if the active CPU is in slot 6, the filename is 15540-*tag-time-stamp*-slot6-running-backup.cfg.
Startup Configuration	Copies the startup configuration of the active CPU to the backup file. The startup configuration is stored in NVRAM and used when the NE reboots. The backup file is saved in the $CTMHOME/admin/*NE-system-ID* directory. The CPU slot number is included in the filename. If you selected a tag name, the tag and time stamp are included in the filename. For example, if the active CPU is in slot 6, the filename is 15540-*tag-time-stamp*-slot6-startup-backup.cfg.
Save Running Config as Startup Config on NE	Saves the running configuration as the startup configuration on the NE itself. The user-defined tag name is ignored. This is the equivalent of the **write mem** CLI command.
Memory Backup Dialog Box 2 for ONS 15600 SONET and ONS 15600 SDH NEs	
Provisioning Data	*Display only.* Backs up the ONS 15600 provisioning data.

Table 4-24 Field Descriptions for the Memory Backup Dialog Box (continued)

Field	Description
Alarm Data	If checked, the ONS 15600 alarm data is backed up.
PM Data	If checked, the 15-minute and 1-day PM data for the ONS 15600 is backed up.

4.5.2 Restoring NE Memory

Use the Memory Restore dialog box to restore provisioning and configuration information stored in the flash memory of the following NEs. (This information is backed up by using the Memory Backup dialog box.)

- ONS 15216 EDFA2 (EDFA2 R2.3.0 and later)
- ONS 15216 EDFA3
- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH
- ONS 15327
- ONS 15454 SONET
- ONS 15454 SDH
- ONS 15530
- ONS 15540 ESP and ESPx
- ONS 15600 SONET
- ONS 15600 SDH

Usage Notes:

- The latest ONS 15216 EDFA2 R2.4 hardware does not support memory restore to a software release other than 2.4.0. The ONS 15216 EDFA2 R2.3 hardware supports memory restore for NE software releases 2.3 and 2.4.
- For the ONS 15530 and ONS 15540, the SNMP Community String table must have a valid write community string for the NE before memory can be restored. For more information, see Chapter 3, "Building the Network."
- Prime Optical does not support memory restore for the ONS 15305 or Not Managed/Other Vendor NEs.

Complete the following steps to restore NE memory:

Step 1 In the Domain Explorer tree, select an NE that is assigned an In Service or Under Maintenance operational state.

Note Run the Memory Restore procedure for *one* NE at a time. You cannot restore memory for preprovisioned or out-of-service NEs.

Step 2 Choose **Administration > Memory Restore**. The Memory Restore dialog box opens.

Step 3 Enter the following information (see Table 4-26 for details):

- NE model
- NEs (select only one)
- Source
- Job comments
- Memory restore options (available only for CTC-based NEs)
- Time

Step 4 Depending on the type of NE, do one of the following:

- For the ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, or ONS 15454 SDH, proceed to Step 5.
- For the ONS 15530 or ONS 15540, proceed to Step 6.
- For the ONS 15600 SONET or ONS 15600 SDH, proceed to Step 7.
- For the ONS 15216 EDFA2 or ONS 15216 EDFA3 NEs, click **Finish**.

Step 5 For the ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, or ONS 15454 SDH, click **Next** to verify the following file properties:

- Node description
- Node name
- Node type
- IP address
- Software version

Prime Optical performs a compatibility check. The following table lists the compatibility factors and the corresponding action. The restore operation is not allowed if the NEs are of different types or if the software version is incompatible.

Table 4-25 Compatibility Factors for Memory Restore

Compatibility Factor	Action
Different NE type	Finish button is disabled; click **Cancel**.
Incompatible software version	Finish button is disabled; click **Cancel**.
Different node name	Prime Optical displays a warning message. You can click **Finish** to proceed with the restore operation or **Cancel** to cancel the operation.
Different software version	Prime Optical displays a warning message. You can click **Finish** to proceed with the restore operation or **Cancel** to cancel the operation.

Caution Restoring the memory of an NE using an incompatible or corrupted file might cause loss of traffic or loss of connectivity.

Step 6 For an ONS 15530 or ONS 15540:

a. Click **Next** to display the memory restore options. Select an option (see Table 4-26 for details):
   - Running configuration
   - Startup configuration

b. Click **Finish** to initiate the memory restore procedure.

Step 7 For the ONS 15600 SONET or ONS 15600 SDH:

a. Click **Next** to display the memory restore options. Select the category of data to restore (see Table 4-26 for details):
   - Provisioning data (is selected by default and is display only)
   - Alarm data
   - PM data

b. Click **Finish** to initiate the memory restore procedure.

To view the results of the memory restore operation, open the Job Monitor table (**Administration > Job Monitor**). For information about the Job Monitor table, see 4.6.1 Monitoring Scheduled Tasks, page 4-87.

Table 4-26 Field Descriptions for the Memory Restore Dialog Box

Field	Description
NE Model	Select the NE model that you want to restore. The model you select determines the NEs that are displayed in the Network Elements field.
Network Elements	Use the **Add** and **Remove** buttons to move the NE that you want to restore to the Selected NE list. You can run the Memory Restore procedure for only one NE at a time.

Table 4-26 Field Descriptions for the Memory Restore Dialog Box (continued)

Field	Description
Source	Specify the location of the backup file that you want to use to restore the NE: • Click **Local** to browse a local client directory for the backup file. • Click **Server** to restore the file from the Prime Optical server. The files shown are in the /opt/CiscoTransportManagerServer/admin/*NE-system-ID* directory in chronological order, with the most recent backup file displayed at the top of the list. The backup file uses the naming convention *NE-model-date time*-backup.cfg, where: – *date* has the format *YYYYMMDD* (that is, 20080206 is February 6, 2008) – *time* has the format *hhmmss* (that is, 144911 is 2:49:11 p.m.) For example, a valid backup filename is Cisco_ONS_15454-20080201144911-backup.cfg. **Note** The Server radio button is not active unless a file exists in that directory. • Click **Remote TFTP Server Address** to restore from another network server. (The Remote option is not supported for CTC-based NEs.) In the TFTP Server Address field, enter the IP address of the TFTP server. In the Relative TFTP File Path field, enter the fully qualified pathname of the backup file to be restored, relative to the tftpboot directory. TFTP must be configured and running on the network server. The Remote option is supported for the ONS 15216 EDFA2 R2.3.0 and later. **Note** If the Remote option is selected for the ONS 15216 EDFA, the backup file that you are restoring must have been saved in the default directory, such as the tftpboot directory on the remote TFTP server. **Note** The tftpboot directory must have read-write access, or the restore job will fail. See Chapter 3, "Building the Network" for information about how to configure the tftp directory with read-write access. • Click **Remote FTP Server Address** to restore from any UNIX workstation that is running FTP. This option requires authentication. In the FTP Server Address field, enter the IP address of the FTP server. In the FTP File Path field, enter the fully qualified pathname of the backup file to be restored, relative to the FTP directory. In the FTP Username field, enter the FTP username. In the FTP User Password field, enter the FTP user password. The Remote FTP Server option is supported only for the ONS 15216 EDFA3.
Job Comments	Enter comments about the restore procedure, if needed.
Memory Restore Options *(available only for CTC-based NEs)*	For CTC-based NEs, specify whether you want to partially or completely restore memory. This feature is available only to users with SuperUser or NetworkAdmin privileges. • Click **Partial Restore** to restore only the provisioning database, which includes information about links, circuits, and information contained in the NE Explorer. Partial Restore is selected by default. • Click **Complete Restore** to restore both the provisioning database and the system database. The system database parameters include software version, version name, NE node name, and so on.
Time *(time zone)*	Set a time for memory restore. Click **Now** to begin memory restore immediately, or click **At Time** and specify when to begin memory restore, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

Table 4-26 Field Descriptions for the Memory Restore Dialog Box (continued)

Field	Description
Memory Restore Dialog Box 2 for ONS 15530 and ONS 15540 NEs	
Running Configuration	Restores the currently running configuration of the NE. **Note** Configuration file commands are *added to* the current running configuration on the NE. The running configuration is not replaced by the configuration file.
Startup Configuration	Restores the startup configuration of the NE. This operation replaces the entire startup configuration file.
Memory Restore Dialog Box 2 for ONS 15600 SONET and ONS 15600 SDH NEs	
Provisioning Data	*Display only.* Restores the ONS 15600 provisioning data.
Alarm Data	If checked, the ONS 15600 alarm data is restored.
PM Data	If checked, the 15-minute and 1-day PM data for the ONS 15600 is restored.

4.5.3 Viewing and Modifying NE Service Properties

The NE Service pane in the Control Panel window allows you to view and update Prime Optical server configuration information, which includes timing parameters and NE backup parameters. You can also stop or start an individual NE service instance.

All server configuration changes take effect when you save them. The NE Service pane contains the following tabs, which are described in Table 4-27:

- NE Poller—Allows you to change timing parameters and CTC IIOP port information.
- NE Auto Backup—Allows you to configure automatic NE backup parameters.
- NE Manual Backup—Allows you to configure manual NE backup parameters.

Note The NE service is not started as a process until you activate an NE for that particular service.

When you add a network partition, the NE service is not started automatically. It starts only when you add an NE to the network partition. When the last NE is removed from the network partition, the NE service is not stopped automatically. The NE service stops only when the network partition is deleted.

Note Prime Optical is limited to running a maximum number of 23 Java processes. Enter the **opticalctl status** command to view the current number of running processes.

4.5.3.1 Understanding the Unmanaged NE Service

Unmanaged NEs have their own NE service. This Unmanaged NE Service allows Prime Optical to support unmanaged NE devices that are not in the Supported NE table. Unmanaged NEs can be Cisco or non-Cisco devices. The Unmanaged NE Service is required for operations such as:

- Creating manual links between managed and unmanaged NEs
- Creating manual links between unmanaged NEs

- Changing the operational state of unmanaged NEs

The Unmanaged NE Service also supports DWDM topology with IP Address along with the optical configuration.The following features are supported:

- Assign the type of the NE (CRS-1, CRS-3) and the IP address.
- Ability to cross-launch Prime Network from the unmanaged device.
- Create manual links between ONS and unmanaged NEs.
- Create patchcords that connects any CRS port to the ROADM device.

Note Passive NEs such as the ONS 15216 EDFA1 are not considered unmanaged NEs.

4.5.3.2 Changing Timing Parameters

Use the NE Service pane to tune timing parameters and accommodate different Prime Optical server-to-NE connectivity scenarios. When timing parameters are tuned, network utilization and Prime Optical server load are optimized. As a rule, timing parameters increase as the network slows.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **NE Service** to open the NE Service pane. Table 4-27 describes the fields in the NE Service pane.

Step 3 Click the **NE Poller** tab and enter the NE health poll interval.

Step 4 In the Control Panel window, expand the **NE Service** and click an NE. Table 4-28 describes the fields in the individual NE Service panes.

Step 5 In the Resync Scheduling area of the individual NE Service pane, enter the interval at which the configuration is retrieved and processed. This field is not available for all NEs.

Note The default values are adequate for most network configurations. Decreasing the values of the parameters could adversely impact server performance.

Step 6 Click **Save**. Changes take effect immediately.

Table 4-27 Field Descriptions for the NE Service Pane

Field	Subfield	Description
NE Poller Tab		
Timing Parameters	NE Health Poll Interval	Displays the NE polling interval (in seconds). The default is 240 seconds (4 minutes).

Table 4-27 Field Descriptions for the NE Service Pane (continued)

Field	Subfield	Description
CTC IIOP Port Configuration	CTC IIOP Port Range	Displays CTC IIOP ports or a range of ports for CTC-based network services that have been selected to be configured. When all ports have been removed in the CTC IIOP Selection dialog box, the CTC IIOP Port Range field displays a zero.
	Edit CTC IIOP Port Range button	Click the Edit CTC IIOP Port Range button to open the CTC IIOP Port Selection dialog box, which allows you to configure CTC IIOP ports or a range of ports for CTC-based network services. **Note** Table 4-29 describes the fields in the CTC IIOP Port Selection dialog box.
NE Auto Backup Tab		
Select Modify Mode	All NE Models, NE Model	Allows you to specify whether the automatic backup should apply to a specific NE model (ONS 15216 EDFA2 [R2.3.0 and later], ONS 15216 EDFA3, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454, ONS 15454 SDH, ONS 15530, ONS 15540 ESP, ONS 15540 ESPx, ONS 15600, ONS 15600 SDH, CPT 200, CPT 200 SDH, CPT 600, or CPT 600 SDH) or to all applicable NE models.
	Apply All Changes	If checked and All NE Models is selected, all of the values on this tab will be applied to all of the NE models. The applied changes also include the values that have not been modified currently. If unchecked, only the current changes will be applied to all of the NE models.

Table 4-27 Field Descriptions for the NE Service Pane (continued)

Field	Subfield	Description
Configuration Parameters	NE Model	If NE Model is selected under Select Modify Mode, this field allows you to specify the NE model that will be backed up automatically.
	Enable Auto Backup	If checked, the system automatically backs up all NE models, or a specific NE model. When NE Auto Backup State is set to Enabled, an entry is added to the Job Monitor table with a new job ID and a new task ID for each NE. Scheduled Time is set to the selected autobackup time and Task Status is set to Queued. When the autobackup time is reached and the task begins, Task Status is set to Running. After the backup is complete, Task Status is set back to Queued and Scheduled Time is reset to the time and date of the next scheduled backup time. When NE Auto Backup State is set to Disabled, Task Status is set to Cancelled. The default state is Disabled. When you first enable Memory Auto Backup, the job runs the same day if the scheduled time has not already passed. If the time has passed, the job runs the next day. However, if you later modify the Memory Auto Backup schedule, the job always runs the next day, regardless of whether or not the scheduled time has passed.
	Number of Backup Copies Retained	Allows you to specify the number of backup copies to keep. The valid range is from 1 to 50 backup copies; the default is 7. Only automatic backup copies count toward the total number of backup copies saved; manual backup copies do not count toward the total. For ONS 15530 and ONS 15540 NEs, the total number of backup copies includes both running and startup configuration files. For example, if you want to keep 7 copies of each configuration file, you should set the number of copies to 14. Each time Prime Optical creates a new backup file, it checks the existing number of backup copies. Prime Optical deletes files as needed, beginning with the oldest file, so as not to exceed the specified number of backup copies to keep.
	Backup Time	Allows you to set the time when the automatic backup will be performed.
NE Manual Backup Tab		
Select Modify Mode	—	Allows you to specify whether the manual backup should apply to a specific NE model (ONS 15216 EDFA2 [R2.3.0 and later], ONS 15216 EDFA3, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454, ONS 15454 SDH, ONS 15530, ONS 15540 ESP, ONS 15540 ESPx, ONS 15600, ONS 15600 SDH, CPT 200, CPT 200 SDH, CPT 600, or CPT 600 SDH) or to all applicable NE models.
Configuration Parameters	NE Model	If NE Model is selected under Select Modify Mode, this field allows you to specify the NE model that will be backed up manually.
	Number of Backup Copies Retained	Allows you to specify the number of backup copies to keep. The default is 7. Each time Prime Optical creates a new backup file, it checks the existing number of backup copies. Prime Optical deletes files as needed, beginning with the oldest file, so as not to exceed the specified number of backup copies to keep.

4.5.3.3 Viewing the Individual NE Service Panes

The individual NE Service panes in the Control Panel window allow you to stop, start, or configure an individual NE service instance.

Table 4-28 Field Descriptions for the Individual NE Service Panes

Field	Description
Status Tab	
Service Status *(This field is called Network Service Status for CTC-based SONET and CTC-based SDH NEs)*	Displays the current status of the service: Active or Not Active. By default, the status is Not Active. **Note** The NE service can take up to 60 seconds to initialize after the GUI status has changed to indicate that the service is up. The status is an indication of the successful initiation of the service startup, not successful initialization.
Service Action	Allows you to stop or start a process. Notice that the Service Action button toggles between Activate and Deactivate, and that the Service Status field changes accordingly.
Threshold	Displays the maximum number of NEs that each NE service instance can manage. The threshold depends on the NE type, as follows: • ONS 15216 NE Service can manage up to 1000 ONS 15216 NEs. • ONS 15305 NE Service can manage up to 1000 ONS 15305 NEs. • ONS 155xx NE Service can manage up to 1000 ONS 155xx NEs. • ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, or ONS 15600 SONET NE Service can manage up to 400 ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, or ONS 15600 SONET NEs (for NE releases earlier than R5.0). **Note** For NE release 5.0 or later in a large or high-end configuration, the NE service can manage up to 500 NEs. • ONS 15454 SDH and ONS 15600 SDH NE Service can manage up to 600 ONS 15454 SDH or ONS 15600 SDH NEs. • Unmanaged NE Service can manage up to 500 unmanaged NEs.

Table 4-28 Field Descriptions for the Individual NE Service Panes (continued)

Field	Description
Resync Scheduling *(not applicable to unmanaged or ONS 155xx NEs)*	Allows you to specify a schedule for database resynchronization for each NE model. A schedule consists of the following configurable parameters: • Days of the week to run: All, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday. Check the check box next to the day(s) to run the configuration resynchronization. • Time of day to initiate the resynchronization, in *HH*:*MM* AM/PM format (specific format based on locale). • Interval between synchronizations, in *HH*:*MM* format. The maximum interval is 24:00; the minimum is 5:00. The resynchronization interval is calculated only until the end of the day. The schedule for the next day takes effect after the end of the current day. For example, if you choose Wednesday with a start time of 10:00 a.m. and an interval of 6 hours, the resynchronization occurs at 10:00 a.m., 4:00 p.m., and 10:00 p.m. on Wednesdays. After you set the time interval between synchronizations, the Prime Optical server resynchronizes the database with the configuration changes from the last resynchronization time. This synchronizes the database with NE, card, and line configuration information. **Note** The Last Resync field shows when the NE was last synchronized. • Enable Resync Alarms check box—This check box is available after you select the days of the week for database resynchronization. When checked, the Config Resync operation starts and Prime Optical resynchronizes with all the active alarms that are present on the NE.
Bandwidth Utilization Report *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Check the Enable Bandwidth Data Service Provisioning (DSP) check box to enable the bandwidth check during L2 service provisioning. The bandwidth utilization report shows available and used bandwidth for each L2 topology. This report can be used during L2 service provisioning to verify whether the requested Committed Information Rate (CIR) is available on the topology. Based on the report, a warning is returned if there is not enough bandwidth available for a drop port. Be careful not to oversubscribe the bandwidth.
Designated Socks Server *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Check the Enable Designated Socks Server check box to allow the CTC-based SONET or CTC-based SDH NEs to serve as a designated SOCKS server (DSS). If the NE is a DSS, it manages connectivity among other NEs through network firewalls.
Threshold Crossing Alerts *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Check the Enable Threshold Crossing Alerts Receiver check box to forward events to other services (for example, from network service to other services) for CTC-based SONET or CTC-based SDH NEs. If the Enable Threshold Crossing Alerts Receiver check box is unchecked, events are not forwarded to other services and TCA information is not saved on the database.
Robust Fault Synchronization *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Allows you to enable or disable the robust fault synchronization for the ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, ONS 15600 SDH, CPT 200, and CPT 600.
BLSR-Ring/MS-SPRing Switch Interval *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Allows you to set the BLSR or MS-SPRing switch interval, in seconds. The default is 60 seconds.

Table 4-28 Field Descriptions for the Individual NE Service Panes (continued)

Field	Description
TL1 Tunnel Connection Timeout *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Allows you to set the time it takes to set up a TL1 tunnel connection between the Prime Optical server and the tunneled NE (TNE). When a new NE is added using the Add NE wizard, you can connect to the new NE using a TL1 tunnel. The Prime Optical server establishes a TCP/IP connection to a non-Cisco GNE (NGNE) and the NGNE establishes an OSI connection to the TNE. If the Prime Optical server cannot set up the TL1 tunnel connection before the specified TL1 tunnel connection timeout, the Add NE operation fails and the TNE connection state becomes unavailable.
Audit Trail Collection Interval *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Allows you to set the audit trail collection interval, in minutes. **Note** For NE releases earlier than release 6.0, the audit trail records are not cleared automatically. Instead, you must clear the alarms manually by archiving the audit records from CTC. In NE release 6.0 and later, the CTC API clears the audit trail records automatically, and the alarms are cleared automatically in Prime Optical. To manually clear audit trail records for NE releases earlier than 6.0, launch CTC and choose **Maintenance > Audit > Archive**.
L2 Service Resync Delay *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Allows you to configure the delay after which Prime Optical performs a Cisco IOS configuration synchronization on ML cards to keep the NE and the Prime Optical Data Provisioning Service synchronized. This operation synchronizes the L2 topology. Full Cisco IOS configuration synchronization is performed automatically by Prime Optical to keep the NE and the Prime Optical Data Provisioning Service synchronized. Full configuration resynchronization might be delayed depending on Prime Optical server usage. For the Prime Optical server deployed as a monitoring server, the recommended value for the delay parameter is 120 seconds. For the Prime Optical server deployed as a provisioning server, the recommended value for the delay parameter is 10 minutes (600 seconds).
ENEs List Poll Interval *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Time interval in which all CTC-based GNEs in Prime Optical need to refresh their list of ENEs. The list of ENEs for each GNE is obtained and compared with the existing ENE list. If there are any changes to the ENE list, topology changes are carried out so that the Domain Explorer will reflect the current topology with correct GNE and ENE icons.

4.5.3.4 Configuring Automatic NE Backup Parameters

Prime Optical can be configured to automatically back up ONS 15216 EDFA2, ONS 15216 EDFA3, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15530, ONS 15540 ESP, ONS 15540 ESPx, ONS 15600 SONET, and ONS 15600 SDH NEs once a day.

Automatic backup files are saved in the following locations and have the following names:

- $CTMHOME/admin/*NE-system-ID*/15216-*YYYYMMDDHHMM*-auto.cfg
- $CTMHOME/admin/*NE-system-ID*/[15530 | 15540]-*YYYYMMDDHHMM*-*Active-CPU-slot-number*-[running | startup]-auto.cfg
- $CTMHOME/admin/*NE-system-ID*/15310-*YYYYMMDDHHMM*-auto.cfg
- $CTMHOME/admin/*NE-system-ID*/Cisco_ONS_15327-*YYYYMMDDHHMM*-auto.cfg
- $CTMHOME/admin/*NE-system-ID*/15454-*YYYYMMDDHHMM*-auto.cfg

- $CTMHOME/admin/*NE-system-ID*/15600-*YYYYMMDDHHMM*-auto.cfg
- $CTMHOME/admin/*NE-system-ID*/*CTM-YYYYMMDDHHMM*-auto.cfg

where:

- *YYYYMMDDHHMM* is the date of the backup:
  - *YYYY* is the four-digit year
  - *MM* is the two-digit month
  - *DD* is the two-digit day
  - *HH* is the two-digit hour (in 24-hour format)
  - *MM* is the two-digit minute

  For example, 4:01 p.m. on September 29, 2006 is represented as 200609291601.
- *Active-CPU-slot-number* is the slot number of the active CPU at the time of job creation.
- [running | startup] indicates whether the backup is of the NE's running configuration or startup configuration.

Note Automatic backup is not available for all NEs.

Use the NE Service pane to set automatic NE backup parameters.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **NE Service** to open the NE Service pane. Click the **NE Auto Backup** tab. Table 4-27 provides descriptions.

Step 3 Enter the following information:

- Select Modify Mode
- NE Model
- Enable Auto Backup
- Number of Backup Copies Retained
- Backup Time
- Backup Data (available only if ONS 15600 SONET or ONS 15600 SDH is selected as the NE model)

Step 4 Click **Save**. Changes take effect immediately; however, the backup already scheduled for the next 24 hours remains in effect. A backup with the new parameters will occur after the previously scheduled backup runs.

If the time you scheduled for the backup is prior to the current time of the current day, a backup for the current day will be scheduled for immediate execution. Otherwise, backups for the current day and subsequent days will occur at the specified time.

To verify whether Prime Optical is automatically backing up the NE, go to the Job Monitor table (**Administration > Job Monitor**), verify that the task is listed, and check its task status. If automatic backup for an NE failed, the task status will be "Failed." This failure is logged in the Audit Log and an alarm is generated.

Note If the Prime Optical server restarts after the scheduled automatic backup time for that day, Prime Optical automatically schedules a backup for all ONS 15327, ONS 15454 SONET, ONS 15530, and ONS 15540 NEs to take place 5 to 10 minutes after the restart. Conversely, if the server restarts before the scheduled backup time for that day, the backup occurs at the regularly scheduled time. This behavior ensures that a backup is performed for each NE at least once a day.

For example, if the automatic backup time is set for 2:00 a.m. and the Prime Optical server restarts at 8:00 p.m., the server schedules a backup 5 to 10 minutes after the restart because the backup time is earlier than the restart time on the same day. As another example, if the automatic backup time is set for 11:00 p.m. and the Prime Optical server restarts at 8:00 p.m., the server waits until 11:00 p.m. to run the backup because the backup time is later than the restart time.

An entry is added to the Audit Log for each successful completion or failed NE autobackup task.

4.5.3.5 Configuring Manual NE Backup Parameters

Use the NE Service pane to set manual NE backup parameters.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **NE Service** to open the NE Service pane. Click the **NE Manual Backup** tab. Table 4-27 provides descriptions.

Step 3 Enter the following information:

- Select Modify Mode
- NE Model
- Number of Backup Copies Retained

Step 4 Click **Save**. Changes take effect immediately; however, the backup already scheduled for the next 24 hours remains in effect. A backup with the new parameters will occur after the previously scheduled backup runs.

4.5.3.6 CTC IIOP Port Configuration

The CTC IIOP Port Selection dialog box allows you to configure individual CTC IIOP ports, or a range of ports, for the CTC-based NE service.

Typically you would configure a specific CTC IIOP port (or a range of ports) if you have a firewall between the Prime Optical server and the NE.

The number of ports configured must equal the number of CTC-based NE services, unless you have SSLIOP configured on the NE. If you have SSLIOP configured on the NE, each NE service requires two ports (instead of one port): one for IIOP and one for SSLIOP.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **NE Service** to open the NE Service pane.

Step 3 Click the **NE Poller** tab.

Step 4 Click the **Edit CTC IIOP Port Range** button to open the CTC IIOP Port Selection dialog box, which allows you to select CTC IIOP ports or a range of ports for the CTC-based NE service. Table 4-29 provides descriptions.

Step 5 Enter the port values.

Note You can specify a single port (leaving the To text field blank) or a port range by specifying the initial value (From text field) and the end value (To text field).

Step 6 Click the **Add Port** button to add the ports you entered. The ports are added to the Selected Port list in ascending order.

Tip You can remove ports from the Selected Port list by selecting the port you want to remove and clicking the **Remove** button. The port moves to the Deleted Port list.

Step 7 Click **OK** to close the CTC IIOP Port Selection dialog box. At the confirmation prompt, click **OK**. The values displayed in the Selected Port list are formatted and displayed in the CTC IIOP Port Range field.

Caution The NE service will not start if the ports you select are already in use by the server. Verify that the port values you select in the CTC IIOP Port Selection dialog box are not already in use by the server before saving your changes.

Table 4-29 Field Descriptions for the CTC IIOP Port Selection Dialog Box

Field	Description
Specify CTC IIOP Port Range	
From/To fields	Enter a port range by specifying the initial value in the From field and the end value in the To field. You can specify a single port by entering the port value in the From field, leaving the To field blank. The valid range for the From/To fields is from 0 to 65,535.
Add Port button	Click the **Add Port** button to add the ports specified in the From/To fields to the Selected Port list. Ports listed in the Selected Port list will appear in the CTC IIOP Port Range field.
Port Selection	
Deleted Port	Displays the list of ports to be deleted from the CTC IIOP Port Range.
Selected Port	Displays the list of ports to be added to the CTC IIOP Port Range.
Add button	Select a port in the Deleted Port list and click the **Add** button to move the port to the Selected Port list. Ports listed in the Selected Port list will appear in the CTC IIOP Port Range field.
Remove button	Select a port in the Selected Port list and click the **Remove** button to move the port to the Deleted Port list. Ports listed in the Deleted Port list will not appear in the CTC IIOP Port Range field.

4.5.4 Viewing and Modifying Service Instance Properties

The NE Service Instance pane in the Control Panel window allows you to view a list of NEs managed by the service instance. You can also activate or deactivate debug logging on selected NEs.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, expand **NE Service**.

Step 3 Expand an individual NE service and click **NE Service Instance**. The following table provides descriptions.

Table 4-30 Field Descriptions for the NE Service Instance Pane

Field	Description
Status	
Network Partition	Displays the name of the associated Network Partition. This is a read-only field.
Service Status	Displays the current status of the service: Running or Stopped. The network service can take up to 60 seconds to initialize after the GUI status has changed to indicate that the service is up. The status is an indication of the successful initiation of the service startup, not successful initialization.
Start Service Instance, Stop Service Instance	Allows you to stop or start an individual network service instance. If you click **Start Service Instance**, the service status changes to *Running*. If you click **Stop Service Instance**, the status changes to *Stopped*. The list of managed NEs shows which NEs are being managed by the selected service instance. If you stop the specified service instance, the NEs in the list are no longer managed.
Dump Cache button	Click the **Dump Cache** button to export the cache (memory) information of the selected service instance to a log file. This feature applies only to CTC-based NE service instances.
Debug Table button	Click the **Debug Table** button to open the Prime Optical NE Module Level Debug table. See 4.5.4.1 Viewing the Prime Optical NE Module Level Debug Table, page 4-78.
Discovery Mode	Lets you set the mode of discovery of NEs; the mode of discovery can be manual or automatic. Set the discovery mode to one of the following: • Automatic—When a new NE is added, Prime Optical automatically discovers the NE and adds it to the network partition. • Manual—When a new NE is added to Prime Optical, the NE remains in the Undiscovered Network Elements group in the Domain Explorer. You can later add the NE to the desired network partition; click **Add Undiscovered NEs** to add the NEs to a network partition. **Note** This option is available only for CTC-based NEs.

Table 4-30 Field Descriptions for the NE Service Instance Pane (continued)

Field	Description
Overall Logging for the Instance	Enable—Click the **Enable** radio button to enable logging. When you click the Enable radio button, the debug modules in the Available list become selectable. Disable—Click the **Disable** radio button to disable logging. When you click the Disable radio button, the debug modules in the Available list become dimmed and you cannot make any selections from the Available list.
Managed NEs	
Filter button	Click the **Filter** button to filter the data displayed in the table.
NE ID	Displays the ID name of the selected NE.
IP Address	Displays the IP address of the selected NE.
NE State	Displays the state of the selected NE.
Communication State	Displays the current connectivity state between Prime Optical and the selected NE. Values are Available or Unavailable.
Subnet ID	Displays the name of the subnetwork associated with the selected NE.
Debug Option	Displays whether the debug option is enabled or disabled for the selected NE.

4.5.4.1 Viewing the Prime Optical NE Module Level Debug Table

The Prime Optical NE Module Level Debug table displays the debug state of the selected NEs, and it lists the modules for which debugging is active.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, expand **NE Service** or **PM Service** then do one of the following:

- Expand one of the following under NE Service:
  - CTC-Based SONET NEs
  - CTC-Based SDH NEs
- Expand one of the following under the PM Service:
  - ONS 15305/ONS 15305 CTC
  - ONS 15310 CL/ONS15310 MA/ONS 15327/ONS 15454
  - ONS 15310 MA SDH/ONS 15454 SDH
  - ONS 15600
  - ONS 15600 SDH

Step 3 Click **Network Service Instance** or **PM Service Instance**.

Step 4 Select one or more managed NEs from the Managed NEs table.

Step 5 Click the **Debug Table** button. The Prime Optical NE Module Level Debug table opens. The following table provides descriptions.

Table 4-31 Field Descriptions for the Prime Optical NE Module Level Debug Table

Field	Description
NE ID	Displays the ID name of the selected NE.
Debug State	Displays the debug state (enabled or disabled).
Debug Modules	Displays a list of debug modules active on the selected node.

4.5.4.2 Configuring the NE Logging Options

The Network Element Logging Options dialog box allows you to modify the debug state for selected NEs.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, expand **NE Service**.

Step 3 Expand **CTC-Based SONET NEs** or **CTC-Based SDH NEs** and click **Network Service Instance**.

Step 4 Select one or more managed NEs from the managed NEs table.

Step 5 Click the **Debug Table** button. The Prime Optical NE Module Level Debug table opens.

Step 6 Click the **Open Debug Dialog** tool to open the Network Element Logging Options dialog box. The following table provides descriptions.

Step 7 Click **Save** to save the NE logging options.

Table 4-32 Field Descriptions for the Network Element Logging Options Dialog Box

Field	Description
Overall Logging	
Enable	Choose the Enable radio button to enable logging. When you choose the Enable radio button, the debug modules in the Available list become selectable.
Disable	Choose the Disable radio button to disable logging. When you choose the Disable radio button, the debug modules in the Available list become dimmed and you cannot make any selections from the Available list.
Apply to All NEs	Check the Apply to All NEs check box to apply all the modules to the NEs selected in the Prime Optical NE Module Level Debug table.
Debug Modules	
Available	Displays the modules available for debugging.
Selected	Displays the modules selected for debugging.

4.5.5 Backing Up Client Files

Use the Backup File dialog box to view a list of NE configuration files that were created during routine backups and saved on the Prime Optical server from the NEs. You can select one or more files from the list and save them to a local client workstation.

Step 1 In the Domain Explorer window, choose **Administration > Memory Backup Upload**. The Backup File dialog box opens. The following table provides descriptions.

Step 2 In the Files area, select backup files from the list. To select multiple files, hold down the **Ctrl** key on your keyboard while using your mouse to click files. Click **Select All** to select all files in the list.

Step 3 In the Upload Location text box, specify where you want to save the backup files on the client. Click **Browse** to choose a client location different from the default.

Step 4 Click **Upload** to upload the selected backup files to the specified client workstation.

Table 4-33 Field Descriptions for the Backup File Dialog Box

Field	Description
Files	Lists the backup files that are available on the server.
Upload Location	Allows you to specify where you want to save the backup files on the client. The default location is *Prime Optical-client-installation-directory*\admin\ or *Prime Optical-client-installation-directory*/admin/. Click **Browse** to choose a different location.
Upload button	Uploads the selected backup files to the specified client location.
Select All button	Selects all of the backup files in the list.
Cancel button	Replaces any changes to user-defined fields with the previous values and closes the dialog box.
Help button	Launches the online help for the Backup File dialog box.

4.5.6 Restoring Server Configuration Files

Step 1 Log into the server workstation as the root user.

Step 2 On the command line, enter the following commands:

```
cd/opt/CiscoTransportManagerServer/bin
./restore_config.sh backup-file-location log-directory ISHA
```

Note The ISHA value is 0.

4.5.7 Configuring Nodes for Database Restore—ONS 15600

Use the Configure Node dialog box to configure the selected ONS 15600 SONET or ONS 15600 SDH node. This feature is essentially a database restore without the check for a matching node ID, software version, and IP address. Additionally, you can specify that a new IP address overrides the IP address in the database. When the node reboots after the database has been downloaded, it uses the new IP address you specified. Only the provisioning database is restored from the ONS 15600 database file, which can contain provisioning, alarm, PM, and audit databases.

Step 1 In the Domain Explorer tree, select an ONS 15600 SONET or ONS 15600 SDH NE that is assigned an In Service or Under Maintenance operational state. You cannot configure nodes for preprovisioned or out-of-service NEs.

Step 2 Choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Configure Node**. The Configure Node dialog box opens. The following table provides descriptions.

Step 3 Enter the following information:

- NE model
- Selected NE
- Source
- Job comments
- Time

Step 4 Click **Next**.

Step 5 Verify the configuration. If necessary, change the IP address with which the new node will be configured.

Step 6 Click **Finish**.

To view the results of the node configuration, check the Job Monitor table (**Administration > Job Monitor**).

Table 4-34 Field Descriptions for the Configure Node Dialog Box

Field	Description
NE Model	Select the NE type that you want to configure. The type you select determines the NEs that are displayed in the Network Elements field. **Note** You can only select ONS 15600 SONET or ONS 15600 SDH.
Network Elements	Use the **Add** and **Remove** buttons to move the NE that you want to configure to the Selected NE list. You can run the node configuration procedure for only one NE at a time.
Source	Specify the location of the backup file that you want to use to configure the NE: • Click **Local** to browse to a local client directory for the backup file. • Click **Server** to configure the file from the Prime Optical server. The files shown are in the directory /opt/CiscoTransportManagerServer/admin/*NE-system-ID*. The Server radio button is not active unless a file exists in that directory. **Note** The Remote options are disabled and do not apply.
Job Comments	Enter comments about the node configuration procedure, if needed.

Table 4-34 Field Descriptions for the Configure Node Dialog Box (continued)

Field	Description
Time (*time zone*)	Set a time for the node configuration. Click **Now** to begin node configuration immediately, or click **At Time** and specify when to begin node configuration, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.
Current Node Configuration	*Display only.* Displays the NE software version and IP address of the current node.
Memory Configuration	*Display only.* Displays the NE software version and IP address in the database file provided for configuring the node. The check box shows that only provisioning data will be considered for restoration.
New Node Configuration	Displays the NE software version and IP address with which the new node will be configured. By default, the IP address is the same as that of the current node. You can modify the IP address.

4.5.8 Managing Protection Groups

A protection group allows you to group modules together, so that if one module goes down for some reason, the other modules will be protected and will not go down as well. The following sections describe how to create, enable, edit, and delete protection groups.

4.5.8.1 Creating Protection Groups

Step 1 Select a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the NE Explorer window, click the **Protection** tab.

Step 3 In the **Protection Groups** subtab, click **Create**. The Create Protection Group dialog box opens. Table 4-35 provides descriptions. Fields shown depend on the type of NE that is selected.

Step 4 Specify the following information:

- Name
- Type
- Protect module

Caution If you are using Prime Optical GateWay/CORBA, make sure that you do not create multiple protection groups with the same name. Prime Optical GateWay/CORBA cannot distinguish between multiple protection groups with the same name while executing a delete protection group command or a perform protection switch command.

Note 1:N protection is not supported for the ONS 15327.

The Layer 2 1+1 protection group is created only between client ports on GE_XP or 10GE_XP cards (in L2 over DWDM mode), and only if Layer 2 trunk-to-trunk internal patchcords are created between the cards' trunk ports.

Based on these selections, a list of available working cards or ports is displayed.

Step 5 From the Available Entities list, choose the card or port that will be the working card or port. Click the arrow button to move each card or port to the Working Entities list.

Step 6 Complete the remaining information:

- Bidirectional switching
- Revertive
- Reversion time
- Recovery guard time
- Verification guard time
- Detection guard time

Step 7 Click **OK**.

Caution Before running traffic on a protected card within a protection group, enable the ports of all protection group cards.

Note After creating a protection group on DS3XM-6 cards, wait for 2 minutes while Prime Optical receives updates for all of the ports supported by the DS3XM-6 cards. The protection group is not visible in Prime Optical until the 2-minute update period is complete.

Note The ONS 15600 SONET must have cards carrying live traffic in order to switch protection. Even a forced switch will be overridden by a failed signal. You cannot perform manual and forced switches on an ONS 15600 using preprovisioned cards. If you try to perform a switch using preprovisioned cards, the NE returns an error, and the protection operation does not switch from Active to Protect. An APS_CLEAR is generated, which can be cleared.

Table 4-35 Field Descriptions for the Create Protection Group Dialog Box

Field	Description
Name	Enter a name for the protection group. The name can have up to 32 alphanumeric characters. **Note** You cannot set the protection group name for ONS 15305 CTC protection groups.
Type	Choose the protection type from the drop-down list: • 1:1 (card) • 1:N (card) • Y Cable (port) • 1+1 (port) • 1+1 Optimized (port) • Layer 2 1+1 The protection selected determines the cards that are available to serve as protect and working cards. For example, if you choose 1:N protection, only DS-1N-14 and DS-3N-12E cards are displayed. If you choose Layer 2 1+1, only the 10GE_XP and GE_XP cards are displayed.
Protect Module	Choose the protect module if using 1:1, 1:N, or Layer 2 1+1.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	(Optical cards only) If checked, both the transmit and the receive channels switch if a failure occurs on one. This option is only available if you select 1+1 (port) type.
Revertive	If checked, the node reverts traffic to the working card or port after failure conditions remain corrected for the amount of time entered in the Reversion Time field. This option is not available if the 1:N (card) type has been selected.
Reversion Time	If Revertive is checked, choose the amount of time following failure condition correction that the node should switch back to the working card or port. Values are listed in half-minute increments.
Recovery Guard Time	Prevents rapid switches due to signal degrade (SD) or signal failure (SF) conditions. After the SD or SF condition is cleared on a facility protected by Optimized 1+1 protection, no switches are performed for the duration of the recovery guard timer.
Verification Guard Time	Specifies the amount of time that a user command has to complete. If a user command cannot be completed within the duration set by the verification guard timer, the command is cleared and an APS_CLEAR event is sent.
Detection Guard Time	Specifies the amount of time after a failure that the system has to complete a switch. After detecting an SD, SF, loss of signal (LOS), loss of frame (LOF), or alarm indication signal line (AISL) failure, the detection guard timer is started. If the detection guard timer is set to zero, the system completes a switch within 60 ms for failure events.

4.5.8.2 Enabling Ports of Protection Group Cards

Step 1 Select a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the card.

Step 3 In the card slot properties pane, click the **Line** tab.

Step 4 In the Line Config subtab, under the Admin State column, select **IS** (in service).

Step 5 Click **Apply**.

4.5.8.3 Editing Protection Groups

Step 1 Select a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the node properties pane, click the **Protection** tab > **Protection Groups** subtab.

Step 3 In the Protection Groups area, choose a protection group.

Step 4 In the Selected Protection Group area, edit the fields as appropriate.

Step 5 In the Protection tab, click the **Operations** subtab.

Step 6 In the Protection Groups area, choose a protection group.

Step 7 In the Protection Group Details area, select a protection group port; then, choose from among the following:

- Clear—Clears a traffic switch on protection group port.
- Manual—Initiates a manual switch on the selected port. This command switches traffic only if the path has an error rate less than the signal degrade (SD) bit error rate (BER) threshold.
- Force—Initiates a forced switch on the selected port. This command switches traffic even if the path has SD or signal fail (SF) conditions. A Force switch has a higher priority than a Manual switch.
- Unlock—Unlocks the protection group. This button is enabled only after you click the Lock Out button.
- Lock Out—For NE software release 8.5 and later, this button sends the lockout command to the ports of the protection group. There are two types of lockout commands:
  - Lockout of protection—If you select the Protect/Standby port of an unlocked protection group, the LOCKOUT OF PROTECTION command is sent to CTC. This prevents the Working/Active port from automatically switching to the protected state. This command also prevents events that force the Protect/Standby port to switch.
  - Lockout of working—If you select the Working/Active port of an unlocked protection group, the LOCKOUT OF WORKING command is sent to CTC. This prevents the Protect/Standby port from automatically switching to the working state. This command also prevents events that force the Working/Active port to switch.
- Lock On—For NE software release 8.5 and later, this button is dimmed and not used.

Step 8 In the confirmation dialog box, click **OK**.

Step 9 Click **Apply**.

4.5.8.4 Deleting Protection Groups

Step 1 Select a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the node properties pane, click the **Protection** tab.

Step 3 In the **Operations** subtab, make sure that the protect card is in standby mode and the working card is in active mode. If the protect card is still active, do not continue.

Step 4 In the **Protection Groups** subtab, select the protection group.

Step 5 Click **Delete**.

Step 6 In the confirmation dialog box, click **OK**.

4.5.9 Restoring NE Defaults

The NE Defaults Management wizard allows you to choose an NE from which an NE defaults file can be loaded. Alternatively, you can load the file from your local (client) disk. The wizard then provides you a list of NEs where you can download the file. When you click Finish, Prime Optical schedules a job for this action. The NE defaults file downloaded to each selected NE is tracked as a separate task on the Job Monitor table.

Note

- If you are applying NE defaults from one NE to another, the NE versions must be identical. For example, you cannot apply NE defaults from an ONS 15454 SONET R7.5 to an ONS 15454 SONET R8.5.
- This feature is available for R3.4 NEs and later.

If you want to revert back to the default settings for an NE, you can download and apply a defaults override file to one or more selected NEs, as follows:

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > NE Defaults Management**. The NE Defaults Management wizard opens. The following table provides descriptions.

Step 2 Choose an NE from which a defaults override file can be loaded. The following options are available:

- From NE
- From File

Step 3 Click **Next**. A display-only list of NE defaults is shown.

Step 4 Click **Next**.

Step 5 Select the NE(s) to which you want to download the default-override file. The following options are available:

- Save to NE
- Save to File

Step 6 Click **Finish**.

Table 4-36 Field Descriptions for the NE Defaults Management Wizard

Field	Description
Select an NE to View the Defaults	
From NE	Select **From NE** if the NE defaults file is on an NE. If you select From NE, the From File options are dimmed.
Select NE	Select the NE where the NE defaults file exists.
From File	Select **From File** if the NE defaults file is on your client workstation or a server. If you select From File, the From NE options are dimmed.
Local	Select **Local** if the file is on your local client workstation. Enter the path for the file, or click **Browse** to search for it.
Server	Select **Server** if the file is located on a server. Use the drop-down list to select a server.
NE Defaults	
Display only. Use this screen to view the selected NE defaults.	
Save the NE Defaults	
Save to NE(s)	To save the defaults to one or more NEs, select **Save to NE(s)**. If you select Save to NE(s), the Save to File options are dimmed.
Available NE(s)	Select one or more NEs in the Available NE(s) field and click **Add** to move them to the Selected NE(s) field.
Selected NE(s)	Select one or more NEs in the Selected NE(s) field and click **Remove** to move them to the Available NE(s) field.
Save to File	To save the defaults to a file on your client workstation or a server, select **Save to File**. If you select Save to File, the Save to NE(s) options are dimmed.
Local	Select **Local** to save the file on your local client workstation. Enter the path for the file, or click **Browse** to search for it.
Server	Select **Server** to save the file on a server. Enter a server path in the field.

4.6 How Do I Monitor the Network?

Follow the procedures in this section to manage scheduled tasks, view NE discrepancies, and monitor client and server configuration details.

4.6.1 Monitoring Scheduled Tasks

The Job Monitor table provides information about scheduled administrative tasks—memory backup, memory restore, and software download. For example, you can see the system username of the person who entered a specific task, the time when the task began, and the time when the task ended.

Note A job consists of multiple tasks.

The Job Monitor table also monitors bulk operations: adding multiple users to multiple NEs, modifying a user on multiple NEs, and deleting multiple users on multiple NEs. (See 8.4.3 Managing NE User Access, page 8-48 for more information about bulk operations.) When a request is made to the Prime Optical server to add, modify, or delete NE users, multiple entries are made in the Job Monitor table. Each entry consists of the following:

- Task Owner—User ID used during login.
- NE ID—NE ID on which the operation is executed.
- Task Creation Time—Server time when the request was made.

After these requests are executed, the job's status is updated accordingly in the Job Monitor table.

Note Sometimes, when a node is busy, a job request may fail. In such a scenario, Prime Optical automatically creates a new similar job and resends the request using the job retry functionality. The new job is triggered anytime within the first 10 minutes of detection of the failure. Prime Optical attempts to resend the request a maximum of five times. Rescheduled jobs can be monitored in the Job Monitor table.

Another task that is monitored is the BLSR/MS-SPRing switch scheduling. (See 7.3.7 Switching BLSRs, page 7-204 or 7.4.9 Switching MS-SPRings, page 7-215.) When the switch ring is scheduled, two tasks are created: the BLSR/MS-SPRing switch job in the west port and the BLSR/MS-SPRing switch job in the east port. The schedule time difference between these two tasks is specified in the Control Panel. (See 7.4.10 Changing the MS-SPRing Switch Interval, page 7-216.)

If you schedule a BLSR/MS-SPRing switch successfully, the corresponding task and its status are monitored in the Job Monitor table. If more than one BLSR switch is scheduled at a certain time on the same ring, only one BLSR switch will be successfully completed. Tasks are marked Succeeded when the switch command is accepted by the NE. If the switch fails due to the unavailability of the NE or if the switch command is rejected by the NE, an alarm is reported in the Alarm Browser and is cleared on the next successful switch or when the cross-connect is reset.

4.6.1.1 Viewing the Job Monitor Table

To view the Job Monitor table, choose **Administration > Job Monitor** in the Domain Explorer window. The following table provides descriptions.

Note Some fields in the Job Monitor table apply only to certain tasks, NEs, or NE versions.

Table 4-37 Field Descriptions for the Job Monitor Table

Field	Description
Job ID	ID number corresponding to the selected job.
Task ID	ID number corresponding to the task. If a job includes more than one NE, each NE has a separate task ID for the job.
Task Type	Type of task. Tasks include adding users, applying alarm profiles, creating BLSR/MS-SPRings, configuring nodes, creating alarm profiles, deleting users, logging out users, automatically backing up memory, manually backing up memory, restoring memory, modifying users, setting up SNTP, setting NE defaults, setting security advisory messages, activating software, downloading software, reverting software, and cloning ML cards.

Table 4-37 Field Descriptions for the Job Monitor Table (continued)

Field	Description
Task Owner	System username of the person who entered the task.
Alias ID	Alias name of the NE.
Task Status	Current status of the task: • Queued—The task is scheduled but has not yet begun. • Running—The task is in progress. • Canceled—The task has been canceled. • Succeeded—The task succeeded. • Failed—The task failed. • Waiting—The node manager must be initialized before a task can begin. If the node manager is not initialized, the status of the task is Waiting. After the node manager becomes initialized, the task status changes to Queued. **Note** A job can be canceled only when its task status is either Queued or Waiting.
Task Creation Time	Date and time when the task was entered into the system.
Task Scheduled Time	Date and time when the task is scheduled to begin.
Task Start Time	Date and time when the task began.
Task End Time	Date and time when the task ended.
Display Information	Information related to the Task Type column.
Note	Any user-entered comments relating to the task.
Additional Information	Any additional information.
NE ID	Name of the NE on which the task is scheduled to run.

4.6.1.2 Viewing the Job Monitor Filter Dialog Box

Use the Job Monitor Filter dialog box to filter job data according to criteria that you select and to display the results in the Job Monitor table. The following table provides descriptions.

Table 4-38 Field Descriptions for the Job Monitor Filter Dialog Box

Tab	Description
Creation Time (*time zone*)	Allows you to filter job monitor data for a specified time period, ranging from the past hour to the past 180 days. Additionally, you can click the **User Specified** radio button to specify exact filter start and end times by date and hour. The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box. Click **No Time Specified** if you want to filter events and the time period is not important. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue.
NE ID	Allows you to move NEs back and forth between the list of available NE IDs and selected NE IDs. The filter runs on the NEs in the Selected NE ID list.
Task Owner	Allows you to move owners back and forth between the list of available owners and selected owners. The filter runs on the owners in the Selected Task Owner list.
Job/Task ID	Allows you to filter jobs by job and task IDs. Jobs consist of multiple tasks. For example, if you perform a memory backup for multiple NEs, the backup operation is a job, and each NE is a task. • If you specify a start and end ID range in the Job ID field but leave the Task ID field blank, the filter runs on the job ID range. • If you specify a start and end ID range in the Task ID field but leave the Job ID field blank, the filter runs on the task ID range. • If you specify a start and end ID range in both the Job ID and Task ID fields, the filter first applies the values in the Job ID field, then narrows the filter according to the values in the Task ID field. For example, if you specify that Job ID Start = 1, Job ID End = 3, Task ID Start = 1, and Task ID End = 2, the returned value is all entries with a Job ID of 1, 2, or 3 and a Task ID of 1 or 2.
Task Type	Allows you to move task types back and forth between the list of available task types and selected task types. The filter runs on the tasks in the Selected Task Types list.
Task Status	Allows you to filter tasks by status: • Queued—The task is scheduled but has not yet begun. • Running—The task is in progress. • Canceled—The task has been canceled. • Failed—The task failed. • Succeeded—The task succeeded. • Waiting—The node manager must be initialized before a task can begin. If the node manager is not initialized, the status of the task is Waiting. After the node manager becomes initialized, the task status changes to Queued.

4.6.1.3 Canceling a Scheduled Job or Task

Step 1 In the Domain Explorer window, choose **Administration > Job Monitor**.

Step 2 Select a task to cancel; then, choose **Edit > Cancel Task** or **Cancel Job** (or click the **Cancel Task** or **Cancel Job** tools).

Note Cancel is enabled only for jobs and tasks with a Queued status. When a job contains more than one task in a Queued status, choosing **Cancel Job** cancels all tasks with the same job ID.

Step 3 Click **OK** in the confirmation dialog box.

4.6.1.4 Adding Job Monitor Notes

The Job Monitor Note dialog box allows you to view and add notes to jobs displayed in the Job Monitor table. If a job has a note, a Job Monitor Note tool appears under the User Comments column.

Step 1 In the Domain Explorer window, choose **Administration > Job Monitor**.

Step 2 Select a task and choose **Edit > User Note**. The following table describes the fields in the Job Monitor Note dialog box.

Comments are visible to all users.

Table 4-39 Field Descriptions for the Job Monitor Note Dialog Box

Field	Description
Note	Provides space for you to type your comments about the selected job. The maximum length of this field is 2048 characters. To add comments to the previous comments, click the **Append** radio button. To overwrite the previous comments, click **Replace**. To delete the comments, click **Delete**.
History	Displays comments entered by previous users.

4.6.2 Monitoring Service Status

The Service Monitor table shows the status of the services that are running on the Prime Optical server. To view the Service Monitor table, choose **Administration > Service Monitor** in the Domain Explorer window. The following table provides descriptions.

Table 4-40 Field Descriptions for the Service Monitor Table

Field	Description
Service Name	Displays the name of the selected service.
Logged In At	Displays the last time the service logged into the main Prime Optical server process.
IP Address	Displays the IP address of the selected service.
Session ID	Displays the unique session ID.

Note The **opticalctl status** command shows the processes that are running on the Prime Optical server. Because some of these processes implement Prime Optical services, the **opticalctl status** command is an alternate way of viewing services that are running on the Prime Optical server. The command also shows processes—such as the Apache web server—that are not Prime Optical services. Do not run multiple **opticalctl status** commands concurrently.

4.6.3 Monitoring Service Availability

You can view current and historical information about NE and PM services.

- The Service Availability table allows you to monitor the status of currently active services. See 4.6.3.1 Viewing the Service Availability Table, page 4-92.
- The Service Uptime Log allows you to view historical uptime data for services that were previously activated, but are currently deactivated. See 4.6.3.2 Viewing the Service Availability Log, page 4-93.

4.6.3.1 Viewing the Service Availability Table

The Service Availability table shows the services that are connected to the SM service, which is a process internal to the Prime Optical server. The Service Availability table differs from the Service Monitor table in that the Service Availability table does not show the SM service itself, whereas the Service Monitor table shows the SM service. Another difference is that Service Availability table displays and monitors service uptime, whereas the Service Monitor table shows only those services that are currently running.

To view the Service Availability table, choose **Administration > Service Uptime** in the Domain Explorer window. (See Table 4-41 for field descriptions.) The following events trigger an update to the Service Availability table:

- A service instance is started—For NE services, this occurs when you use the Add New NE wizard to add a new NE, and then you activate the corresponding NE service in the Control Panel. For PM services, this occurs when you activate a PM service in the Control Panel.
- A service instance is stopped—For NE services, this occurs when you deactivate an NE service in the Control Panel, or when there are no NEs added to that NE service in the Control Panel. For PM services, this occurs when you deactivate a PM service in the Control Panel.
- A service instance crashes—This occurs when a service stops running but is still active.
- A service instance is restarted after a crash.

If the Prime Optical server is shut down with the **opticalctl stop** or **opticalctl abort** command, all of the services are stopped. All service instances that were running when the Prime Optical server was shut down are marked as stopped and moved to the Service Uptime Log. When the Prime Optical server restarts, the new service instances are added to the Service Availability table.

Table 4-41 Field Descriptions for the Service Availability Table

Field	Description
Service Name	Name of the service instance.
Status	Current status of the service. Values are: • Running—The service is running. • Not Running—The service is not running.
Started At	Date and time when the service was started.
Last Crash	Date and time when the most recent service crash occurred. If the service has not crashed, this field displays a value of N/A.
Uptime	Amount of time that has elapsed since the most recent startup; or, if the service has not crashed, shows the amount of time that has elapsed since the service was started.
Total Time	Sum of all uptimes since the service was started.
Uptime Percentage	Percentage of time during which the service has been up. This value is the ratio between the total uptime and the amount of time that has elapsed since the service was started.

4.6.3.2 Viewing the Service Availability Log

The SM service sends an event to the Prime Optical client whenever a service instance is stopped. The Service Availability Log table refreshes to show a new row for each stopped service.

To view the Service Availability Log table, choose **Administration > Service Uptime Log** in the Domain Explorer window. The following table provides descriptions.

Table 4-42 Field Descriptions for the Service Availability Log Table

Field	Description
Service Name	Name of the stopped service instance.
Started At	Date and time when the service was started.
Stopped At	Date and time when the service was stopped.
Status	Current status of the service. The value is always Not Active, meaning the service has been stopped in the Control Panel, or, for NE services, no NEs of that type have been added to the Domain Explorer.
Last Crash	Amount of time that has elapsed since the most recent crash.
Total Uptime	Sum of all uptimes before the service was stopped.
Uptime Percentage	Percentage of time during which the service was up before it was stopped.

4.6.4 Viewing the NE Discrepancy Table

The NE Discrepancy table shows all ONS 155xx misconfigurations detected by Prime Optical.

Step 1 In the Domain Explorer or Subnetwork Explorer tree, select the ONS 155xx NE, group, or subnetwork for which to view misconfiguration data.

Step 2 Choose **Configuration > ONS 155XX > NE Discrepancy Table**. The NE Discrepancy table opens. The following table provides descriptions.

Table 4-43 Field Descriptions for the NE Discrepancy Table

Field	Description
Name	Type of discrepancy: • Wavelength Mismatch—Wavelengths cannot be added to a MUX/DEMUX card while the same wavelengths that were added by another MUX/DEMUX card on the network are passing through this MUX/DEMUX card passively. • Protection Mode Mismatch—The protection mode is configured differently at each end of a circuit or connection. • Protocol Mismatch—The protocol type is misconfigured at the ends of a circuit or connection. • Link Mismatch—A link has been configured to connect more than one device to the same port on a third device.
Description	Description of the discrepancy.
Perceived Severity	Severity level of the discrepancy: • CR—Critical • MJ—Major • MN—Minor • WN—Warning
Time Stamp	Date and time when the discrepancy was discovered.
Node 1	The first ONS 155xx involved in the discrepancy.
Node 2	The other ONS 155xx involved in the discrepancy. Discrepancies usually involve two devices.
Details	Details on the discrepancy, including its cause. If the text extends beyond the width of the field, use the pull-down arrow to the right of the field to read the remaining text. Alternatively, choose **File > Show Discrepancy Details** to read the full text.

4.6.5 Monitoring Prime Optical Client and Server Configuration Details

The Prime Optical Properties pane in the Control Panel window displays information about the Prime Optical server and client configuration.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **Cisco Prime Optical** to open the Prime Optical Properties pane. The following table provides descriptions.

Table 4-44 Field Descriptions for the Cisco Prime Optical Properties Pane

Field	Description
Server Configuration Tab	
Server Name	Workstation name where the Prime Optical server application resides.
IP Address	IP address of the Prime Optical server.
Software Version	Prime Optical software version that is running.
Server Size	Size of the Prime Optical server installation. Values are small, medium, large, or high end.
Port Information Area	
Server JMOCO Port	JMOCO port number of the Prime Optical server. The Active field displays the current port; the Activated After Restart field displays the port that is active after the server is rebooted.
Service Manager IIOP Port	Service manager port number.
Client Configuration Tab	
Hostname	Workstation name where the Prime Optical client application resides.
IP Address	IP address of the Prime Optical client.
Username	Name that was used to log into the Prime Optical client.

4.6.6 Viewing the Prime Optical Server Version

You can view the Prime Optical server version in the Control Panel and in the About Cisco Prime Optical dialog box. You can also view the server version in the Management Domain Properties pane.

Step 1 To view the Prime Optical server version in the Control Panel, complete the following substeps:

- **a.** In the Domain Explorer window, choose **Administration > Control Panel**.
- **b.** In the Control Panel window, click **Cisco Prime Optical** to open the Prime Optical Properties pane.
- **c.** Click the **Server Configuration** tab. The Prime Optical server version is shown in the Software Version field.

Step 2 To view the Prime Optical server version in the About dialog box, choose **Help > About Cisco Prime Optical** in any window.

Step 3 To view the Prime Optical server version in the Management Domain Properties pane, complete the following substeps:

- **a.** In the Domain Explorer tree, click the management domain node to open the Management Domain Properties pane.

b. Click the **Identification** tab. The Prime Optical server version is shown in the Software Version field.

4.7 How Do I Manage CTC Operations?

CTC is the software interface that provides provisioning and administrative functionality for the following NEs:

- ONS 15305 R3.0
- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH
- ONS 15327
- ONS 15454 SONET
- ONS 15454 SDH
- ONS 15600 SONET
- ONS 15600 SDH

4.7.1 Functionality Provided in CTC that Is Not Available in Prime Optical

The following table lists the CTC functions that are not supported in Prime Optical through generic Prime Optical features (such as PM, software download, or memory backup) or through the native NE Explorer (equipment provisioning) for CTC-based NEs. The table provides a brief description of each function and a reference to the location within CTC where the function is provided.

Table 4-45 CTC Functions that Are Not Supported in Prime Optical

CTC Function	CTC Reference
Network Level	
Prime Optical does not support management of overhead circuits.	Network View > Provisioning > Overhead Circuits
Node Level	
Prime Optical does not support access to the EtherBridge MAC table (and related operations) or trunk utilization.	Node View > Maintenance > EtherBridge > MAC table Node View > Maintenance > EtherBridge > Trunk Utilization
Prime Optical does not support management of Unified Control Plane (UCP) parameters.	Node View > Provisioning > UCP
Prime Optical does not support retrieval of the diagnostics file or operation of the lamp test.	Node View > Maintenance > Diagnostics
Prime Optical does not support test access.	Node View > Maintenance > Test Access
Prime Optical does not support a Routing Information Protocol (RIP) table for BLSRs.	Node View > BLSR > RIP Table
Card Level	

Table 4-45 CTC Functions that Are Not Supported in Prime Optical (continued)

CTC Function	CTC Reference
Prime Optical does not support the ability to clear or reset PM register statistics on the NE.	Card View > Performance
Prime Optical does not support the ability to provision the user data channels (UDCs) or line DCC, or perform virtual wire maintenance operations.	AIC Card View > Maintenance > Virtual Wires AIC Card View > Maintenance > Overhead Termination
Prime Optical does not support the ability to upgrade automatically the OC-n cards and spans.	Network View > Span Upgrade
Prime Optical does not support the ability to provision passive cards.	Node View > Provisioning > WDM-ANS > Passive Cards
Prime Optical does not support the ability to provision any objects in the Rack View.	—
Circuit Management	
Prime Optical does not support the ability to create TL1-like cross-connections. Prime Optical does not support specification of the interdomain SLA.	Circuit Creation wizard
Prime Optical does not support the ability to edit path selector attributes of an existing circuit.	Tools > Circuits > Set Path Selector Attributes
Prime Optical does not support the ability to provision internal patchcords that include passive cards.	Node View > Provisioning > WDM-ANS > Internal Patchcords
Prime Optical does not support the Spanning Tree Map for E-series Ethernet cards.	—
Prime Optical does not support in-service topology upgrades.	Tools > Topology Upgrade > Convert UPSR to BLSR Tools > Topology Upgrade > Convert Unprotected to BLSR

4.7.2 Specifying CTC Partitions for CTC-Based NEs

CTC-based NEs that are added to the Prime Optical domain to access other CTC-based NEs are called GNEs, or topology hosts. When starting CTC for a particular CTC-based NE, the GNE for that NE is specified in CTC. CTC can take more than one GNE as input and discover the nodes behind those GNEs.

In a stable network, if CTC is started with a particular set of GNEs, the CTC view looks the same every time it is started with that set of GNEs. Prime Optical tries to copy this behavior when starting CTC for a given NE.

The Prime Optical client smart-link feature maintains an association between the CTC instance and the list of CTC-based NEs that it can manage. You can navigate through NEs within the same CTC partition without relaunching CTC. This feature conserves memory resources and ensures a fast response time.

If you launch and exit one instance of CTC and then launch a second CTC instance from the same partition, the second CTC launch goes through a 1-minute timeout period to ensure that the previous instance has exited. The 1-minute timeout occurs even if you launched and exited the previous CTC instance for a different NE. After the timeout, CTC initializes and a new window is launched. There is a delay of 10 to 20 seconds while the CTC launch initializes.

Caution ONS 15454 SONET and ONS 15454 SDH NEs propagate VLANs whenever a node appears in the same network view as another node, regardless of whether or not the nodes are DCC-connected. When there is more than one CTC management domain in Prime Optical, nodes that are not connected through DCC often appear in the same CTC view that is launched for that domain. The ONS 15454 NEs propagate VLAN information to these DCC-disconnected nodes. To prevent VLAN propagation, make sure that DCC-disconnected nodes do not appear in the same CTC view.

Configuring Hardware

This chapter describes the various NE configuration procedures that can be managed by Cisco Prime Optical. It contains the following sections:

- 5.1 Overview, page 5-1
- 5.2 Using the NE Explorer to Configure Optical NEs, page 5-2
- 5.3 Configuring Routing Protocols on Optical NEs, page 5-2
- 5.4 Synchronizing the Network, page 5-29
- 5.5 Configuring the ONS 15216, page 5-39
- 5.6 Configuring the ONS 15305 Earlier than R3.0, page 5-39
- 5.7 Configuring the ONS 15305 R3.0, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, and ONS 15454 SDH, page 5-39
- 5.8 Configuring the ONS 15600 SONET and ONS 15600 SDH, page 5-44

5.1 Overview

For Prime Optical to communicate with NEs, certain configuration tasks must be performed on the NEs. Until these configuration tasks are completed, Prime Optical cannot contact the NEs, and no management can begin.

Before Prime Optical can manage NEs, the following conditions must be met:

- Ethernet—Management Ethernet port must be configured.
- Password—Current privileged command password must be configured.
- Telnet—Gigabit Route Processor (GRP) should accept a Telnet session.
- SNMP—GRP must be SNMP-manageable.

Configuration management functions control, identify, retrieve data from, and provide data to network resources to deliver customer services. Configuration management includes broad categories traditionally known as network planning and engineering, installation, network and service provisioning, service planning and negotiation, and status and control.

5.2 Using the NE Explorer to Configure Optical NEs

Step 1 In the Domain Explorer window, select the NE that you want to configure.

Note Not all NEs have an associated NE Explorer. See Table 1-14 on page 1-32 for more information.

Step 2 Choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 3 In the NE Explorer tree, click the top-level NE node to open the node properties pane.

Step 4 Click the tab (or subtab) that corresponds to the setting(s) you want to change. Modify the settings. For drop-down lists, select an item from the list. For numerics or editable text fields, double-click the field and type the new number or text. Click **Apply**.

5.3 Configuring Routing Protocols on Optical NEs

This section describes how to configure the various routing protocols supported by Prime Optical. This section contains the following information:

- 5.3.1 Specifying a Routing Protocol, page 5-3
- 5.3.2 Viewing Routing Tables for CTC-Based NEs, page 5-3
- 5.3.3 Creating Static Routes for CTC-Based NEs, page 5-3
- 5.3.4 Using OSPF with CTC-Based NEs, page 5-4
- 5.3.5 Using RIP, page 5-8
- 5.3.6 Creating and Modifying an SDCC, LDCC, or GCC Termination on Transponder Cards, page 5-10
- 5.3.7 Creating and Modifying an SDCC, LDCC, GCC, or OSC Termination on SONET or SDH Cards, page 5-12
- 5.3.8 Creating a DCC Tunnel Connection, page 5-15
- 5.3.9 Using SNMP, page 5-15
- 5.3.10 Configuring FTP Hosts for CTC-Based NEs, page 5-22
- 5.3.11 Specifying the Preferred Copy—ONS 15600 SONET or ONS 15600 SDH, page 5-24
- 5.3.12 Enabling Intermediate Path Performance Monitoring, page 5-25
- 5.3.13 Enabling Pointer Justification Count Monitoring for CTC-Based NEs, page 5-27
- 5.3.14 Changing the Power Monitoring Threshold for the ONS 15454 SONET and ONS 15454 SDH, page 5-27
- 5.3.15 Changing the Power Monitoring Threshold for the ONS 15600 SONET and ONS 15600 SDH, page 5-28
- 5.3.16 Creating an Ethernet Threshold, page 5-29

5.3.1 Specifying a Routing Protocol

Prime Optical allows you to choose a routing protocol for the LAN interface for CTC-based NEs. You can choose one of the following:

- Open Shortest Path First (OSPF)
- Routing Information Protocol (RIP)
- SNMP

By default, no routing protocol is specified.

5.3.2 Viewing Routing Tables for CTC-Based NEs

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **Routing Table** subtab. The following table provides field descriptions.

Table 5-1 Field Descriptions for the Routing Table

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Usage	Displays the number of times the listed route has been used.
Interface	Displays the node interface used to access the destination.

5.3.3 Creating Static Routes for CTC-Based NEs

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **Static Routes** subtab.

Step 4 Click **Create**. The Create New Static Route dialog box opens. The following table provides descriptions.

Step 5 After making your selections, click **OK**.

Table 5-2 Field Descriptions for the Create New Static Route Dialog Box

Field	Description
Destination IP	Enter the IP address of the computer running Prime Optical.
Length	Enter the subnet mask length (a decimal number representing the subnet mask length, in bits).
Subnet Mask	Enter the subnetwork mask IP address.
Next Hop	Enter the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Enter the number of hops between the NE and the computer running Prime Optical.

5.3.4 Using OSPF with CTC-Based NEs

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **OSPF** subtab.

Step 4 Complete the following fields. Fields shown depend on the type of NE selected.

- DCC OSPF Area ID—Number that identifies the NE as a unique OSPF area. It can be between 0.0.0.0 and 255.255.255.255. The number must be unique to the LAN OSPF area.
- SDCC Metric—Cost of sending packets across the SDCC, which is used by OSPF routers to calculate the shortest path.
- LDCC Metric—Cost of sending packets across the LDCC, which is used by OSPF routers to calculate the shortest path.
- OSPF Active on LAN—When checked, it enables the OSPF topology to be advertised to OSPF routers on the LAN.
- LAN Port Area ID—OSPF area ID for the router port where the NE is connected. This number is different from the DCC OSPF Area ID.
- Authentication Type—Displays either one of the following:
  - Simple Password—If the router where the NE is connected uses authentication.
  - No Authentication—If the router where the NE is connected does not use authentication.
- Authentication Key—Displays the OSPF key (or password) if authentication is enabled.
- Confirm Authentication Key—Re-enter the OSPF authentication key to confirm it.
- Router Priority—Designated router for a subnet.
- Hello Interval—Number of seconds between OSPF hello packet advertisements sent by OSPF routers. The Cisco default is 10 seconds.
- Dead Interval—Number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. The Cisco default is 40 seconds.
- Transit Delay—Service speed. The Cisco default is 1 second.
- Retransmit Int—Time that will elapse before a packet is resent. The Cisco default is 5 seconds.

- LAN Metric—Cost for sending packets across the LAN. Values should be greater than zero.

Step 5 Click **Apply**.

5.3.4.1 Creating an OSPF Area Range

Note The ONS 15305 R3.0 does not support OSPF area ranges.

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **OSPF** subtab and check the OSPF Active on LAN check box. (See 5.3.4 Using OSPF with CTC-Based NEs, page 5-4 for more information.)

Step 4 Click **Apply**.

Step 5 Click the **OSPF Area Range** subtab.

Step 6 Click **Create**. The Create OSPF Area Range dialog box opens. The following table provides descriptions.

Step 7 After making your selections, click **OK**.

Note If no range address is created when enabling OSPF on a LAN from Prime Optical, you must manually provision the OSPF area range address for the respective range area IDs, as described in this procedure. Alternatively, enable OSPF from CTC so that the range address is created when OSPF is enabled. This is a known issue that has been tracked using DDTS number CSCin62975.

Table 5-3 Field Descriptions for the Create OSPF Area Range Dialog Box

Field	Description
Range Address	Enter the area IP address for the NEs that reside within the OSPF area. For example, if the OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Enter the OSPF area ID for the NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the Area ID for LAN Port field. The ID cannot be 0.0.0.0.
Mask Length	Enter the subnet mask length.
Mask	Enter the subnet mask.
Advertise	Check this check box if you want the area range to be advertised.

5.3.4.2 Deleting an OSPF Area Range

Note The ONS 15305 R3.0 does not support OSPF area ranges.

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **OSPF Area Range** subtab.

Step 4 Select the OSPF area range from the table; then, click **Delete**.

Step 5 Click **OK** in the confirmation message box.

5.3.4.3 Managing OSPF Virtual Links

The following sections describe how to manage OSPF virtual links.

Note The ONS 15305 R3.0 does not support OSPF virtual links.

5.3.4.3.1 Viewing OSPF Virtual Links

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **OSPF Virtual Links** subtab. The following information is displayed:

- Neighbor—Router ID of the Area 0 router.
- Transit Delay—Service speed. The Cisco default is 1 second.
- Retransmit Interval—Time that will elapse before a packet is resent. The Cisco default is 5 seconds.
- Hello Interval—Number of seconds between OSPF hello packet advertisements sent by OSPF routers.
- Dead Interval—Number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down.
- Authentication Type—Authentication type.
- Auth Key—Authentication key.

5.3.4.3.2 Creating an OSPF Virtual Link

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **OSPF** subtab and check the OSPF Active on LAN check box. (See 5.3.4 Using OSPF with CTC-Based NEs, page 5-4 for more information.)

Step 4 Click **Apply**.

Step 5 Click the **OSPF Virtual Links** subtab.

Step 6 Click **Create**. The Create New Virtual Link dialog box opens and allows you to define a link between OSPF area border routers. The following table provides descriptions.

Step 7 After making your selections, click **OK**.

Table 5-4 Field Descriptions for the Create New Virtual Link Dialog Box

Field	Description
Neighbor	Specify the IP address of the Area 0 router.
Transit Delay	Specify the service speed. The Cisco default is 1 second.
Retransmit Interval	Specify the time that will elapse before a packet is resent. The Cisco default is 5 seconds.
Hello Interval	Specify the number of seconds between OSPF hello packet advertisements. The Cisco default is 10 seconds.
Dead Interval	Specify the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. The Cisco default is 40 seconds.
Authentication Type	Specify the authentication type. Select **Simple Password** if the router where the NE is connected uses authentication. Otherwise, select **No Authentication**.
Authentication Key	Enter the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Reenter the authentication key to confirm it.

5.3.4.3.3 Modifying an OSPF Virtual Link

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **OSPF Virtual Links** subtab.

Step 4 Select an OSPF virtual link to modify; then click **Edit**.

Step 5 The Modify Virtual Link dialog box opens. Modify the following:

- Neighbor—Enter the new IP address.
- Transit Delay—Indicates the service speed.
- Retransmit Delay—Sets the time that will elapse before a packet is resent.
- Hello Interval—Sets the number of seconds between OSPF hello packet advertisements sent by OSPF routers.
- Dead Interval—Sets the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down.

- Authentication Type—Select the authentication type. Select either No Authentication or Simple Authentication.
- Auth Key—If Simple Authentication is selected as authentication type, enter the authentication key.
- Confirm Auth Key—Re-enter the authentication key.

Step 6 Click **OK**.

5.3.4.3.4 Deleting an OSPF Virtual Link

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **OSPF Virtual Links** subtab.

Step 4 Select an OSPF virtual link to delete; then, click **Delete**.

Step 5 Click **Yes** in the confirmation dialog box.

5.3.5 Using RIP

Step 1 In the Domain Explorer tree, select an ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **RIP** subtab.

Step 4 Complete the following:

- RIP Active—Check to enable RIP.
- RIP Type—Select the RIP version from the drop-down list.
- Metric—Select a number between 1 and 15. This represents the number of hops.
- Authentication Type—By default, RIP is set to **No Authentication**. If the router that the NE is connected to requires authentication, set this to **Simple Password**.
- Authentication Key—If the Authentication Type is set to Simple Password, enter the password.
- Confirm Authentication Key—Re-enter the password to confirm it.

Step 5 If you want to create an address summary, complete the following steps:

a. Click **Create**. Complete the address summary only if the NE is a gateway network element (GNE) with multiple end NEs attached and IP addresses in different subnets.

b. In the Create RIP Address Summary dialog box that opens, create aggregate addresses, which will be represented in the routing table by a summary address. Table 5-5 provides descriptions. The NEs use the IP summary address for RIP to advertise a summarized local IP address pool on the NE so that the address pool can be provided to clients.

c. After making your selections, click **OK**. The RIP address information is displayed in the RIP Address Summary table.

Step 6 If you want to delete a RIP address, complete the following steps:

a. Select the RIP address from the RIP Address Summary table and click **Delete**.

b. Click **Yes** in the confirmation dialog box.

Step 7 Click **Apply**.

Note Both the OSPF and RIP tabs are enabled if no routing advertisement is enabled. If either OSPF or RIP is enabled, the other routing protocol is disabled.

Table 5-5 Field Descriptions for the Create RIP Address Summary Dialog Box

Field	Description
Summary Address	Specify the IP address of the RIP summary. This field is set to the NE IP address, with an applied mask of 255.255.255.0. For example, if the NE IP address is 10.20.30.15, the summary address is 10.20.30.0.
Mask Length	Enter the subnet mask length. The valid range is from 1 to 24.
Mask Address	*Display only.* View the subnet mask address, which is 255.255.255.0 by default.
Cost	Enter the hop count metric (the number of hops between the NE and the destination). The valid range is from 1 to 15. The smaller the number of hops, the higher the priority.

5.3.5.1 Viewing the RIP Routing Table

Step 1 In the Domain Explorer tree, select an ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **RIP Routing Table** subtab. The RIP Routing table is displayed with the following information:

- Destination—*Display only.* The IP address of the destination network or host.
- Mask—*Display only.* The subnet mask used to reach the destination host or network.
- Gateway—*Display only.* The IP address of the gateway used to reach the destination network or host.
- Cost—*Display only.* The hop count metric. The valid range is 1 to 15.

5.3.6 Creating and Modifying an SDCC, LDCC, or GCC Termination on Transponder Cards

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane of the NE Explorer, click one of the following tabs. Tabs shown depend on the type of NE selected.

- DCC—DCC (Data Communications Channel) carries provisioning and maintenance data/information between network elements in the SONET overhead.
- DCC/GCC/OSC—GCC (General Communications Channel) is used for transponders and muxponders in dense wavelength division multiplexing (DWDM) applications. Optical Service Channel (OSC) is a bidirectional channel that connects two adjacent nodes in a DWDM ring.

  For more information on GCC see, 6.5.9 Create, Edit, and Delete GCC, page 6-17.
- LDCC—LDCC (Line Data Communications Channel or Line DCC) is a 576-kb/s data communications channel embedded in the section overhead for OAM&P traffic between two NEs.
- SDCC—SDCC (Section Data Communications Channel or Section DCC) is a 192-kb/s data communications channel embedded in the section overhead for OAM&P traffic between two NEs.

Step 3 Click the subtab that corresponds to the termination that you want to create or modify. For example, to create or modify an LDCC termination, click the **LDCC** subtab.

Step 4 Complete one of the following options, depending on whether you want to create a new termination or modify an existing one:

- Click the **Create** button above the Transponder area. The Create *SDCC, LDCC, GCC, or OSC* dialog box opens and allows you to create new terminations on transponder cards. The following table provides descriptions.

  Note The fields shown in the Create *SDCC, LDCC, GCC, or OSC* dialog box depend on the type of termination that is being created. The fields shown also depend on the NE type.

- Select an existing termination and click the **Edit** button above the Transponder area. The Edit *SDCC, LDCC, GCC, or OSC* dialog box opens and allows you to modify existing terminations on transponder cards. The following table provides descriptions.

  Note The fields shown in the Edit *SDCC, LDCC, GCC, or OSC* dialog box depend on the type of termination that is being modified. The fields shown also depend on the NE type.

Step 5 After making your selections, click **OK**.

Table 5-6 Field Descriptions for the Create or Modify SDCC, LDCC, GCC, or OSC Dialog Box

Tab	Description
SDCC/LDCC Info	(*Available for SDCC and LDCC terminations*) Displays the slot and port number of the SDCC or LDCC termination. **Note** For OTU2_XP cards, the card name might be shown as XP_4_10G_LINE_CARD.
GCC Terminations	(*Available for GCC terminations*) Displays the slot and port number of the GCC termination. **Note** For OTU2_XP cards, the card name might be shown as XP_4_10G_LINE_CARD.
OSPF Disabled on Link	Indicates whether Open Shortest Path First (OSPF) is disabled on the link. OSPF should be disabled only when the slot and port connect to third-party equipment that does not support OSPF.
Foreign	If checked, it means that the far-end node is a non-ONS node.
Admin State	Indicates the SDCC or LDCC port state. Select one of the following: **Note** Admin state options that appear in the drop-down list depend on the NE type. • Leave Unchanged • IS • OOS MT • IS AINS
Layer3/Layer 2 Config	
Layer3 (Layer2) Config	Select one of the following: • OSI (LAPD)—When selected, all fields in the OSI Subnet and LAPD areas are enabled. The Layer 3 protocol used for the DCC is OSI (IP not applicable); the Layer 2 protocol is LAPD. The OSI (LAPD) option applies only to SDCC and is disabled for all other DCC types. • IP (PPP)—When selected, all fields in the OSI Subnet and LAPD areas are disabled. The Layer 3 protocol used for the DCC is IP only; the Layer 2 protocol is PPP. • OSI and IP (PPP)—When selected, only the fields in the OSI Subnet area are enabled. The Layer 3 protocol includes both OSI and IP, but the Layer 2 protocol remains as PPP. **Note** When editing an existing DCC, you can toggle between the IP (PPP) and OSI and IP (PPP) options if either option exists on the DCC. **Note** If the DCC is configured as OSI (LAPD), you cannot modify the Layer 3/Layer 2 configuration.
OSI Subnet	
Router Number	The OSI virtual router where the subnet (SDCC or LDCC) is provisioned.
IS-IS Cost	Sets the cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path.
ISH	Sets the Intermediate System Hello (ISH) protocol data unit (PDU) propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds. The range is from 10 to 1000 seconds.
ESH	Sets the End System Hello (ESH) propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds. The range is from 10 to 1000 seconds.

Table 5-6 Field Descriptions for the Create or Modify SDCC, LDCC, GCC, or OSC Dialog Box (continued)

Tab	Description
IIH	Sets the Intermediate System to Intermediate System Hello PDU propagation frequency. The IS-IS Hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds. The range is from 1 to 600 seconds.
LAPD	
Acknowledgement	Indicates the Link Access Protocol on the D channel (LAPD) acknowledgement type. Select either: • Acknowledged Information Transfer Service (AITS) • Unacknowledged Information Transfer Service (UITS)
T200	Shows the time between Set Asynchronous Balanced Mode (SABM) frame transmissions. The range is from 0.2 to 20 seconds.
T203	Shows the maximum time between LAPD frame exchanges. The range is from 4 to 120 seconds.
Mode	Indicates the LAPD frame command/response role. Values are: • Network • User
MTU	Sets the maximum transfer unit (MTU).

5.3.7 Creating and Modifying an SDCC, LDCC, GCC, or OSC Termination on SONET or SDH Cards

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane of the NE Explorer, click one of the following tabs. Tabs shown depend on the type of NE selected.

- DCC—DCC carries provisioning and maintenance data/information between network elements in the SONET overhead.
- DCC/GCC/OSC—GCC is used for transponders and muxponders in DWDM applications. OSC is a bidirectional channel that connects two adjacent nodes in a DWDM ring.

  For more information on GCC, see 6.5.9 Create, Edit, and Delete GCC, page 6-17.
- LDCC—LDCC is a 576-kb/s data communications channel embedded in the section overhead for OAM&P traffic between two NEs.
- SDCC—SDCC is a 192-kb/s data communications channel embedded in the section overhead for OAM&P traffic between two NEs.

Step 3 Click the subtab that corresponds to the termination that you want to create or modify. For example, to create or modify an LDCC termination, click the **LDCC** subtab.

Step 4 Complete one of the following options, depending on whether you want to create a new termination or modify an existing one:

- Click the **Create** button above the SONET/SDH area. The Create *SDCC, LDCC, GCC, or OSC* dialog box opens and allows you to create new terminations on SONET or SDH cards. The following table provides descriptions.

  Note The fields shown in the Create *SDCC, LDCC, GCC, or OSC* dialog box depend on the type of termination that is being created. The fields shown also depend on the NE type.

- Select an existing termination and click the **Edit** button above the SONET/SDH area. The Edit *SDCC, LDCC, GCC, or OSC* dialog box opens and allows you to modify existing terminations on SONET or SDH cards. The following table provides descriptions.

  Note The fields shown in the Edit *SDCC, LDCC, GCC, or OSC* dialog box depend on the type of termination that is being modified. The fields shown also depend on the NE type.

Step 5 After making your selections, click **OK**.

Table 5-7 Field Descriptions for the Create or Edit SDCC, LDCC, GCC, or OSC Dialog Box

Field	Description
SDCC/LDCC Info	(*Available for SDCC and LDCC terminations*) Displays the slot and port number of the SDCC or LDCC termination.
GCC Terminations	(*Available for GCC terminations*) Displays the slot and port number of the GCC termination.
OSC Terminations	(*Available for OSC terminations*) Displays the slot and port number of the OSC termination.
OSPF Disabled on Link	Indicates whether Open Shortest Path First (OSPF) is disabled on the link. OSPF should be disabled only when the slot and port connect to third-party equipment that does not support OSPF.
Foreign	If checked, it means that the far-end node is a non-ONS node.
Admin State	Indicates the SDCC or LDCC port state. Select one of the following: **Note** Admin state options that appear in the drop-down list depend on the NE type. • Leave Unchanged • IS • OOS MT • IS AINS
GCC Rate	(*Available for GCC terminations*) Select the GCC rate.

Table 5-7 Field Descriptions for the Create or Edit SDCC, LDCC, GCC, or OSC Dialog Box (continued)

Field	Description
Layer3/Layer 2 Config	
Layer3 (Layer2) Config	Select one of the following: • OSI (LAPD)—When selected, all fields in the OSI Subnet and LAPD areas are enabled. The Layer 3 protocol used for the DCC is OSI (IP not applicable); the Layer 2 protocol is LAPD. The OSI (LAPD) option applies only to SDCC and is disabled for all other DCC types. • IP (PPP)—When selected, all fields in the OSI Subnet and LAPD areas are disabled. The Layer 3 protocol used for the DCC is IP only; the Layer 2 protocol is PPP. • OSI and IP (PPP)—When selected, only the fields in the OSI Subnet area are enabled. The Layer 3 protocol includes both OSI and IP, but the Layer 2 protocol remains as PPP. **Note** When editing an existing DCC, you can toggle between the IP (PPP) and OSI and IP (PPP) options if either option exists on the DCC. **Note** If the DCC is configured as OSI (LAPD), you cannot modify the Layer 3/Layer 2 configuration.
OSI Subnet	
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
IS-IS Cost	Sets the cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path.
ISH	Sets the Intermediate System Hello (ISH) protocol data unit (PDU) propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds. The range is from 10 to 1000 seconds.
ESH	Sets the End System Hello (ESH) propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds. The range is from 10 to 1000 seconds.
IIH	Sets the Intermediate System to Intermediate System Hello PDU propagation frequency. The IS-IS Hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds. The range is from 1 to 600 seconds.
LAPD	
Acknowledgement	Indicates the Link Access Protocol on the D channel (LAPD) acknowledgement type. Select either: • Acknowledged Information Transfer Service (AITS) • Unacknowledged Information Transfer Service (UITS)
T200	Shows the time between Set Asynchronous Balanced Mode (SABM) frame transmissions. The range is from 0.2 to 20 seconds.
T203	Shows the maximum time between LAPD frame exchanges. The range is from 4 to 120 seconds.
Mode	Indicates the LAPD frame command/response role. Values are: • Network • User
MTU	Sets the maximum transfer unit (MTU).

5.3.8 Creating a DCC Tunnel Connection

The Create DCC Tunnel Connection dialog box allows you to create new DCC tunnel connections for the ONS 15454 SONET R3.3 and earlier.

Step 1 In the Domain Explorer tree, select the R3.3 or earlier ONS 15454 SONET NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane of the NE Explorer, click the **DCC/GCC/OSC** tab.

Step 3 Click the **DCC Tunnel Connection** subtab.

Step 4 Click **Create**. The Create dialog box opens. The following table provides descriptions.

Step 5 After making your selections, click **OK**.

Table 5-8 Field Descriptions for the Create DCC Tunnel Connection Dialog Box

Field	Description
From A	Select a beginning interface for the DCC tunnel.
From B	Select an ending interface for the DCC tunnel.

5.3.9 Using SNMP

5.3.9.1 Changing the SNMP Community String—CTC-Based NEs

Use the SNMP Trap Destination dialog box in CTC to provision community names for all SNMP requests (for example, get, next, bulk, and set) for CTC-based NEs R3.3 and later. Any SNMP request that uses a community name that matches a community name in the list of provisioned SNMP trap destinations is considered valid.

If an SNMP request contains an invalid community name (one that does not match a provisioned community name), the request is dropped silently. The MIB variable snmpInBadCommunityNames increments, and an authenticationFailure trap is sent.

Due to security concerns, the community names *public* and *private* do not have the special meaning that they have in most SNMP interfaces.

5.3.9.2 Configuring SNMP for CTC-Based NEs

Step 1 Select a CTC-based NE in the Domain Explorer tree and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab; then, click the **SNMP** subtab. Fields shown depend on the type of NE that is selected.

Step 3 To allow SNMP proxy, check the **Allow SNMP Proxy** check box.

Step 4 To use the SNMP management software with the NE, check the **Allow SNMP Set** check box.

Step 5 Click **Apply**.

Step 6 Click **Create**. The Create SNMP Trap Destination dialog box opens. The following table provides descriptions.

Step 7 After making your selections, click **OK**.

Step 8 Click **Apply**.

Table 5-9 Field Descriptions for the Create SNMP Trap Destination Dialog Box

Field	Description
IP Address	Enter the IP address of your NMS.
Community Name	Enter the SNMP community name. For a description of SNMP community names, refer to the SNMP information in the NE reference guide. **Note** The community name is a form of authentication and access control. The community name assigned to the ONS 15600 is case-sensitive and must match the community name of the NMS.
UDP Port	Set the UDP port for SNMP. The Cisco default port is 162. Allowed UDP port values are 162, 391, and values between 1024 and 65535.
Trap Version	Set the Trap Version field for either SNMPv1 or SNMPv2. See your NMS documentation to determine whether to use SNMPv1 or SNMPv2.
Max Traps per Second *(not applicable to all NEs)*	Enter the maximum number of traps per second that will be sent to the SNMP manager. A zero value indicates that there is no maximum and all traps are sent to the SNMP manager.

5.3.9.3 Creating an SNMP Community—ONS 15216 EDFA2

The Create SNMP Community View dialog box allows you to create an SNMP community for the ONS 15216 EDFA2.

Note SNMP views are supported only for EDFA2 R2.4.0. The SNMP tab is not present in the EDFA2 R2.1.1 and R2.3.0.

Step 1 In the Domain Explorer, select an ONS 15216 EDFA2 and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **SNMP** tab.

Step 3 Click the **SNMP Community Table** subtab.

Step 4 Click **Create**. The Create SNMP Community View dialog box opens. The following table provides descriptions.

Table 5-10 Field Descriptions for the Create SNMP Community View Dialog Box

Field	Description
Community Name	Enter the SNMP community name.
Privileges	Enter the access privileges that govern what management operations a particular community can perform. These privileges are expressed as a sum of values, where each value represents a particular operation. See Table 5-11 for the SNMP operation decimal values.
IP Address	Enter the IP address from which network management traffic for the new SNMP community originates.
Subnet Mask	Enter the subnet mask for the source IP address.

Step 5 After making your selections, click **OK** in the Create SNMP Community View dialog box.

Step 6 Click **Apply** in the node properties pane. The new SNMP community is listed in the SNMP Community table.

The following table displays the decimal values for the different SNMP operations. For example, 255 is the sum of all decimal values and specifies access to all SNMP operations. This sum is the default private community. 247 is the sum for all SNMP operations with the exception of the Set operation. This sum is the default public community.

Table 5-11 SNMP Operation Decimal Values

SNMP Operation	Decimal Values
Get	1
GetNext	2
Response (enable for all community strings)	4
Set	8
SNMPv1-Trap	16
GetBulk	32
Inform (enable for all community strings)	64
SNMPv2-Trap (enable for all community strings)	128

5.3.9.4 Modifying an SNMP Community—ONS 15216 EDFA2

Step 1 In the Domain Explorer, select an ONS 15216 EDFA2 and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **SNMP** tab.

Step 3 Click the **SNMP Community Table** subtab.

Step 4 In the SNMP Community table, select the SNMP community to modify.

Step 5 Double-click a specific field and modify the following:

- Community Name—New community string.
- View Index—New index number.

- Privilege—New access privilege that governs what management operations a particular community can perform. These privileges are expressed as a sum of values, where each value represents a particular operation. See Table 5-11 for the SNMP operation decimal values.
- IP Address—New IP address from which network management traffic for the new SNMP community originates.
- Subnet Mask—New subnet mask for the source IP address.
- Status—*Display only.*

Step 6 Click **Apply**.

5.3.9.5 Deleting an SNMP Community—ONS 15216 EDFA2

Step 1 In the Domain Explorer, select an ONS 15216 EDFA2 and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **SNMP** tab.

Step 3 Click the **SNMP Community Table** subtab.

Step 4 In the SNMP Community table, select an SNMP community to delete.

Step 5 Click **Delete**; then, click **OK**.

Step 6 Click **Apply**.

5.3.9.6 Creating an SNMP Trap Destination—ONS 15216 EDFA2

Step 1 In the Domain Explorer, select an ONS 15216 EDFA2 and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **SNMP** tab.

Step 3 Click the **Trap Destination Table** subtab.

Step 4 Click **Create**. The Create Trap Destination dialog box opens. The following table provides descriptions.

Step 5 After making your selections, click **OK**.

Step 6 Click **Apply** in the node properties pane. The new SNMP trap destination is listed in the Trap Destination table.

Table 5-12 Field Descriptions for the Create Trap Destination Dialog Box

Field	Description
IP Address	Type the SNMP trap destination IP address.
UDP Port	Set the trap destination User Datagram Protocol (UDP) port for SNMP.

Table 5-12 Field Descriptions for the Create Trap Destination Dialog Box (continued)

Field	Description
Community Name	Type the SNMP community name.
Version	Enter the trap version number.

5.3.9.7 Modifying an SNMP Trap Destination—ONS 15216 EDFA2

Step 1 In the Domain Explorer, select an ONS 15216 EDFA2 and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **SNMP** tab.

Step 3 Click the **Trap Destination Table** subtab.

Step 4 In the Trap Destination table, select the SNMP trap destination to modify.

Step 5 Double-click a specific field and modify the following:

- IP Address—IP address of the SNMP trap destination.
- UDP Port—UDP port number of the SNMP trap destination.
- Community Name—SNMP trap destination community string name.
- Version—Select the version from the pull-down menu.
- View Index—New index number.
- Status—*Display only.*

Step 6 Click **Apply**.

5.3.9.8 Deleting an SNMP Trap Destination—ONS 15216 EDFA2

Step 1 In the Domain Explorer, select an ONS 15216 EDFA2 and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **SNMP** tab.

Step 3 Click the **Trap Destination Table** subtab.

Step 4 In the Trap Destination table, select an SNMP trap destination to delete.

Step 5 Click **Delete**; then, click **OK**.

Step 6 Click **Apply**.

5.3.9.9 Creating an SNMP View—ONS 15216 EDFA2

Step 1 In the Domain Explorer, select an ONS 15216 EDFA2 and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **SNMP** tab.

Step 3 Click the **SNMP Views** subtab.

Step 4 Click **Create**. The Create SNMP View dialog box opens. The following table provides descriptions.

Step 5 After making your selections, click **OK**.

Step 6 Click **Apply** in the node properties pane. The new SNMP view is listed in the SNMP Views table.

Table 5-13 Field Descriptions for the Create SNMP View Dialog Box

Field	Description
View Index	Enter the view index number, which is a unique value for each MIB view.
Subtree	Enter an object identifier that designates a subtree element in the MIB hierarchy.
Mask	Enter the bit mask that identifies objects in the subtree.
Type	From the pull-down menu, select the flag that specifies the status of the view. Values are included and excluded.

5.3.9.10 Modifying an SNMP View—ONS 15216 EDFA2

Step 1 In the Domain Explorer, select an ONS 15216 EDFA2 and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **SNMP** tab.

Step 3 Click the **SNMP Views** subtab.

Step 4 In the SNMP Views table, select the SNMP view to modify.

Step 5 Double-click a specific field and modify the following:

- View Index—*Display only.*
- Subtree—*Display only.*
- Mask—Modify the bit mask that identifies objects in the subtree.
- Type—From the pull-down menu, select the flag that specifies the status of the view.
- Status—*Display only.*

Step 6 Click **Apply**.

5.3.9.11 Deleting an SNMP View—ONS 15216 EDFA2

Step 1 In the Domain Explorer, select an ONS 15216 EDFA2 and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **SNMP** tab.

Step 3 Click the **SNMP Views** subtab.

Step 4 In the SNMP Views table, select an SNMP view to delete.

Step 5 Click **Delete**; then, click **OK**.

Step 6 Click **Apply**.

5.3.9.12 Creating an SNMP Trap Destination—ONS 15216 EDFA3

Step 1 In the Domain Explorer, select an ONS 15216 EDFA3 and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **SNMP** tab.

Step 3 Click **Add Row**. The Create Trap Destination table opens. The following table provides descriptions.

Step 4 After making your selections, click **OK**.

Step 5 Click **Apply** in the node properties pane. The new SNMP trap destination is listed in the Trap Destination table.

Note A maximum of 10 SNMP hosts can be configured for the EDFA3. (The EDFA2 has no such restriction.)

Table 5-14 Field Descriptions for the Trap Destination Table Subtab

Field	Description
IP Address	Enter the trap destination IP address.
UDP Port	Set the trap destination UDP port for SNMP.
Community Name	Enter the SNMP trap destination community string name.
Version	Enter the trap version number.

5.3.9.13 Modifying an SNMP Trap Destination—ONS 15216 EDFA3

Step 1 In the Domain Explorer, select an ONS 15216 EDFA3 and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **SNMP** tab.

Step 3 Click the **Trap Destination Table** subtab.

Step 4 In the Trap Destination table, select the SNMP trap destination to modify.

Step 5 Double-click a specific field and modify the following:

- IP Address—IP address of the SNMP trap destination.
- UDP Port—UDP port number of the SNMP trap destination.
- Community Name—SNMP trap destination community string name.

- Version—Select the version from the pull-down menu.

Step 6 Click **Apply**.

5.3.9.14 Deleting an SNMP Trap Destination—ONS 15216 EDFA3

Step 1 In the Domain Explorer, select an ONS 15216 EDFA3 and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **SNMP** tab.

Step 3 Click the **Trap Destination Table** subtab.

Step 4 In the Trap Destination table, select an SNMP trap destination to delete; then, click **Delete Row**.

Step 5 Click **Apply**.

5.3.10 Configuring FTP Hosts for CTC-Based NEs

The following sections describe how to configure database backup or restore and software download to an ENE when a firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which time the FTP relay resumes blocking all FTP access for the ENEs.

5.3.10.1 Creating an FTP Host

Step 1 In a CTC-based GNE/ENE configuration with proxy/firewall enabled, select one of the following NEs in the Domain Explorer tree and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool):

- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH
- ONS 15454 SONET
- ONS 15454 SDH
- ONS 15600 SONET
- ONS 15600 SDH

Step 2 In the node properties pane, click the **Network** tab; then, click the **FTP Hosts** subtab.

Step 3 Click the **Create** button. The Create New FTP Host dialog box opens.

Note You can create up to a maximum of 12 FTP hosts.

Step 4 Configure the fields described in the following table.

Step 5 Click **OK**. The new FTP host is created and appears in the FTP Hosts subtab.

Table 5-15 Field Descriptions for the Create New FTP Host Dialog Box

Field	Description
FTP Host Address	Enter the FTP host IP address.
Prefix Length	Specify the FTP host subnet mask length.
Enable FTP Relay	Check this check box to enable FTP relay. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Enter the number of minutes for the FTP relay to continue, after which time the FTP relay resumes blocking all FTP access for the ENEs.

5.3.10.2 Creating FTP Hosts on Multiple NEs Simultaneously

Use the FTP Hosts Creation wizard to create FTP hosts on multiple NEs simultaneously in a GNE/ENE firewall environment.

Step 1 In a CTC-based GNE/ENE configuration with proxy/firewall enabled, choose **Administration > Bulk FTP Configuration** in the Domain Explorer. The FTP Hosts Creation wizard opens.

Step 2 In the Add FTP Hosts pane, click **Add Row**. For each new FTP host, configure the following information:

- FTP host address—Enter the IP address for the FTP host.
- Prefix length—Specify the subnet mask length for the FTP host.
- FTP relay—Enable or disable FTP relay. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
- FTP relay timer—Enter the number of minutes for the FTP relay to continue, after which time the FTP relay resumes blocking all FTP access for the ENEs.

Step 3 Repeat Step 2 for each new FTP host that you want to create. If you make a mistake, select the row and click **Delete Selected Row**. When you are finished, click **Next**.

Step 4 In the Save the FTP Hosts pane, complete the following substeps:

a. In the Available NEs list, select the NEs on which to add the new FTP hosts and click **Add**. The NEs move to the Selected NEs list.

b. In the Job Comments area, enter comments about the bulk FTP host creation, if needed.

c. In the Time (*time zone*) area, set a time for the operation. Click **Now** to begin FTP host creation immediately, or click **At Time** and specify when to begin the operation. You can specify a time based on 5-minute increments. The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

d. Click **Finish**.

Step 5 To view the results of the operation, check the Job Monitor table (**Administration > Job Monitor**). After the bulk FTP host creation succeeds, the details are displayed in the NE Explorer node properties pane > Network tab > FTP Hosts subtab for each NE.

5.3.10.3 Modifying an FTP Host

Step 1 In the Domain Explorer tree, select the NE that contains the FTP that you want to modify and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab; then, click the **FTP Hosts** subtab.

Step 3 Modify the following fields in the FTP Hosts subtab:

- FTP Host Address—*Display only.*
- Prefix Length—*Display only.*
- Enable FTP Relay—Check this check box to enable FTP relay. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
- FTP Relay Timer—Modify the number of minutes for the FTP relay to continue, after which time the FTP relay resumes blocking all FTP access for the ENEs.

Step 4 Click **Apply**. The modified FTP host appears in the FTP Hosts subtab.

5.3.10.4 Deleting an FTP Host

Step 1 In the Domain Explorer tree, select the NE that contains the FTP host and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab; then, click the **FTP Hosts** subtab.

Step 3 Select the FTP host that you want to delete; then, click the **Delete** button.

Step 4 In the confirmation dialog box, click **Yes**. The FTP host disappears from the FTP Hosts subtab.

5.3.11 Specifying the Preferred Copy—ONS 15600 SONET or ONS 15600 SDH

Step 1 In the Domain Explorer tree, select the ONS 15600 SONET or ONS 15600 SDH NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Maintenance** tab.

Step 3 In the **Preferred Copy** subtab > Data Copy area, select the preferred data from the Preferred Data pull-down list.

Step 4 Click **Apply**.

5.3.12 Enabling Intermediate Path Performance Monitoring

Most CTC-based networks use line-terminating equipment (LTE) to enable intermediate path performance monitoring (IPPM). IPPM allows you to transparently monitor a transmission signal originating from any equipment without terminating the channel of that signal. To use IPPM, create the STS circuit on the DS-N cards; then, enable IPPM on the EC1-12 or OC-N cards that carry the circuit.

Note IPPM occurs only on STS paths that have IPPM enabled; threshold crossing alerts (TCAs) are raised only for PM parameters on the IPPM-enabled paths. The monitored IPPM parameters are STS CV-P, STS ES-P, STS SES-P, STS UAS-P, and STS FC-P.

Note IPPM is not supported for the CTC-based ONS 15305 R3.0.

Step 1 In the Domain Explorer, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 Select an LTE card. The following table lists the LTE cards.

Table 5-16 Traffic Cards that Terminate the Line (LTE Cards)

NE	Line-Terminating Equipment	
ONS 15327	XTC-14	XTC-28-3
	OC3 IR4 1310	OC12 IR 1310
	OC12 LR 1550	OC48 IR 1310
	OC48 LR 1550	—

Table 5-16 Traffic Cards that Terminate the Line (LTE Cards) (continued)

NE	Line-Terminating Equipment	
ONS 15454 SONET	**Electrical LTE**	
	EC1-12	DS1-14
	DS1N-14	DS3-12
	DS3N-12	DS3-12E
	DS3N-12E	DS3XM-6
	DS3i/DS3iN	—
	Optical LTE	
	OC3 IR 4/STM1 SH 1310	OC3 IR/STM1 SH 1310-8
	OC12 IR/STM4 SH 1310	OC12 LR/STM4 LH 1310
	OC12 LR/STM4 LH 1550	OC12 IR/STM4 SH 1310-4
	OC48 IR 1310	OC48 LR 1550
	OC48 IR/STM16 SH AS 1310	OC48 LR/STM16 LH AS 1550
	OC48 ELR/STM16 EH 100 GHz	OC48 ELR 200 GHz
	OC192 SR/STM64 IO 1310	OC192 IR/STM64 SH 1550
	OC192 LR/STM64 LH 1550	OC192 LR/STM64 LH ITU 15xx.xx
	TXP_MR_10G	MXP_2.5G_10G
ONS 15454 SDH	**Electrical LTE**	
	E1-N-14	E1-42
	E3-12	DS3i-N-12
	STM1E-12	—
	Optical LTE	
	OC3 IR 4/STM1 SH 1310	OC3 IR/STM1 SH 1310-8
	OC12 IR/STM4 SH 1310	OC12 LR/STM4 LH 1310
	OC12 LR/STM4 LH 1550	OC12 IR/STM4 SH 1310-4
	OC48 IR/STM16 SH AS 1310	OC48 LR/STM16 LH AS 1550
	OC48 ELR/STM16 EH 100 GHz	OC192 SR/STM64 IO 1310
	OC192 IR/STM64 SH 1550	OC192 LR/STM64 LH 1550
	OC192 LR/STM64 LH ITU 15xx.xx	—
ONS 15600	OC48/STM16 LR/LH 16 Port 1550	OC192/STM64 LR/LH 4 Port 1550

Step 3 Click the **STS** tab.

Step 4 Click the **STS Config** subtab.

Step 5 Check the **IPPM Enabled** check box.

Step 6 Click **Apply**.

5.3.13 Enabling Pointer Justification Count Monitoring for CTC-Based NEs

Note Pointer justification count monitoring is not available for the ONS 15600 SONET and ONS 15600 SDH NEs.

Pointers are used in CTC-based NEs to compensate for frequency and phase variations. They provide a way to align the phase variations in STS and VT payloads. Pointer justification counts indicate timing differences on SONET networks.

There are positive pointer justification count (PPJC) and negative pointer justification count (NPJC) parameters. PPJC is a count of path-detected (PPJC-Pdet) or path-generated (PPJC-Pgen) positive pointer justifications. NPJC is a count of path-detected (NPJC-Pdet) or path-generated (NPJC-Pgen) negative pointer justifications depending on the specific PM name.

A consistent pointer justification count indicates clock synchronization problems between nodes. A difference between the counts means the node transmitting the original pointer justification has timing variations with the node detecting and transmitting this count. Positive pointer adjustments occur when the frame rate of the synchronous payload envelope (SPE) is too slow in relation to the rate of the STS-1.

To enable performance monitoring of the pointer justification count:

Step 1 In the Domain Explorer, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 Select an LTE card. See Table 5-16 for a list of LTE cards.

Step 3 Click the **Line** tab.

Step 4 Click the **Line Config** subtab.

Step 5 Double-click the **PJStsMon#** field and select a number:

- The value *Off* means pointer justification monitoring is disabled.
- The values *1* to *n* are the STS numbers on one port. One STS per port can be enabled from the PJStsMon# menu, as follows:
  - EC1-12 PJStsMon# card field: 0 or 1 can be selected on a total of 12 ports.
  - OC-3 PJStsMon# card field: 1, 2, or 3 can be selected on a total of 4 ports.
  - OC-12 PJStsMon# card field: Between 1 and 12 can be selected on 1 port.
  - OC-48 PJStsMon# card field: Between 1 and 48 can be selected on 1 port.
  - OC-192 PJStsMon# card field: Between 1 and 192 can be selected on 1 port.

Step 6 Click **Apply**.

5.3.14 Changing the Power Monitoring Threshold for the ONS 15454 SONET and ONS 15454 SDH

Step 1 In the Domain Explorer tree, select an ONS 154545 SONET or ONS 15454 SDH NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **General** tab.

Step 3 Click the **Power Monitor** subtab.

Step 4 In the Voltage Thresholds area, select the threshold for the following:

- ELWBATVG—Very low battery voltage.
- LWBATVG—Low battery voltage. Available on ONS 15454 SONET only.
- HIBATVG—High battery voltage. Available on ONS 15454 SONET only.
- EHIBATVG—Very high battery voltage.
- Current Voltage Environment—*Display only.*

Note You can set thresholds in 0.5 VDC increments.

Step 5 Click **Apply**.

5.3.15 Changing the Power Monitoring Threshold for the ONS 15600 SONET and ONS 15600 SDH

Step 1 In the Domain Explorer tree, select an ONS 15600 SONET or ONS 15600 SDH NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **General** tab.

Step 3 Click the **Power Monitor** subtab.

Step 4 In the Voltage Thresholds area, select the threshold for the following:

- ELWBATVG—Very low battery voltage.
- LWBATVG—Low battery voltage. Available on ONS 15600 SONET only.
- HIBATVG—High battery voltage. Available on ONS 15600 SONET only.
- EHIBATVG—Very high battery voltage.
- Current Voltage Environment—*Display only.*

Note You can set thresholds in 0.5 VDC increments.

Step 5 Click **Apply**.

5.3.16 Creating an Ethernet Threshold

The Create Ethernet Threshold dialog box allows you to create new Ethernet thresholds for the G1000-2, G1000-4, ETH100, ETH1000, and ML-series cards for ONS 15327, ONS 15454 SONET, and ONS 15454 SDH NEs.

Step 1 In the Domain Explorer, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the NE Explorer tree, select an Ethernet card.

Step 3 Click the **Thresholds** tab.

Step 4 Click **Create**. The Create Ether Thresholds dialog box opens. The following table provides descriptions.

Step 5 After making your selections, click **OK**.

Step 6 Click **Apply**.

Table 5-17 Field Descriptions for the Create Ethernet Thresholds Dialog Box

Field	Description
Slot	Select a slot for the new Ethernet threshold.
Port	Select a port for the selected slot. If you select All, the threshold is created on all ports for that slot. This operation might take several minutes to complete.
Variable	Select a variable for the new Ethernet threshold. The list of variables differs based on the type of card that is installed in the slot selected in the Slot field.
Alarm Type	Select an alarm type for the new Ethernet threshold. Available alarm types are Rising, Falling, and Rising and Falling.
Sample Type	Select a sample type for the new Ethernet threshold. Available sample types are Relative and Absolute.
Sample Period	Enter a sample period for the new Ethernet threshold. The sample period is measured in seconds.
Rising Threshold	Enter a rising threshold for the new Ethernet threshold. The value must be equal to or greater than the Falling Threshold value.
Falling Threshold	Enter a falling threshold for the new Ethernet threshold. The value must be equal to or less than the Rising Threshold value.

5.4 Synchronizing the Network

Use the NE Explorer to synchronize the CTC-based NEs in your network. The following sections describe the synchronization settings in detail.

5.4.1 Synchronization Settings for the ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, and ONS 15600 SONET

Full Cisco IOS configuration synchronization is performed automatically by Prime Optical to keep the NE and the Prime Optical Data Provisioning Service synchronized. Full configuration resynchronization might be delayed depending on Prime Optical server usage. For more information, see Chapter 7, "Provisioning Services and Connections."

Synchronization status messaging (SSM) is a SONET protocol that communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SONET Line layer. These messages enable SONET devices to automatically select the highest quality timing reference and to avoid timing loops.

SSM messages are either Generation 1 or Generation 2. Generation 1 is the first and most widely deployed SSM message set. Generation 2 is a newer version. If SSM is enabled, consult the timing reference documentation to determine which message set to use. The following tables show the Generation 1 and Generation 2 message sets.

Table 5-18 SSM Generation 1 Message Set

Message	Quality	Description
PRS	1	Primary reference source—Stratum 1
STU	2	Synchronization traceability unknown
ST2	3	Stratum 2
ST3	4	Stratum 3
SMC	5	SONET minimum clock
ST4	6	Stratum 4
DUS	7	Do not use for timing synchronization
RES	—	Reserved; quality level set by user

Table 5-19 SSM Generation 2 Message Set

Message	Quality	Description
PRS	1	Primary reference source—Stratum 1
STU	2	Synchronization traceability unknown
ST2	3	Stratum 2
TNC	4	Transit node clock
ST3E	5	Stratum 3E
ST3	6	Stratum 3
SMC	7	SONET minimum clock
ST4	8	Stratum 4
DUS	9	Do not use for timing synchronization
RES	—	Reserved; quality level set by user

Note Alarms relating to PM collection indicate that the load on the system is high. Reduce the load on the system before proceeding.

5.4.1.1 Setting Up External or Line Timing for CTC-Based SONET NEs

Step 1 Select an ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, or ONS 15600 SONET NE and choose **Configuration > NE Explorer**.

Step 2 In the node property pane, click the **Timing** tab. Fields shown depend on the NE that is selected.

Step 3 In the General Timing section of the **General** subtab, complete the following information:

- Timing Mode—Set to **External** if the NE derives its timing from a building integrated timing supply (BITS) source wired to the backplane pins; set to **Line** if timing is derived from an OC-N card that is optically connected to the timing node. A third option, **Mixed**, allows users to set external and line timing references.

Caution Because mixed timing can cause timing loops, Cisco does not recommend its use. Use this mode with care.

Note The Mixed option is not applicable to the ONS 15600 SONET.

- SSM Message Set—Choose the message set level supported by the network. If a Generation 1 node receives a Generation 2 message, the message will be mapped down to the next available Generation 1. For example, an ST3E message becomes an ST3.
- Revertive—If checked, the NE reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
- Reversion Time—If Revertive is checked, indicate the amount of time that the NE will wait before reverting back to its primary timing source.
- Quality of RES—If the timing source supports the reserved S1 byte, set the timing quality here. (Most timing sources do not use RES.) Qualities are displayed in descending quality order as ranges. For example, ST3 < RES < ST2 means the timing reference is higher than a Stratum 3 and lower than a Stratum 2.

Step 4 In the BITS Facilities section of the **General** subtab, complete the following information:

Note The BITS Facilities section sets the parameters for BITS1 and BITS2 timing references. Many of these settings are determined by the timing source manufacturer. If the equipment is timed through BITS Out, set the timing parameters to meet the requirements of the equipment.

- In State—If Timing Mode is set to External or Mixed, set In State for BITS 1 and/or BITS 2 to in service (IS), depending on whether one or both BITS input pin pairs on the backplane are connected to the external timing source. If Timing Mode is set to Line, set the In State to **OOS** (Out of Service).
- Out State—If equipment is connected to the node's BITS output pins on the backplane and you want to time the equipment from a node reference, set Out State for BITS 1 and/or BITS 2 to **IS**, depending on which BITS output pins are used for external equipment. If equipment is not attached to the BITS output pins, set the Out State to **OOS**.

- Coding—Set to the coding used by the BITS reference: **B8ZS** (binary 8-zero substitution) or **AMI** (alternate mark inversion).
- Framing—Set to the framing used by the BITS reference: **ESF** (Extended Superframe) or **SF(D4)** (Super Frame). SSM is not available with Super Frame.
- Sync Messaging—Check to enable SSM.
- AIS Threshold (Not applicable to the ONS 15600 SONET)—Sets the quality level where a node sends an alarm indication signal (AIS) from the BITS 1 Out and BITS 2 Out backplane pins. When a node times at or below the AIS threshold quality, an AIS is sent. This is used when SSM is disabled or when the frame is SF.
- LBO (Not applicable to the ONS 15600 SONET)—If you are timing an external device connected to the BITS Out pins, set the distance between the device and the NE. Options are 0-133 ft. (Cisco default), 134-266 ft., 267-399 ft., 400-533 ft., and 534-655 ft.

Step 5 In the **Reference List** subtab, complete the following information:

Note Reference lists define up to three timing references for the node and up to six BITS Out references. BITS Out references define the timing references used by equipment that can be attached to the node BITS Out pins on the backplane. If you attach equipment to BITS Out pins, you normally attach it to a node with Line mode because equipment near the External timing reference can be directly wired to the reference.

- NE References—Define up to three timing references (Ref-1, Ref-2, Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to Internal Clock. This is the Stratum 3 clock provided on the TCC+/TCC2 card. The options displayed depend on the Timing Mode setting:
  - Timing Mode set to External—Options are BITS1, BITS2, and Internal Clock.
  - Timing Mode set to Line—Options are the node's working OC-N cards (non-DWDM nodes), OSC cards (DWDM nodes), and Internal Clock. Select the cards and ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk (span) cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if slot 5 is connected to the node wired to the BITS source, select slot 5 as Reference 1.
  - Timing Mode set to Mixed—Both BITS and optical cards are available, which allows you to set a mixture of external BITS and OC-N trunk cards as timing references.
- BITS 1 Out/BITS 2 Out—Define the timing references for equipment wired to the BITS Out backplane pins. BITS 1 Out and BITS 2 Out are enabled when BITS 1 and BITS 2 facilities are put in service. If Timing Mode is set to external, choose the OC-N card used to set timing. If Timing Mode is set to Line, you can choose an OC-N card or choose NE reference to have BITS 1 out and/or BITS 2 Out follow the same timing reference as the NE.

Step 6 In the **Status** subtab, complete the following information:

- NE Clock
  - NE Reference—Set the NE timing reference to internal, BITS 1, or BITS 2.
  - Status—*Display only.* Displays the status of the NE clock.
  - Operations—Execute a switch on the NE timing reference.
- BITS 1 OUT
  - BITS 1 Out—Set the BITS 1 Out timing reference.
  - Status—*Display only.* Displays the status of the BITS 1 out timing reference.

  - Operations—Execute a switch on the BITS 1 out timing reference.
- BITS 2 OUT
  - BITS 2 Out—Set the BITS 2 Out timing reference.
  - Status—*Display only.* Displays the status of the BITS 2 out timing reference.
  - Operations—Execute a switch on the BITS 2 out timing reference.

Step 7 In the **Timing Report** subtab, you can view the timing status report summary for the node.

Step 8 Click **Apply**.

Note Refer to the relevant ONS 15310 CL, ONS 15310 MA, ONS 15327, ONS 15454, or ONS 15600 troubleshooting guide for timing-related alarms.

5.4.1.2 Setting Up Internal Timing for CTC-Based SONET NEs

If no BITS source is available, set up internal timing by timing all nodes in the ring from the internal clock of one node.

Caution Internal timing is Stratum 3 and not intended for permanent use. All nodes should be timed to a Stratum 2 or better primary reference source.

Complete the following steps to set up internal timing for CTC-based SONET NEs:

Step 1 Select an ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, or ONS 15600 SONET NE and choose **Configuration > NE Explorer**.

Step 2 In the node property pane, click the **Timing** tab. Fields shown depend on the NE that is selected.

Step 3 In the General Timing section of the **General** subtab, enter the following information:

- Timing Mode—Set to **External**.
- SSM Message Set—Set to **Generation 1**.
- Revertive—Not relevant for internal timing; the default setting (checked) is sufficient.
- Reversion Time—The default setting is sufficient.
- Quality of RES—Set to **RES=DUS**.

Step 4 In the BITS Facilities section of the **General** subtab, enter the following information:

- In State—Set BITS 1 and BITS 2 to **OOS**.
- Out State—Set BITS 1 and BITS 2 to **OOS**.
- Coding—Not relevant for internal timing. The default (B8ZS) is sufficient.
- Framing—Not relevant for internal timing. The default (ESF) is sufficient.
- Sync Messaging—Checked.
- AIS Threshold—Not available.
- LBO—Not relevant.

Step 5 In the **Reference List** subtab, enter the following information:

- NE References
  - Ref-1—Set to **Internal Clock**.
  - Ref-2—Set to **Internal Clock**.
  - Ref-3—Set to **Internal Clock**.
- BITS 1 Out/BITS 2 Out—Set to **None**.

Step 6 Click **Apply**.

Step 7 In the Domain Explorer tree, select the node that you set up in Step 1 through Step 6 and choose **Configuration > NE Explorer**.

Step 8 In the **Timing** tab, enter the same information that was entered in Step 3, except for the following:

- In the General Timing section of the **General** subtab, set the Timing Mode field to **Line**.
- In the NE References section of the **Reference List** subtab:
  - Ref-1—Set to the OC-N trunk (span) card (non-DWDM node) or OSC card (DWDM) with the closest connection to the node.
  - Ref-2—Set to the OC-N trunk (span) card (non-DWDM node) or OSC card (DWDM) with the next closest connection to the node.
  - Ref-3—Set to **Internal Clock**.

Step 9 Click **Apply**.

Step 10 Repeat Step 3 through Step 9 for each node in the ring that will be timed from the internal clock of the selected node.

5.4.2 Synchronization Settings for the ONS 15310 MA SDH, ONS 15454 SDH, and ONS 15600 SDH

SSM communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SDH section overhead. These messages enable SDH devices to automatically select the highest quality timing reference and to avoid timing loops.

SSM messages are either Generation 1 or Generation 2. Generation 1 is the first and most widely deployed SSM message set. Generation 2 is a newer version. If you enable SSM for the ONS 15454 SDH, consult your timing reference documentation to determine which message set to use. The following table shows the SDH message set.

Table 5-20 SDH SSM Message Set

Message	Quality	Description
G811	1	Primary reference clock
STU	2	Synchronization traceability unknown
G812T	3	Transit node clock traceable
G812L	4	Local node clock traceable

Table 5-20 SDH SSM Message Set (continued)

Message	Quality	Description
SETS	5	Synchronous equipment
DUS	6	Do not use for timing synchronization

Note Alarms relating to PM collection indicate that the load on the system is high. Reduce the load on the system before proceeding.

5.4.2.1 Setting Up External or Line Timing for CTC-Based SDH NEs

Step 1 Select an ONS 15310 MA SDH, ONS 15454 SDH, or ONS 15600 SDH NE and choose **Configuration > NE Explorer**.

Step 2 In the node property pane, select the **Timing** tab. Fields shown depend on the NE that is selected.

Step 3 In the General Timing section of the **General** subtab, complete the following information:

- Timing Mode
  - For the ONS 15310 MA SDH and ONS 15454 SDH:

    Choose **External** if the ONS 15310 MA SDH or ONS 15454 SDH NE derives its timing from an MIC-C/T/P FMEC; choose **Line** if timing is derived from an STM-N card (non-DWDM node) or OSC card (DWDM node) that is optically connected to the timing node. A third option, **Mixed**, allows you to set external and line timing references.
  - For the ONS 15600 SDH:

    Choose **External** if the ONS 15600 SDH NE derives its timing from a BITS source wired to the backplane; choose **Line** if timing is derived from an STM-N card that is optionally connected to the timing node. A third option, **Mixed**, allows you to set external and line timing references.

Caution Because mixed timing may cause timing loops, Cisco does not recommend its use. Use this mode with care.

- Revertive—If checked, the NE reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
- Reversion Time—If Revertive is checked, indicate the amount of time the NE will wait before reverting to its primary timing source.
- SSM Message Set (Applicable to the ONS 15600 SDH)—Enabled only if T1 signal type is selected. Choose the message set level supported by the network.

Step 4 In the BITS Facilities section of the **General** subtab, complete the following information:

Note The BITS Facilities section sets the parameters for your BITS 1 and BITS 2 timing references. Many of these settings are determined by the timing source manufacturer. If equipment is timed through BITS Out, you can set timing parameters to meet the requirements of the equipment.

- Facility Type—Choose the facility type that applies to the signal supported in your market. For example, 64 KHz is used in Japan. E1, 2.048 MHz, and 64 KHz are physical signal modes used to transmit the external clock (from a GPS, for example) to BITS.
- In State—If Timing Mode is set to External or Mixed, set In State for BITS 1 and/or BITS 2 to in service (IS), depending whether one or both BITS input pin pairs on the backplane are connected to the external timing source. If Timing Mode is set to Line, set In State to Locked.
- Out State—If equipment is connected to the node's BITS output pins on the backplane and you want to time the equipment from a node reference, set Out State for BITS 1 and/or BITS 2 to IS, depending on which BITS output pins are used for external equipment. If equipment is not attached to the BITS output pins, set Out State to Locked.
- State (Applicable to the ONS 15600 SDH)—For nodes using external timing, set State to Unlocked.
- Coding—Choose the coding used by your BITS reference: **HDB3** or **AMI**. If you selected 2.048 MHz or 64 KHz, the coding option is disabled.
- Framing—Choose the framing used by your BITS reference: **unframed**, **FAS**, **FAS + CAS**, **FAS + CRC**, or **FAS + CAS + CRC**. If you selected 2.048 MHz or 64 KHz, the framing option is disabled.
- Sync Messaging—Select the check box to enable SSM. SSM is used to deliver clock quality. SSM options supported in SDH are G811, STU, G812T, G812L, SETS, DUS (ordered from high quality to low quality). If you selected 2.048 MHz, 64 KHz, or E1 with FAS, or if FAS + CAS framing is provisioned, the SSM option is disabled.
- AIS Threshold (Applicable to the ONS 15310 MA SDH and ONS 15454 SDH)—Sets the quality level at which a node sends an alarm indication signal (AIS) from the BITS 1 Out and BITS 2 Out FMEC connectors. When a node times at or below the AIS threshold quality, an AIS is raised. (The AIS threshold is used when SSM is disabled or framing is set to unframed, FAS, or FAS + CAS.)
- LBO (Applicable to the ONS 15310 MA SDH and ONS 15454 SDH)—Choose a BITS cable length. Line build out (LBO) relates to the BITS cable length.
- Cable Type (Applicable to the ONS 15600 SDH)—Choose 75 ohm or 120 ohm.
- Sa bit—Choose one of 5 Sa bits (**4**, **5**, **6**, **7**, or **8**). The Sa bit transmits the SSM message. If you selected 2.048 MHz or 64 KHz, the Sa bit option is disabled.

Step 5 In the **Reference List** subtab, complete the following information:

Note Reference lists define up to three timing references for the node and up to six BITS Out references. BITS Out references define the timing references used by equipment attached to the node's MIC-C/T/P FMEC Timing A Out and Timing B Out connectors. If you attach equipment to the Timing A Out or Timing B Out connector, you normally attach it to a node with line mode because equipment near the external timing reference can be directly wired to the reference.

- NE References—Allows you to define three timing references (Ref-1, Ref-2, Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case the node uses Reference 2. If Reference 2 fails, the node uses Reference 3, which is typically set to Internal Clock. The internal clock is the Stratum 3 clock provided on the TCC2. The options displayed depend on the Timing Mode setting:
  - Timing Mode set to External—Options are BITS 1, BITS 2, and Internal Clock.
  - Timing Mode set to Line—For the ONS 15310 MA SDH and ONS 15454 SDH, options are the node's working OC-N cards (non-DWDM nodes), OSC cards (DWDM nodes), and Internal Clock. For the ONS 15600 SDH, options are Internal Clock and the node's STM-N ports, except for the ports that have been specified as protection ports in 1+1 groups (Linear Multiplex

Section Protection [LMSP] groups). Select the cards and ports that are directly or indirectly connected to the node wired to the BITS source; that is, select the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1.

  - Timing Mode set to Mixed—Both BITS and optical cards are available, allowing you to set a mixture of external BITS and optical trunk (span) cards as timing references.

- BITS 1 Out/BITS 2 Out References (Applicable to the ONS 15310 MA SDH and ONS 15454 SDH)—Define the timing references for equipment connected to the Timing A Out or Timing B Out FMEC connector. Normally, Timing Out is used with line nodes, so the options displayed are the working optical cards. Timing A Out and Timing B Out are enabled as soon as BITS 1 and BITS 2 facilities are placed in service.

Step 6 In the **Status** subtab, complete the following information:

- NE Clock
  - NE Reference—Set the NE timing reference to internal, BITS 1, or BITS 2.
  - Status—*Display only.* Displays the status of the NE clock.
  - Operations—Execute a switch on the NE timing reference.
- BITS 1 OUT
  - BITS 1 Out—Set the BITS 1 out timing reference.
  - Status—*Display only.* Displays the status of the BITS 1 out timing reference.
  - Operations—Execute a switch on the BITS 1 out timing reference.
- BITS 2 OUT
  - BITS 2 Out—Set the BITS 2 out timing reference.
  - Status—*Display only.* Displays the status of the BITS 2 out timing reference.
  - Operations—Execute a switch on the BITS 2 out timing reference.

Step 7 In the **Timing Report** subtab, you can view the timing status report summary for the node.

Step 8 Click **Apply**.

Note Refer to the *Cisco ONS 15454 SDH Troubleshooting Guide* or *Cisco ONS 15600 SDH Troubleshooting Guide* for timing-related alarms.

5.4.2.2 Setting Up Internal Timing for CTC-Based SDH NEs

If no BITS source is available, you can set up internal timing by timing all nodes in the ring from the internal clock of one node.

Caution Internal timing is Stratum 3 and not intended for permanent use. All nodes should be timed to a Stratum 2 or better primary reference source.

Complete the following steps to set up internal timing for CTC-based SDH NEs:

Step 1 Select an ONS 15310 MA SDH, ONS 15454 SDH, or ONS 15600 SDH NE and choose **Configuration > NE Explorer**.

Step 2 In the node property pane, select the **Timing** tab.

Step 3 In the General Timing section of the **General** subtab, enter the following information:

- Timing Mode—Choose **External**.
- Revertive—Not applicable for internal timing; the default setting (checked) is sufficient.
- Reversion Time—Not applicable; leave unchanged.

Step 4 In the BITS Facilities section of the **General** subtab, enter the following information:

- Facility Type—Choose the facility type that applies to the signal supported in your market. For example, 64 KHz is used in Japan. E1, 2.048 MHz, and 64 KHz are physical signal modes used to transmit the external clock (from a GPS, for example) to BITS.
- In State—Set BITS 1 and BITS 2 to **Locked**.
- Out State—Set BITS 1 and BITS 2 to **Locked**.
- State (Applicable to the ONS 15600 SDH)—Set BITS 1 and BITS 2 to **Locked**.
- Coding—Not relevant for internal timing; the default is sufficient.
- Framing—Not relevant for internal timing; the default is sufficient.
- Sync Messaging—Checked automatically. SSM is used to deliver clock quality. SSM options supported in SDH are G811, STU, G812T, G812L, SETS, DUS (ordered from high quality to low quality). If you selected 2.048 MHz or 64 KHz, the SSM option is disabled.
- AIS Threshold—Not relevant for internal timing.
- LBO—Not relevant for internal timing.
- Sa bit—Not relevant for internal timing.

Step 5 In the **Reference List** subtab, enter the following information:

- NE References
  - Ref-1—Set to **Internal Clock**.
  - Ref-2—Set to **Internal Clock**.
  - Ref-3—Set to **Internal Clock**.
- BITS 1 Out/BITS 2 Out (Applicable to the ONS 15310 MA SDH and ONS 1545 SDH)—Set to **None**.

Step 6 Click **Apply**.

Step 7 In the Domain Explorer tree, select the node that you set up in Step 1 to Step 6 and choose **Configuration > NE Explorer**.

Step 8 In the **Timing** tab, complete the following:

- In the General Timing section of the **General** subtab:
  - Timing Mode—Set to **Line**.
  - Revertive—Not applicable for internal timing; the default setting is sufficient.
  - Reversion Time—Not applicable for internal timing; the default setting is sufficient.
- In the NE References section of the **Reference List** subtab:

- Ref-1—Set to the STM-N trunk card with the closest connection to the node.
- Ref-2—Set to the STM-N trunk card with the next closest connection to the node.
- Ref-3—Set to **Internal Clock**.

Step 9 Click **Apply**.

Step 10 Repeat Steps 7 through 9 for each node that will be timed by the node.

5.5 Configuring the ONS 15216

Step 1 In the Domain Explorer tree, select the ONS 15216 NE that will be configured and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool). The NE Explorer window displays configuration information for the selected ONS 15216 NE.

Step 2 Make any necessary changes to the fields in the properties pane that corresponds to the NE or its components. Click **Apply** to save the changes to the Prime Optical database and apply the changes to the NE.

5.6 Configuring the ONS 15305 Earlier than R3.0

Within Prime Optical, use Cisco Edge Craft to configure ONS 15305 NEs earlier than R3.0. (For the ONS 15305 R3.0, use the Prime Optical NE Explorer. See 5.7 Configuring the ONS 15305 R3.0, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, and ONS 15454 SDH, page 5-39.) Select the ONS 15305 NE in the Domain Explorer tree and choose **Configuration > ONS 15305 > Launch Cisco Edge Craft**. Refer to the "Installing the Cisco Prime Optical Client and Cisco Edge Craft" chapter in the *Cisco Prime Optical 9.6.3 Installation Guide* for instructions on how to start Cisco Edge Craft.

Note To configure ONS 15305 NEs through Cisco Edge Craft, refer to *Cisco Edge Craft Software Guide*.

5.7 Configuring the ONS 15305 R3.0, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, and ONS 15454 SDH

You can use the Prime Optical NE Explorer, CTC, or TL1 to configure CTC-based NEs.

5.7.1 Launching the Prime Optical NE Explorer

Step 1 In the Domain Explorer tree, select the NE that will be configured and choose **Configuration > NE Explorer**. The NE Explorer window displays configuration information about the selected NE.

Step 2 Make any necessary changes to the fields in the properties pane that corresponds to the NE or its components. Click **Apply** to save the changes to the Prime Optical database and apply the changes to the NE.

5.7.2 Launching CTC

Only the latest CTC release is launched from Prime Optical, regardless of the NE release you selected. If you need to use other CTC releases, launch CTC from a web browser and connect directly to the NE that has the required CTC release.

Step 1 In the Domain Explorer tree, Subnetwork Explorer tree, or Network Map, select the NE that will be configured and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Launch CTC**.

Step 2 The Launch CTC dialog box opens with the Username and Password fields filled in with the values contained in the Cisco Prime Optical Users table for that user. If the CTC Username value for that user is empty in the Cisco Prime Optical Users table, the fields in the Launch CTC dialog box are empty; enter the username and password.

Step 3 Check the **Enable Socks Server** check box to set the CTC DSS property (ctc.proxy.designatedgnes), which contains all of the GNEs present in the network partition. This feature speeds up network discovery and enables the cross-launch of CTC on all NEs that are not directly connected to the LAN.

Step 4 Click **OK**.

5.7.3 Launching TL1

In the Domain Explorer tree, Subnetwork Explorer tree, or Network Map, select the NE that will be configured and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Launch TL1 Interface**. This launches a Telnet session directed at the TL1 port on the NE.

5.7.4 Provisioning an ONS 15305 R3.0, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, or ONS 15454 SDH Card Slot

You can use this procedure to reset, delete, or change a card.

Step 1 In the Domain Explorer tree, select the NE that will be configured and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the tree view or in the shelf view of the node properties pane, right-click an unprovisioned slot and choose **Add Card** from the shortcut menu.

Step 3 Select the type of card. The list of cards in the Add Card menu depends on the NE and the slot selected.

Step 4 Click **OK** in the confirmation dialog box.

It might take several minutes for the newly provisioned card to be added on the NE. During this time, it is possible to add additional cards on the same slot. However, only the first card added will be shown in the NE Explorer tree view and in the shelf view.

5.7.5 Resetting a Card

Step 1 In the Domain Explorer tree, select the NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the tree view or in the shelf view of the node properties pane, right-click the card that you want to reset and choose **Reset Card** from the shortcut menu.

Step 3 Click **OK** in the confirmation dialog box.

5.7.6 Deleting a Card

Step 1 In the Domain Explorer tree, select the NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the tree view or in the shelf view of the node properties pane, right-click the card that you want to delete and choose **Delete Card** from the shortcut menu.

Note For the ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH, you cannot delete the CTX card.

Step 3 Click **OK** in the confirmation dialog box.

5.7.7 Changing a Card

Step 1 In the Domain Explorer tree, select the NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the tree view or in the shelf view of the node properties pane, right-click the card that you want to change and choose **Change Card** from the shortcut menu.

Note For the ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH, you cannot change the CTX card.

Step 3 Select the type of the new card. The list of cards in the Change Card menu depends on the slot selected.

Step 4 Click **OK** in the confirmation dialog box.

Tip If you receive a mismatched equipment alarm (MEA) after changing a card, troubleshoot the MEA with the *Cisco ONS 15454 Troubleshooting Guide*.

5.7.8 Inserting an AIS-V on an STS-1 SD-P

Note This procedure does not apply to the ONS 15454 SDH.

Step 1 In the Domain Explorer tree, select the ONS 15305 R3.0, ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, or ONS 15454 SONET NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Identification** tab.

Step 3 In the AIS-V Insertion on STS-1 Signal Degrade-Path area, complete the following substeps:

- **a.** Check the **Insert AIS-V on STS-1 SD-P** check box to insert an AIS-V on the STS-1 Signal Degrade-Path.
- **b.** Click **OK** in the warning message dialog box.
- **c.** Select the SD-P BER from the drop-down list.

Step 4 Click **Apply**.

5.7.9 Changing Secure Config Mode—ONS 15454 SONET or ONS 15454 SDH

The TCC2P card supports secure config mode. When the secure mode is ON, the NE has two IP addresses, one for the backplane and one for the front port. The front port IP address is used by the DCC-connected NEs. The secure config mode feature applies to the ONS 15454 SONET R5.0 and ONS 15454 SDH R5.0 and later.

The Secure Config Mode subtab allows you to configure the secure config mode. The fields shown depend on whether the NE is in secure mode. For example, the Backplane Ethernet Port values are displayed only when the NE is in secure mode.

Step 1 In the Domain Explorer tree, select the ONS 15454 SONET or ONS 15454 SDH NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **Secure Config Mode** subtab.

Step 4 Click the **Change Mode** button. The Change Secure Mode dialog box opens.

Note The Change Mode button is enabled only if an active TCC2P card exists on the NE.

Step 5 Complete one of the following options, depending on your configuration:

- If you are changing the secure mode from secure to nonsecure, fill in the fields described in Table 5-21.
- If you are changing the secure mode from nonsecure to secure, fill in the fields described in Table 5-22.

Step 6 Click **OK**.

Table 5-21 Field Descriptions for the Change Secure Mode Dialog Box when the NE Is Secure

Field	Description
Node IP Address	
Backplane LAN Port	Click this radio button to use the IP address currently assigned to the backplane LAN port as the IP address of the NE in normal (nonsecure) mode.
TCC LAN Port	Click this radio button to use the IP address currently assigned to the TCC LAN port as the IP address of the NE in normal (nonsecure) mode.
New IP Address	Click this radio button to use neither the backplane nor the TCC LAN port IP address, but instead assign a completely new IP address to the NE.
IP Address	(Available only if New IP Address is selected) Enter the backplane IP address.
Net/Subnet Mask Length	(Available only if New IP Address is selected) Enter the mask length of the secure IP address. Use the up or down arrows to change the mask length.
Default Router	(Available only if New IP Address is selected) Enter the address of the default router for this NE.
Gateway Settings	
Enable Proxy Server on Port	If checked, the ONS 15454 SONET or ONS 15454 SDH serves as a proxy for connections between the Prime Optical server and NEs that are DCC-connected to the proxy NE. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server uses port number 1080. If unchecked, the node does not proxy.
End Network Element (ENE)	(Available only if Enable Proxy Server on Port is checked) Enables the node to proxy as an ENE.
Gateway Network Element (GNE)	(Available only if Enable Proxy Server on Port is checked) Enables the node to proxy as a GNE.
Proxy-only	(Available only if Enable Proxy Server on Port is checked) Enables proxy only.

Table 5-22 Field Descriptions for the Change Secure Mode Dialog Box when the NE Is Not Secure

Field	Description
TCC Ethernet Port	
IP Address	Enter the TCC Ethernet port IP address.
Net/Subnet Mask Length	Enter the mask length of the secure IP address. Use the up or down arrows to change the mask length.
Backplane Ethernet Port	
IP Address	Enter the backplane Ethernet port IP address.
Default Router	Enter the address of the default router for this NE.
Subnet Mask	Enter the subnet mask of the secure IP address.
Gateway Settings	
Enable Proxy Server on Port	If checked, the ONS 15454 SONET or ONS 15454 SDH serves as a proxy for connections between the Prime Optical server and NEs that are DCC-connected to the proxy NE. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server uses port number 1080. **Note** When you are changing the config mode to secure, you cannot disable proxy. If unchecked, the node does not proxy.
End Network Element (ENE)	(Available only if Enable Proxy Server on Port is checked) Enables the node to proxy as an ENE.
Gateway Network Element (GNE)	(Available only if Enable Proxy Server on Port is checked) Enables the node to proxy as a GNE.
Proxy-only	(Available only if Enable Proxy Server on Port is checked) Enables proxy only.

5.8 Configuring the ONS 15600 SONET and ONS 15600 SDH

You can use the Prime Optical NE Explorer or CTC to configure ONS 15600 SONET and ONS 15600 SDH NEs.

5.8.1 Launching the Prime Optical NE Explorer

Step 1 In the Domain Explorer tree, select the ONS 15600 SONET or ONS 15600 SDH NE that will be configured and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool). The NE Explorer window displays configuration information about the selected ONS 15600 SONET or ONS 15600 SDH NE.

Step 2 Make any necessary changes to the fields in the properties pane that corresponds to the NE or its components. Click **Apply** to save the changes to the Prime Optical database and apply the changes to the NE.

5.8.2 Launching CTC

See 5.7.2 Launching CTC, page 5-40, which also applies to ONS 15600 SONET and ONS 15600 SDH NEs.

5.8.3 Resetting a Card

Step 1 In the Domain Explorer tree, select the ONS 15600 SONET or ONS 15600 SDH NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 Click the **Shelf View** tab.

Step 3 On the shelf graphic, right-click a card and select either **Hard Reset Card** or **Soft Reset Card** from the shortcut menu.

Step 4 Click **OK** in the confirmation message box.

5.8.4 Deleting a Card

Step 1 In the Domain Explorer tree, select the ONS 15600 SONET or ONS 15600 SDH NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the tree view or in the shelf view of the node properties pane, right-click the card that you want to delete and choose **Delete Card** from the shortcut menu.

Step 3 Click **OK** in the confirmation dialog box.

5.8.5 Changing a Card

Step 1 In the Domain Explorer tree, select the ONS 15600 SONET or ONS 15600 SDH NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the tree view or in the shelf view of the node properties pane, right-click the card that you want to change and choose **Change Card** from the shortcut menu.

Step 3 Select the type of the new card. The list of cards in the Change Card menu depends on the slot selected.

Step 4 Click **OK** in the confirmation dialog box.

Provisioning Cards

This chapter provides instructions on how to provision a subset of Cisco Prime Optical-supported cards. For more information on card provisioning, see the NE-related documentation.

This chapter contains the following sections:

- 6.1 How Do I Provision Cards?, page 6-1
- 6.2 Common Cards, page 6-2
- 6.3 DWDM Cards, page 6-2
- 6.4 Electrical Cards, page 6-2
- 6.5 Ethernet Cards, page 6-8
- 6.6 FC_MR-4 Card, page 6-21
- 6.7 FMEC Cards, page 6-21
- 6.8 Multirate Cards, page 6-21
- 6.9 Optical Cards, page 6-21

6.1 How Do I Provision Cards?

Where supported, use the NE Explorer to view and provision card settings.

Step 1 Select an NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the card that you want to provision.

Step 3 In the slot properties pane, click the tab or subtab that corresponds to the settings that you want to modify. For detailed information on the different tabs and subtabs available for each card, see:

- Appendix C, "Slot Properties Pane Information—Common, DWDM, Electrical, and Ethernet Cards"
- Appendix D, "Slot Property Information—FC_MR-4, FMEC, Multirate, and Optical Cards"

Step 4 Modify the settings. For drop-down lists, select an item from the list. For numerics, double-click the field and type the new number.

Step 5 Click **Apply**.

6.2 Common Cards

For the common cards supported in Prime Optical and the NEs that contain common cards, see C.1 Common Cards, page C-1.

6.3 DWDM Cards

For the DWDM cards supported in Prime Optical and the NEs that contain DWDM cards, see C.2 DWDM Cards, page C-111.

6.3.1 Provisioning Pluggable Entities on DWDM Cards

Step 1 Select a CTC-based NE in the Domain Explorer tree and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the DWDM card that you want to provision and click the **PPM** tab.

Step 3 Click **Create**. Depending on the selection context, one of the following dialog boxes opens; fields vary accordingly:

- Create PPM
- Create Port

Step 4 In the PPM No. field, select the PPM number from the drop-down list.

Step 5 In the PPM Type field, select the type of PPM from the drop-down list. (This field is not visible in the Create Port dialog box.)

Step 6 In the Port Rate field, select the port rate from the drop-down list. (This field is not visible in the Create PPM dialog box.)

Step 7 Click **OK**.

6.4 Electrical Cards

For the electrical cards supported in Prime Optical and the NEs that contain electrical cards, see C.3 Electrical Cards, page C-651.

6.4.1 Converting DS1-14 Cards from 1:1 to 1:N Protection

Note This procedure assumes that DS1-14 cards are installed in slots 1 through 6 and/or slots 12 through 17. The DS1-14 cards in slots 3 and 15, which are the protection slots, will be replaced with DS1N-14 cards. The ONS 15454 must run CTC Release 2.0 or later. The procedure also requires at least one DS1N-14 card and a protection group with DS1-14 cards.

Step 1 Select the NE in the Domain Explorer; then, choose **Configuration > NE Explorer**.

Step 2 In NE node property sheet, click the **Protection** tab.

Step 3 In the **Protection Groups** subtab, select the protection group containing slot 3 or slot 15 (where the DS1N-14 card will be installed).

Step 4 Be sure that the slot that is being upgraded is not carrying working traffic. In the **Operations** tab, look at the Protection Groups Details. The protect slot must be Protect/Standby and not Protect/Active. If the protect slot status is Protect/Active, complete the following steps to switch traffic to the working card:

a. In the Protection Group Details list, click the protect card.

b. In the Switch Commands area, click **Switch**.

The working slot should change to Working/Active and the protect slot should change to Protect/Standby. If they do not change, do not continue. Troubleshoot the working card and slot to determine why the card cannot carry working traffic.

c. In the Switch Commands area, click **Clear**.

Step 5 Repeat Step 1 to Step 4 for each protection group that you want to convert.

Step 6 Verify that no standing alarms exist for any of the DS1-14 cards that will be converted. If alarms exist that cannot be cleared, contact the next level of support.

Step 7 Click the **Protection Groups** subtab.

Step 8 Click the 1:1 protection group that contains the cards that will be moved into the new protection group.

Step 9 Click **Delete**.

Step 10 When the confirmation dialog box opens, click **OK**.

Note Deleting the 1:1 protection groups will not disrupt service. However, no protection bandwidth exists for the working circuits until the 1:N protection procedure is completed. Therefore, complete this procedure as quickly as possible.

Step 11 If needed, repeat Step 6 to Step 10 for any other protection groups.

Step 12 Physically remove the DS1-14 card from slot 3 or slot 15. This generates an improper removal alarm.

Step 13 In the node view, right-click the slot that held the removed card and choose **Delete card** from the drop-down list. Wait for the card to disappear from the node view.

Step 14 Physically insert a DS1N-14 card into the same slot.

Step 15 Verify that the card boots up properly.

Step 16 Choose **Configuration > CTC-Based SONET NEs > Equipment Inventory Table** and verify that the new card appears as a DS1N-14 card.

Step 17 Click the node view in the NE Explorer tree.

Step 18 Click the **Protection** tab; then, click the **Protection Groups** subtab.

Step 19 Click **Create**. The Create Protection Group dialog box opens.

Step 20 (Optional) In the Name field, enter a name for the protection group.

Step 21 In the Type field, choose **1:N (card)** from the drop-down list.

Step 22 In the Protect Module field, choose the protection slot from the drop-down list.

The Create Protection Group dialog box shows the protect card in the Protect Card field and the available cards in the Available Cards field.

Step 23 Verify that the DS1N-14 card appears in the Protect Card field.

Step 24 In the Available Cards list, highlight the card that will be included in the protection group. Click the arrow (>>) to move the card to the Working Cards list.

Step 25 In the Reversion Time field, choose the reversion time from the drop-down list.

Step 26 Click **OK**.

Step 27 When the confirmation dialog box opens, click **Yes**.

The protection group should appear in the Protection Groups list on the Protection subtab.

6.4.2 Converting DS3-12 Cards from 1:1 to 1:N Protection

Note This procedure assumes that DS3-12 cards are installed in slots 1 through 6 and/or slots 12 through 17. The DS3-12 cards in slots 3 and 15, which are the protection slots, will be replaced with DS3N-12 cards. The ONS 15454 must run CTC Release 2.0 or later. This procedure also requires at least one DS3N-12 card and a protection group with DS3-12 cards.

Step 1 Select the NE in the Domain Explorer; then, choose **Configuration > NE Explorer**.

Step 2 In the NE node property sheet, click the **Protection** tab.

Step 3 In the **Protection Groups** subtab, select the protection group containing slot 3 or slot 15 (where the DS3N-12 card will be installed).

Step 4 Be sure that the slot that is being upgraded is not carrying working traffic. In the **Operations** tab, look at the Protection Groups Details. The protect slot must be Protect/Standby and not Protect/Active. If the protect slot status is Protect/Active, complete the following steps to switch traffic to the working card:

a. In the Protection Group Details list, click the protect card.

b. In the Switch Commands area, click **Switch**.

The working slot should change to Working/Active and the protect slot should change to Protect/Standby. If they fail to change, do not continue. Troubleshoot the working card and slot to determine why the card cannot carry working traffic.

c. In the Switch Commands area, click **Clear**.

Step 5 Repeat Step 1 to Step 4 for each protection group that you want to convert.

Step 6 Verify that no standing alarms exist for any of the DS3-12 cards that are being converted. If alarms exist that cannot be cleared, contact the next level of support.

Step 7 Click the **Protection Groups** subtab.

Step 8 Click the 1:1 protection group that contains the cards that will be moved into the new protection group.

Step 9 Click **Delete**.

Step 10 When the confirmation dialog box opens, click **OK**.

Note Deleting the 1:1 protection groups will not disrupt service. However, no protection bandwidth exists for the working circuits until the 1:N protection procedure is completed. Therefore, complete this procedure as quickly as possible.

Step 11 If needed, repeat Step 6 to Step 10 for each protection group.

Step 12 Physically remove the DS3-12 card from slot 3 or slot 15. This generates an improper removal alarm.

Step 13 In the node view, right-click the slot that held the removed card and choose **Delete card** from the drop-down list. Wait for the card to disappear from the node view.

Step 14 Physically insert a DS3N-12 card into the same slot.

Step 15 Verify that the card boots up properly.

Step 16 Choose **Configuration > CTC-Based SONET NEs > Equipment Inventory Table** and verify that the new card appears as a DS3N-12 card.

Step 17 Click the node view in the NE Explorer tree.

Step 18 Click the **Protection** tab; then, click the **Protection Groups** subtab.

Step 19 Click **Create**. The Create Protection Group dialog box opens.

Step 20 (Optional) In the Name field, enter a name for the protection group.

Step 21 In the Type field, choose **1:N (card)** from the drop-down list.

Step 22 In the Protect Module field, choose the protection slot from the drop-down list.

The Create Protection Group dialog box shows the protect card in the Protect Card field and the available cards in the Available Cards field.

Step 23 Verify that the DS3N-12 card appears in the Protect Card field.

Step 24 In the Available Cards list, highlight the card that will be included in the protection group. Click the arrow (>>) to move the card to the Working Cards list.

Step 25 In the Reversion Time field, choose a reversion time from the drop-down list.

Step 26 Click **OK**.

Step 27 When the confirmation dialog box opens, click **Yes**.

The protection group should appear in the Protection Groups list on the Protection subtab.

6.4.3 Converting E1-N-14 Cards from 1:1 to 1:N Protection

Note

- This procedure assumes that E1-N-14 cards are installed in slots 1 through 6 and/or slots 12 through 17. The E1-N-14 cards in slots 3 and 15, which are the protection slots, will be converted from 1:1 to 1:N protection. (E1-N-14 cards can work in 1:1 and 1:N protection schemes.)
- Be sure that the slot containing the E1-N-14 card is not carrying working traffic. Also, be sure that there are no existing alarms for the E1-N-14 card that you are converting.

Complete the following steps to convert E1-N-14 cards from 1:1 to 1:N protection:

Step 1 Select the NE in the Domain Explorer; then, choose **Configuration > NE Explorer**.

Step 2 In NE node property sheet, click the **Protection** tab.

Step 3 In the **Protection Groups** subtab, select the protection group containing slot 3 or slot 15 (where the E1-N-14 card will be installed).

Step 4 Be sure that the slot that is being upgraded is not carrying working traffic. In the **Operations** tab, look at the Protection Groups Details. The protect slot must be Protect/Standby and not Protect/Active. If the protect slot status is Protect/Active, complete the following steps to switch traffic to the working card:

a. In the Protection Group Details list, click the protect card.

b. In the Switch Commands area, click **Switch**.

The working slot should change to Working/Active and the protect slot should change to Protect/Standby. If they fail to change, do not continue. Troubleshoot the working card and slot to determine why the card cannot carry working traffic.

c. In the Switch Commands area, click **Clear**.

Step 5 Repeat Step 1 to Step 4 for each protection group that you want to convert.

Step 6 Verify that no standing alarms exist for any of the E1-N-14 cards that are being converted. If alarms exist that cannot be cleared, contact the next level of support.

Step 7 Click the **Protection Groups** subtab.

Step 8 Click the 1:1 protection group that contains the cards that will be moved into the new protection group.

Step 9 Click **Delete**.

Step 10 When the confirmation dialog box opens, click **OK**.

Note Deleting the 1:1 protection groups will not disrupt service. However, no protection bandwidth exists for the working circuits until the 1:N protection procedure is completed. Therefore, complete this procedure as quickly as possible.

Step 11 If needed, repeat Step 6 to Step 10 for each protection group.

Step 12 Click **Create**. The Create Protection Group dialog box opens.

Step 13 (Optional) In the Name field, enter a name for the protection group.

Step 14 In the Type field, choose **1:N (card)** from the drop-down list.

Step 15 Verify that the E1-N-14 card appears in the Protect Card field.

Step 16 In the Available Cards list, highlight the card that will be included in the protection group. Click the arrow (**>>**) to move the card to the Working Cards list.

Step 17 Click **OK**.

Step 18 When the confirmation dialog box opens, click **Yes**.

The protection group should appear in the Protection Groups list on the Protection subtab.

6.4.4 Converting DS3i-N-12 Cards from 1:1 to 1:N Protection

Note This procedure assumes that DS3i-N-12 cards are installed in slots 1 to 6 and/or slots 12 to 17.

Step 1 Select the NE in the Domain Explorer; then, choose **Configuration > NE Explorer**.

Step 2 In NE node property sheet, click the **Protection** tab.

Step 3 In the **Protection Groups** subtab, select the protection group containing slot 3 or slot 15 (where the DS3i-N-12 card will be installed).

Step 4 Be sure that the slot that is being upgraded is not carrying working traffic. In the **Operations** tab, look at the Protection Groups Details. The protect slot must be Protect/Standby and not Protect/Active. If the protect slot status is Protect/Active, complete the following steps to switch traffic to the working card:

a. In the Protection Group Details list, click the protect card.

b. In the Switch Commands area, click **Switch**.

The working slot should change to Working/Active and the protect slot should change to Protect/Standby. If they fail to change, do not continue. Troubleshoot the working card and slot to determine why the card cannot carry working traffic.

c. In the Switch Commands area, click **Clear**.

Step 5 Repeat Step 1 to Step 4 for each protection group that you want to convert.

Step 6 Verify that no standing alarms exist for any of the DS3i-N-12 cards that are being converted. If alarms exist that cannot be cleared, contact the next level of support.

Step 7 Click the **Protection Groups** subtab.

Step 8 Click the 1:1 protection group that contains the cards that will be moved into the new protection group.

Step 9 Click **Delete**.

Step 10 When the confirmation dialog box opens, click **OK**.

Note Deleting the 1:1 protection groups will not disrupt service. However, no protection bandwidth exists for the working circuits until the 1:N protection procedure is completed. Therefore, complete this procedure as quickly as possible.

Step 11 If needed, repeat Step 6 to Step 10 for each protection group.

Step 12 Verify that the card boots up properly.

Step 13 Click the node view in the NE Explorer tree.

Step 14 Click the **Protection** tab; then, click the **Protection Groups** subtab.

Step 15 Click **Create**. The Create Protection Group dialog box opens.

Step 16 (Optional) In the Name field, enter a name for the protection group.

Step 17 In the Type field, choose **1:N (card)** from the drop-down list.

Step 18 Verify that the DS3i-N-12 card appears in the Protect Card field.

Step 19 In the Available Cards list, highlight the card that will be included in the protection group. Click the arrow (>>) to move the card to the Working Cards list.

Step 20 Click **OK**.

Step 21 When the confirmation dialog box opens, click **Yes**.

The protection group should appear in the Protection Groups list on the Protection subtab.

Note When a manual OC-N protection switch is performed incorrectly, a warning message indicates that Prime Optical cannot perform the operation.

6.4.5 Resetting NE Thresholds to the Default Values

You can reset NE thresholds on electrical and optical cards.

Step 1 Select the NE in the Domain Explorer; then, choose **Configuration > NE Explorer**.

Step 2 Open the card slot property sheet for the electrical or optical card.

Step 3 Click the **Line** or **STS** tab.

Step 4 Click the threshold subtab that contains the values that you want to revert to the default.

Step 5 In the threshold subtab, click the **Reset to Default** button.

Step 6 At the confirmation prompt, click **Yes**.

6.5 Ethernet Cards

For the Ethernet cards supported in Prime Optical and the NEs that contain Ethernet cards, see C.4 Ethernet Cards, page C-832.

6.5.1 Provisioning E-Series Ethernet Ports for VLAN Membership

Caution The ONS 15305 CTC, ONS 15454 SONET, and ONS 15454 SDH propagate VLANs whenever a node appears on the same network view as another node, regardless of whether or not the nodes connect through data communication channels (DCCs). For example, if two ONS 15454 SONETs or ONS 15454 SDHs without DCC connectivity belong to the same Login Node Group, whenever CTC is launched from within this login node group, VLANs propagate from one to the other. This happens even though the ONS 15454 SONETs or ONS 15454 SDHs do not belong to the same ring.

Caution If a node is unreachable or out of service, and if the DCC connections used to reach the NE still exist, Prime Optical does not allow the deletion of a VLAN on the NE. You must delete the DCC connections before deleting a VLAN.

The ONS 15305 CTC, ONS 15327, ONS 15454 SONET, and ONS 15454 SDH allow configuration of the VLAN membership and Q-tag handling of individual Ethernet ports.

Step 1 Select an ONS 15305 CTC, ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NE in the Domain Explorer tree and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the card that you want to provision and click the **VLAN** tab.

Step 3 To put a port in a VLAN, click the port and choose **Tagged** or **Untag**.

If a port is a member of only one VLAN, go to the row of that VLAN and choose **Untag** from the Port column. Choose **--** for all the other VLAN rows in that Port column. The VLAN with **Untag** selected can connect to the port, but other VLANs cannot access that port.

If a port is a trunk port, it connects multiple VLANs to an external device, such as a switch, that also supports trunking. A trunk port must have tagging (802.1Q) enabled for all the VLANs that connect to that external device. Choose **Tagged** at all VLAN rows that need to be trunked. Choose **Untag** at one or more VLAN rows in the trunk port column that do not need to be trunked; for example, the default VLAN. Each Ethernet port must be attached to at least one untagged VLAN. The following table describes the port settings.

Table 6-1 Port Settings

Setting	Description
--	A port marked with this symbol does not belong to the VLAN.
Untag	The node will tag ingress frames and strip tags from egress frames.
Tagged	The node will handle ingress frames according to VLAN ID; egress frames will not have their tags removed.

Step 4 After each port is in the appropriate VLAN, click **Apply**.

Note If Tagged is chosen, the attached external devices must recognize IEEE 802.1Q VLANs.

Note Both ports on an individual E1000-2 or E1000-2-G card cannot be members of the same VLAN.

6.5.2 Specifying the ML-Series Card Username and Password

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Security Properties**; then, click one of the following:

- **CTC-Based SDH** tab > **ONS 15454 SDH**, **ONS 15600 SDH**, **ONS 15305 CTC**, or **ONS 15310 MA SDH** subtab
- **CTC-Based SONET** tab > **ONS 15454**, **ONS 15600**, **ONS 15327**, **ONS 15310 CL**, or **ONS 15310 MA** subtab

Step 3 In the Server - ML Series Card Connection area, enter the username and password. Retype the password as confirmation.

Note The Prime Optical barebone Cisco IOS configuration file uses CTM123+ as the predefined password. By default, the same password is set in the Control Panel at installation.

Step 4 Click **Save**.

6.5.3 Modifying Configuration Settings for the ML-Series Cards—ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH

Full Cisco IOS configuration synchronization is performed automatically by Prime Optical to keep the NE and the Prime Optical Data Provisioning Service synchronized. Full configuration resynchronization might be delayed depending on the usage of the Prime Optical server. For the Prime Optical server deployed as the monitoring server, the recommended value for the delay parameter is 120 seconds. For the Prime Optical server deployed as the provisioning server, the recommended value for the delay parameter is 10 minutes (for example, 600 seconds). The default value is provided in the Control Panel > NE Service > CTC-Based SONET NEs or CTC-Based SDH NEs > NE Service pane > L2 Service Resync Delay field. For example, for the CTC-based SONET or CTC-based SDH network service, the default L2 Service Resync Delay value is 600 seconds.

To upload or download a configuration file for the ML-series card:

Step 1 Select an ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, or ONS 15454 SDH NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the ML card.

Step 3 Click the **Configuration** tab. The following parameters are displayed:

- Source—Source of the configuration file.
- Host—Host machine where the configuration file is stored or the location where the file will be downloaded.
- Filename—Name of the configuration file.
- Directory—Directory on the host machine for the configuration file.
- Time Stamp—Date and time of the file upload or download.

Note These parameters are initially grayed out or disabled. When a file download or upload is completed, the fields display the parameters of the download or upload. These parameters are related to the newly loaded barebone configuration file. Once a change is made to the barebone configuration file, the fields are cleared.

Step 4 To download the file from the Timing Communications and Control (TCC) card to the host machine:

a. In the **Configuration** subtab, click **TCC>>File**. The Download from TCC dialog box opens.

b. Select the location of the file to download. Click either the **Local** or the **Server** radio button.

Step 5 To upload the file from the host machine to the TCC card:

a. In the **Configuration** subtab, click **File>> TCC**. The Upload to TCC dialog box opens.

b. Select the location of the file to upload. Click either the **Local** or **Server** radio button.

Note If you select Local, the file is first copied to the Prime Optical server and then uploaded to the TCC card. The host refers to the server; the directory refers to the directory on the server where the file resides.

Step 6 Be sure to reset the ML-series cards after uploading a Cisco IOS startup config file to a TCC card.

Step 7 To launch the command-line interface (CLI), click **Launch CLI**.

6.5.4 Creating RMON Thresholds

Step 1 Select an NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the card.

Step 3 Depending on the card selected, click the **Thresholds** tab or **Line** tab > **RMON Thresholds** or **RPR Span** subtab.

Step 4 Click **Create**. The Create RMON Thresholds dialog box opens. The following table provides descriptions. Fields shown depend on the type of NE that is selected.

Step 5 Click **OK**.

Table 6-2 Field Descriptions for the Create RMON Thresholds Dialog Box

Field	Description
Slot	Choose the appropriate card.
Port	Choose the applicable port on the card you selected.
Variable	Choose the MIB variable to monitor.
Alarm Type	Indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Depending on the type of data module used by the NE, choose Relative, Absolute, or Delta. • Relative restricts the threshold to use the number of occurrences in the user-set sample period. • Absolute sets the threshold to use the total number of occurrences, regardless of time period. • Delta tests the delta between samples.
Sample Period	Specify the sample period, in seconds.

Table 6-2 Field Descriptions for the Create RMON Thresholds Dialog Box (continued)

Field	Description
Rising Thresholds	Enter the appropriate number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Thresholds	Enter the appropriate number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15 minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).

6.5.5 Creating Segments

Step 1 Select an NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the GE_XP or 10GE_XP card.

Step 3 Click the **REP** tab > **Segment** subtab.

Step 4 Click **Create**. The Create Segment dialog box opens.

Step 5 Enter the segment ID in the Segment field. Valid values are from 1 to 1024.

Step 6 From the Port drop-drown list, choose a REP port that must belong to this segment.

Note A REP port can belong to only one segment.

Step 7 From the Port Role area, choose whether you want to configure the port as an edge port or a regular port. The options are:

- Edge—The port is configured as an edge port.
  - Check the **Primary** check box to configure the edge port as a primary edge port.
  - Uncheck the **Primary** check box to configure the edge port as a secondary edge port.
  - Check the **Preferred** check box to configure the edge port as a preferred alternate port.
  - Check the **NoNeighbor** check box if the edge port must not have a neighbor port. REP does not check for neighbor adjacency.
- None—The port is configured as a regular port. If you choose this option, Segment Topology Change Notifications (STCN) and VLAN Load Balancing (VLB) configurations are disabled.

  Check the **Preferred** check box to configure the regular port as a preferred alternate port.

Step 8 From the STCN area, configure the destination of STCN messages:

a. Check the **Enable** check box to enable sending STCN messages.

b. From the **Port** drop-down list, do one of the following:

- Choose the STCN port to send STCN messages.
- Enter the segment ID in the Segment field to send STCN messages. The STCN port and REP port must be unique.

Step 9 From the VLAN Load Balancing area, configure VLB:

a. Check the **Enable** check box to enable VLB.

b. Enter a single SVLAN or range of SVLANs in the SVLAN field.

c. Enter the REP Port ID in the REP PortId field.

d. Check the **Preferred** check box to identify the preferred alternate port for VLAN load balancing.

Step 10 From the VLB Preempt Delay area, enter the trigger delay for automatic VLB activation. Valid values are from 15 to 300 seconds.

Step 11 Click **Next**.

Step 12 Enter the details of the second port to add it to the segment. Repeat Step 6 through Step 10 when the first port is configured as a regular port and the second port is configured as a primary edge port. Repeat Step 6 and Step 7 when the first port is configured as a primary edge port and the second port is configured as a regular port.

Step 13 Click **Finish**.

6.5.6 Editing Segments

Step 1 Select an NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the GE_XP or 10GE_XP card.

Step 3 Click the **REP** tab > **Segment** subtab.

The list of segments appears.

Step 4 Choose a segment from the list of segments that you want to edit.

Step 5 Click **Edit**. The Edit Segment dialog box opens.

Note You can edit only the STCN and VLB entries for a segment.

Step 6 Segment ID—*Display only.* Displays the Segment ID.

Step 7 Port—*Display only.* Displays the REP port that belongs to this segment.

Step 8 In the Port Role area (which is display only), the details of the edge port or regular port is displayed.

Step 9 From the STCN area, modify the destination of STCN messages:

a. Check the **Enable** check box to enable sending STCN messages.

b. From the **Port** drop-down list, do one of the following:

- Choose the STCN port to send STCN messages.
- Modify the segment ID in the Segment field to send STCN messages. The STCN port and REP port must be unique.

Step 10 From the VLAN Load Balancing area, modify VLB:

a. Check the **Enable** check box to enable VLB.

b. Modify a single SVLAN or range of SVLANs in the SVLAN field.

c. Modify the REP Port ID in the REP PortId field.

d. Check the **Preferred** check box to identify the preferred alternate port for VLAN load balancing.

Step 11 From the VLB Preempt Delay area, modify the trigger delay for automatic VLB activation. Valid values are from 15 to 300 seconds.

Step 12 Click **Next**.

Step 13 Modify the details of the second port in the segment, if required.

Step 14 Click **Finish**.

6.5.7 Creating Configurations

Step 1 Select an NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the 10x10G_LC, 100G_LC_C, or CFP_LC card.

Step 3 Click the **Card** tab.

For the 10x10G_LC card:

1. Click **Create**. The Configure Operating Mode dialog box opens.
2. From the Configuration Mode drop-down list, choose the configuration.

   The card configuration options vary depending on the card. For more information about card configurations, see Table C-821. For more information about Operating Modes, see Table 6-3. Fields shown depend on the type of NE that is selected.
3. Click **Next**.

   The following happens in the Port Mappings area:

   – If you select MXP-10G or FANOUT, the configuration requires all the client ports. The CXP port is available for FANOUT mode only. Proceed to Step 5.

   – If you select TXP-10G, RGN-10G, or LOW-LATENCY, you can select the available ports. Click **Next** to view all the ports that are about to be configured.

Note The Create button is disabled once the MXP-10x10G- or FANOUT is created on the card mode. You cannot configure any other modes for the card, since it requires all ten client ports.

Note If you need to create some other card mode, delete the existing card mode that was created and create a new card mode.

For the CFP_LC card:

There are two operating modes for the CFP_LC card:

- CFP-TXP
- CFP-MXP

1. Click **Create**. The Configure Operating Mode dialog box opens.
2. From the Configuration Mode drop-down list, choose the configuration. The card configuration options vary depending on the card. For more information about the card configurations, see Table 6-3. For more information about Operating Modes, see Table C-821. Fields shown depend on the type of NE that is selected.
3. Click **Next** to map a peer card with the port.

Step 4 In the Configure Operating Mode window, to map a peer card with a port, drag and drop the peer card to the port field. CFP_LC supports two ports.

A maximum of two peer cards are available. You can also unmap the selected peer card from the port field. The selected peer card information along with the port details is displayed on the left side of the Configure Operating Mode window.

For CFP-MXP, the configuration uses two ports and one peer card only. You can map a peer card to both ports.

Note You can also map one more port to the card mode, since there is one more available port.

For 100G_LC_C card:

1. Click **Create**. The Configure Operating Mode dialog box opens.
2. Choose the configuration from the Configuration Mode drop-down list. The card configuration options vary depending on the card. For more information about the card configurations, see Table 6-3. For more information about Operating Modes, see Table C-821. Fields shown depend on the type of NE that is selected. Proceed to Step 5.

Note The TXP-100G card configuration does not require any peer card.

Step 5 Click **Finish**.

The selected operating mode is provisioned on the 10x10G_LC, 100G_LC_C, and CFP_LC card. The selected operating mode information, along with the port details, is displayed on the left side of the Configure Operating Mode window.

Table 6-3 Field Descriptions for the Create Operating Mode Dialog Box

Field	Description
Configuration Mode	Choose one of the following card configuration options from the drop-down list: • TXP-10G (10x10G_LC)—Provisions the 10x10G_LC card as a standalone supporting multi-transponder functionality. The 10 Gb/s SFP+ ports are paired providing 10 G transponder functionality for each port pair. • RGN-10G (10x10G_LC)—Provisions the 10x10G_LC card as a standalone regenerator. • MXP-10x10G (10x10G_LC)—Provisions the 10x10G_LC card as a 10x10G muxponder. The 100G_LC_C card is connected through the Cisco ONS 15454 M6 or Cisco ONS 15454 M2 backplane to the 10x10G_LC card to support 10-port 10 G muxponder capabilities. **Note** For MXP-10x10G operating mode, you cannot proceed to completion unless a peer card is selected. • FANOUT (10x10G_LC)—Provisions the 10x10G_LC card as a standalone functionary. **Note** You cannot configure any other modes for the card, once a MXP-10x10G and FANOUT mode are configured. • LOW-LATENCY (10x10G_LC)—Provisions the 10x10G_LC card as a standalone functionary. It occupies only two ports and can coexist with other card modes such as RGN-10G and TXP-10G. It is possible to configure multiple pair of ports in LOW-LATENCY mode. There is no support for Terminal or Facility loopback on this mode, or for backplane loopback functionality on a card that has any ports in this mode. • CFP-TXP (CFP_LC)—Provisions the CF_LC card as a 100 G transponder. The CFP_LC card is connected to the 100G_LC_C card to support the 100GE-BASELR4 client interface for 100 Gb/s transponder capabilities. The CFP_LC card can be connected through the Cisco ONS 15454 M6 backplane with up to two 100G_LC_C cards placed in the upper and lower slots of the same shelf. • CFP-MXP (CFP_LC)—Provisions the CFP_LC card as a two-port 40G muxponder. The CFP_LC card is connected with the 100G_LC_LC card through the Cisco ONS 15454 M6 or Cisco ONS 15454 M2 backplane. • TXP-100G (100G_LC_C)—Provisions the 100G_LC_C card as a 100G standalone transponder. • RGN-100G (100G_LC_C)—Provisions the 100G_LC_C card as a regenerator. Two 100G_LC_C cards can be connected to work in back-to-back mode through the backplane in the same shelf. Regeneration is performed by leveraging the OTU4 backplane interconnection supported by the Cisco ONS 15454 M6 or Cisco ONS 15454 M2 chassis.
Peer Card	Displays the shelf and slot number of the peer card that is set up for a specific card configuration. If the peer card is not set up, “N/A” is displayed. **Note** The MXP-10x10G, RGN-100G, CFP-MXP, and CFP-TXP operating modes support peer card configuration only.
Port Mapping	Click the toggle button to select a port for configuration. Port Status options are as follows: • Available for Selection—You can select the ports for configuration. • Not Available/Invalid—Already selected or invalid for the chosen operating mode. • Selected for Configuration—Ports are selected for configuration.
Finish	Completes the card configuration and closes the dialog box.
Cancel	Cancels the card configuration and closes the dialog box.

6.5.8 Adding a Peer Card

Note You can add another 100G_LC_C peer card to the CFP-TXP card configuration with only one peer card configured in the Create Configuration section. This option is available for CFP-TXP card mode only.

Step 1 Select an NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the **Provisioning > Card** tab.

Step 3 Click the **Add Peer Card** button to open the dialog showing the available peer card and the port left out to be mapped.

Note The Add Peer button is enabled only if the CFP card is configured with CFP-TXP card mode with one peer card; otherwise, this button is disabled.

Step 4 Click **OK**.

The peer card and map are added to the available port. If the peer card is unavailable, you will see the following error message:

```
No peer cards are available to add. Create a peer card and try again.
```

Step 5 Click **OK**.

6.5.9 Create, Edit, and Delete GCC

This procedure creates, edits, and deletes the DWDM GCC terminations required for network setup when using the TXP and MXP cards. Perform this task before you create OCHCC or OCHNC circuits for the cards. In this task, you can also set up the node so that it has direct IP access to a far-end, non-ONS node over the GCC network.

6.5.9.1 Create GCC

Step 1 Select an NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the CFP_LC card.

Step 3 Click the **Card** tab.

Step 4 Click **Create**. The Create Terminations dialog box appears.

Step 5 Select the ports where you want to create the GCC termination.

Step 6 Under Port Admin State area, select one of the following:

- Leave unchanged—Does not change the DCC/GCC termination port administrative state.
- Set to IS or Set to Unlocked—Puts the DCC/GCC termination port in service.
- Set OOS,DSLBD to IS,AINS (for ANSI) or Set Locked,disabled to Unlocked,automaticInService (for ETSI)—Changes a port that is currently out of service or locked to automatic in service.

- Set OOS,DSLBD to OOS,MT (for ANSI) or Set Locked,disabled to Locked,maintenance (for ETSI)—Changes a port that is currently out of service or locked to out of service for maintenance.

Note For GCC termination, default GCC rate is 192 kb/s and cannot be changed.

Step 7 In the Layer 3 area, do one of the following:

- Check the **IP** box only if the GCC is between the ONS 15454 and another ONS node, and only ONS nodes reside on the network. The GCC will use Point-to-Point Protocol (PPP).
- Check both the **IP** box and the **OSI and IP** box if the GCC is between the ONS 15454 and another ONS node, and third-party NEs that use the OSI protocol stack are on the same network. The GCC will use PPP.

Step 8 If you checked OSI, complete the following substeps. If you checked IP only, continue with Step 9.

- Click **Next**.
- Provision the following fields:
  - Router—Choose the OSI router.
  - ESH—Sets the End System Hello (ESH) propagation frequency. End system (ES) NEs transmit ESHs to inform other ESs and intermediate systems (ISs) about the Network Service Access Points (NSAPs) that the ES NEs serve. The default is 10 seconds. The range is 10 to 1000 seconds.
  - ISH—Sets the Intermediate System Hello (ISH) protocol data unit (PDU) propagation frequency. IS NEs send ISHs to other ESs and ISs to inform them about the IS NEs that the IS NEs serve. The default is 10 seconds. The range is 10 to 1000 seconds.
  - IIH—Sets the Intermediate System to Intermediate System Hello (IIH) PDU propagation frequency. The IS-IS Hello PDUs establish and maintain adjacencies between ISs. The default is 3 seconds. The range is 1 to 600 seconds.
  - IS-IS Cost—Sets the cost for sending packets on the LAN subnet. The IS-IS protocol uses the cost to calculate the shortest routing path. The default metric cost for LAN subnets is 60. The cost normally should not be changed.

Step 9 Click **Finish**. The following alarms appear until all the network DCC/GCC terminations are created and the ports are in service:

- GCC-EOC for GCC termination
- EOC for SDCC termination
- EOC-L for LDCC termination.

6.5.9.2 Edit GCC

This task modifies a GCC termination.You can enable or disable OSPF and the foreign node setting.

Step 1 Select an NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the CFP_LC card.

Step 3 Click the **Card** tab.

Step 4 Select the GCC that you want to change.

Step 5 Click **Edit**. The Edit Termination dialog box appears.

Step 6 Complete the following as necessary:

- GCC Rate—(Display only) Indicates the communication channel rate.
- Disable OSPF on Link—If checked, OSPF is disabled on the link. OSPF should be disabled only when the slot and port connect to third-party equipment that does not support OSPF.
- Far End is Foreign—Check this box to specify that the DCC/GCC termination is a non-ONS node.
- Far end IP—If you checked the Far End is Foreign check box, type the IP address of the far-end node or leave the 0.0.0.0 default. An IP address of 0.0.0.0 means that any address can be used by the far end.

Step 7 Click **OK**.

6.5.9.3 Delete GCC

This task deletes the DWDM GCC terminations required for network setup when using TXP or MXP cards.

Step 1 Select an NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the CFP_LC card.

Step 3 Click the **Card** tab.

Step 4 Select the GCC that you want to change.

Step 5 Click **Delete**. The Delete Termination dialog box appears.

Step 6 (Optional) To place ports out of service, check the **Set port OOS** check box.

Step 7 Click **Yes**. The following alarms will appear until all network terminations are deleted and the ports are out of service:

- GCC-EOC for GCC termination
- EOC for SDCC termination
- EOC-L for LDCC termination

6.5.10 E-Series Spanning Tree Protocol (IEEE 802.1D)

The ONS 15327, ONS 15454 SONET, and ONS 15454 SDH operate Spanning Tree Protocol (STP) according to IEEE 802.1D when an Ethernet card is installed. STP operates over all packet-switched ports, including Ethernet and ONS 15327, ONS 15454 SONET, or ONS 15454 SDH ports. On Ethernet ports, STP is disabled by default and can be enabled by checking the check box under the Port subtab of the **Provisioning** tab at the card-level view. On ONS 15327, ONS 15454 SONET, or ONS 15454 SDH interface ports, STP is active by default and cannot be disabled.

The Ethernet card can enable STP on the Ethernet ports to allow redundant paths to the attached Ethernet equipment. STP spans cards so that both equipment and facilities are protected against failure.

STP detects and eliminates network loops. When STP detects multiple paths between any two network hosts, STP blocks ports until only one path exists between any two network hosts. The single path eliminates possible bridge loops. This is crucial for shared packet rings, which naturally include a loop.

To remove loops, STP defines a tree that spans all of the switches in an extended network. STP forces certain redundant data paths into a standby (blocked) state. If one network segment in the STP becomes unreachable, the spanning-tree algorithm reconfigures the spanning-tree topology and reactivates the blocked path to reestablish the link. STP operation is transparent to end stations, which do not discriminate between connections to a single LAN segment and a switched LAN with multiple segments. The ONS 15327, ONS 15454 SONET, and ONS 15454 SDH support one STP instance per circuit and a maximum of eight STP instances per ONS 15327, ONS 15454 SONET, or ONS 15454 SDH.

Note When an Ethernet card is provisioned, the STP state might need to be updated. Click the **Update** button in the NE Explorer to update the STP state.

The ONS 15327, ONS 15454 SONET, or ONS 15454 SDH can operate multiple instances of STP to support VLANs in a looped topology. Separate circuits can be dedicated across the SONET ring for different VLAN groups (that is, one for private TLS services and one for Internet access). Each circuit runs its own STP to maintain VLAN connectivity in a multiring environment.

6.5.10.1 Viewing E-Series Spanning-Tree Configurations

Step 1 Select an ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NE in the Domain Explorer tree and choose **Configuration > NE Explorer**.

Step 2 Click the **EtherBridge** tab.

Step 3 Click the **Spanning Tree Config** subtab. The spanning-tree configuration parameters are listed in the following table.

Table 6-4 Spanning-Tree Configuration Parameters

Parameter	Cisco Default Value	Value Range
Priority	32768	0–65535
Bridge Max Age	20 seconds	6–40 seconds
Bridge Hello Time	2 seconds	1–10 seconds
Bridge Forward Delay	15 seconds	4–30 seconds

6.5.10.2 Viewing E-Series Spanning-Tree Parameters

Step 1 Select an ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NE in the Domain Explorer tree and choose **Configuration > NE Explorer**.

Step 2 Click the **EtherBridge** tab.

Step 3 Click the **Spanning Tree Status** subtab. The spanning-tree parameters are listed in the following table.

Table 6-5 Spanning-Tree Parameters

Parameter	Description
BridgeID	Unique identifier that transmits the configuration bridge protocol data unit (BPDU); the bridge ID is a combination of the bridge priority and the NE MAC address.
Topo Age	Amount of time in seconds since the last topology change.
Topo Changes	Number of times the spanning-tree topology has been changed since the node booted up.
Designated Root	The designated root of the spanning tree for a particular spanning-tree instance.
Root Cost	The total path cost to the designated root.
Root Port	Port used to reach the root.
Max Age	Maximum time that received-protocol information is retained before it is discarded.
Hello Time	Time interval, in seconds, between the transmission of configuration BPDUs by a bridge that is the spanning-tree root or is attempting to become the spanning-tree root.
Hold Time	Minimum time period, in seconds, that elapses during the transmission of configuration information about a given port.
Forward Delay	Time spent by a port in the listening state and the learning state.

6.6 FC_MR-4 Card

For the NEs that support the FC_MR-4 card, D.1 FC_MR-4 Card, page D-1.

6.7 FMEC Cards

For the FMEC cards supported in Prime Optical and the NEs that contain FMEC cards, see D.2 FMEC Cards, page D-7.

6.8 Multirate Cards

For the multirate cards supported in Prime Optical and the NEs that contain multirate cards, see D.3 Multirate Cards, page D-16.

6.9 Optical Cards

For the optical cards supported in Prime Optical and the NEs that contain optical cards, see D.4 Optical Cards, page D-84.

6.9.1 Provisioning an OC-N Card for ONS 15454 SONET

ONS 15454 SONET OC-3, OC-12, and OC-48 cards can be provisioned to support either SONET or SONET over SDH signals.

Step 1 Select an ONS 15454 SONET NE in the Domain Explorer tree and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the OC-N card.

Step 3 Click the **Line** tab; then, click the **Line Config** subtab.

Step 4 In the EnableSyncMsg column, uncheck the check box.

Step 5 Be sure that the Admin state of the port is selected as OOS (only then can the SONET port be configured as SDH).

Step 6 In the **Type** column, choose **SDH**.

Step 7 Click **Apply**.

6.9.2 Resetting NE Thresholds to the Default Values

See 6.4.5 Resetting NE Thresholds to the Default Values, page 6-8.

Provisioning Services and Connections

This section describes how to use Cisco Prime Optical to provision network services. It also explains the tasks required to create new connections, and display, modify, and delete existing connections.

This section includes the following topics:

- 7.1 Overview, page 7-1
- 7.2 Managing Circuits, page 7-2
- 7.3 Managing BLSRs, page 7-198
- 7.4 Managing MS-SPRings, page 7-208
- 7.5 Managing VLANs for E-Series Cards, page 7-218
- 7.6 Managing VLANs (ML-Series Cards), page 7-220
- 7.7 Managing SVLAN Profiles, page 7-221
- 7.9 Managing SVLANs, page 7-224
- 7.10 Provisioning Data Services, page 7-235
- 7.11 Managing QoS Profiles, page 7-323
- 7.12 Managing DWDM Nodes, page 7-330

7.1 Overview

A metro network is a network that aggregates customer traffic and connects customers to services. The metro network is responsible for receiving network traffic from long-haul transport networks and routing this traffic to and from enterprises and end users.

The service point-of-presence (POP) performs service adaptation and packet switching. This layer performs the following functions:

- Grooming of traffic from the metro network
- Edge packet switching, where IP services are enabled
- Core packet switching, where POPs are interconnected over the IP backbone

The service POP is the hub of high-value Internet services. The core network, where optical technologies predominate, is the domain of the long-haul carrier. This high-speed transport fabric interconnects service POPs and has traditionally been built as SONET ring architectures.

Prime Optical simplifies operations support system (OSS) integration for service providers for the end-to-end management of transport networks.

7.2 Managing Circuits

A circuit represents an end-to-end connection between two or more connection termination points (CTPs). A circuit consists of an alternating series of cross-connections and link connections. In its simplest form, a circuit consists of a single cross-connection (if the circuit is defined between two CTPs on the same NE). A circuit can be bidirectional or unidirectional, point-to-point (PTP) or point-to-multipoint, and protected or unprotected.

Prime Optical allows you to create unidirectional and bidirectional circuits for CTC-based NEs. For unidirectional path switched ring (UPSR) circuits, you can create revertive or nonrevertive circuits. Prime Optical can route the circuits automatically, or you can route them manually. For CTC-based NEs (including the ONS 15305 R3.0), circuits can be viewed, created, modified, traced, and deleted. For the ONS 15530 or ONS 15540, a circuit is an end-to-end connection between two ports on ONS 15530 or ONS 15540 NEs in terms of lambda (wavelength). For the ONS 155xx, circuit services provide the following major capabilities:

- Finding all end-to-end connections between NEs in terms of client ports, provided the entire path was traversed within ONS 15530 and ONS 15540 NEs.
- Displaying the protection information associated with each circuit.
- Displaying all directional-based paths that have been configured and are in use for a protected circuit.
- Displaying the active and standby paths that have been configured and are in use for a protected circuit.

Note Circuit information is not available for the ONS 15216. For the ONS 15305, circuits can be created through CEC (**Configuration > ONS 15305 > Launch Cisco Edge Craft**).

For ONS 15305 NE releases 3.0 and later, circuits can be created in Prime Optical, CTC, and CEC. Circuits that are created in Prime Optical or CTC can be managed in Prime Optical, CTC, and CEC. But circuits that are created in CEC show unpredictable and erroneous behavior in Prime Optical and CTC.

For ONS 15305 NE releases earlier than R3.0, the circuit information is not available in Prime Optical. Circuits can be created in CEC but cannot be managed in Prime Optical.

Note Circuit management performance depends on an efficient DCN network. See the ONS 15454 user documentation for details.

The following table defines the circuit terms and options that are used throughout this chapter.

Table 7-1 Circuit Terms and Options

Circuit Option	Description
Link	Represents a topological relationship between two physical termination points (PTPs) for a particular layer rate. The possible set of layer rates is determined by the layer rates terminated by the PTP. For example, an OC-N port will terminate a physical layer rate and a SONET layer rate.
Circuit	Represents an end-to-end connection between two or more CTPs.
Cross-connection	A (normally flexible) connection between two CTPs within the same NE.

Table 7-1 Circuit Terms and Options (continued)

Circuit Option	Description
Link connection	An inflexible (or fixed) connection between two CTPs that are contained by two PTPs connected by a link. It represents a portion of the transport capacity of a link, such as an STS-1 channel within an OC-N link.
PTP	A termination point that is the actual or potential endpoint of a link that might be abstracted as a PTP. It is the representation of a physical port.
CTP	Represents the actual or potential endpoint of a cross-connection, link connection, or circuit. A CTP is contained within a PTP. In some cases, there is a single CTP associated with a PTP, such as with a DS-1 PTP. There could also be multiple CTPs, such as with STS-1 or STS-Nc CTPs contained within an OC-N PTP.
Source	The circuit source is where the circuit enters the network.
Destination	The circuit destination is where the circuit exits the network.
Automatic circuit routing	Prime Optical routes the circuit automatically on the shortest available path based on routing parameters and bandwidth availability.
Manual circuit routing	Manual routing allows you to choose a specific path, not just the shortest path chosen by automatic routing. You can choose a specific STS or VT for each circuit segment for SONET nodes, or a specific VC4, VC3, or VC12 for each circuit segment for SDH nodes. You can also create circuits from work orders prepared by an OSS such as the Telcordia TIRKS system.
Low-order tunnel	Low-order tunnels allow VC3 and VC12 circuits to pass through an SDH node without using cross-connect card (XC10G and XCVXL) resources. Low-order circuits using tunnels use cross-connect capacity only at the source and destination nodes. One low-order tunnel can carry three VC3s, and each VC3 can carry 21 VC12s. One tunnel can carry one VC3 circuit span and 42 VC12 circuit spans, and each VC3 is a separate container that can contain a VC3 circuit span or 21 VC12 circuit spans.
Low-order aggregation point	Low-order aggregation points (LAPs) allow low-order VC12 and VC3 circuits to be aggregated into a VC4 for handoff to non-ONS networks or equipment, such as interoffice facilities (IOFs), switches, or digital access cross-connect systems. The VC4 grooming end of the LAP requires an STM-N card. LAPs can be created on MS-SPRings, 1-1, or unprotected nodes, but cannot be created on subnetwork connection protection (SNCP) nodes.
VT tunnel	VT tunnels allow VT1.5 circuits to pass through a SONET node without using cross-connect resources. VT circuits using VT tunnels use cross-connect capacity only at the source and destination nodes. One VT tunnel can carry 28 VT1.5 circuits.
VT aggregation point	VT aggregation points (VAPs) allow VT circuits to be aggregated into an STS for handoff to non-ONS networks or equipment, such as IOFs, switches, or digital access cross-connect systems. VAPs reduce VT matrix resource utilization at the node where the VT1.5s are aggregated onto the STS. This node is called the STS grooming end. The STS grooming end requires an OC-N, EC-1, or DS3XM-6 card. VT aggregation points can be created on BLSR, 1+1, or unprotected nodes, but cannot be created on UPSR nodes.

7.2.1 Circuit Table Launch Points

The following table describes the various launch points and the expected behavior for the Circuit table.

Table 7-2 Circuit Table Launch Points and Expected Behavior

Selection	Circuit Table
Domain Explorer > Configuration > Circuit Table	For a top-level root node or group nodes in the Domain Explorer, all circuits that have NEs in the domain as source/destination or pass-through NEs. For an NE node in the Domain Explorer, all circuits that have the selected NE node as the source/destination or pass-through NE.
Subnetwork Explorer > Configuration > Circuit Table	For a top-level root node or subnetwork nodes in the Subnetwork Explorer, all circuits that have NEs in the subnetwork as source/destination or pass-through NEs. For an NE node in the Subnetwork Explorer, all circuits that have the selected NE node as the source/destination or pass-through NE.
Domain Explorer > Edit > Find **Note** Select Sonet Circuits or SDH Circuits from the Object Type drop-down list.	All SONET or SDH circuits that have NEs in the domain as source/destination or pass-through NEs.
Circuit Report > Circuit > Circuit Table	Displays the Circuit Table for the selected circuit.
L2 Topology Table > Configuration > Circuits	Displays the Circuit Table for the selected circuit.

7.2.2 Viewing the Circuit Table

The Circuit table shows circuit information for all circuits that make up a topology. A circuit describes a fixed-size bandwidth pipe that is fully cross-connected from one user-defined source point (node, slot, or port) to a second user-defined destination point across some number of node-to-node optical spans (zero if the circuit is local to a single NE).

An endpoint can be an actual physical drop port (DS-1, DS-3, and so on) or an STS-n or VT1.5 channel in an optical line. A multicast circuit consists of circuit spans that have one source endpoint and a sequence of destination endpoints.

Note See Appendix A, "Icons and Menus Displayed in Prime Optical" for details of all the icons displayed in this window.

To launch the Circuit table, do any of the following:

- Select a node in the Domain Explorer tree or Network Map and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Circuit Table**.
- Right-click a node in the Domain Explorer tree and choose **Circuit Table**.
- (For CTC-based NEs) Open the Layer 2 Topology table and choose **Configuration > Circuits**.

Note When launching the Circuit table in a large or high-end network setup and on a larger scope (for example, for the Domain Explorer), a database timeout can occur due to the high volume of data being retrieved. As a workaround, launch the Circuit table on a smaller scope.

The following table describes the fields in the Circuit table.

Table 7-3 Field Descriptions for the Circuit Table

Column Name	Description
Circuit Name	Displays the name of the selected circuit. **Note** If there are multiple circuits with the same name displayed in the Circuit table, the label *Duplicate* appears in this column.
Note	Displays comments that have been entered for the selected circuit, and allows you to add additional comments.
Source NE: Module Type/Physical Loc/Interface	Displays the NE ID and module type at the span source, the slot and port name and numbers (physical location), and the STS number (interface). You can sort this column in ascending or descending order. The sort order is based on the NE ID and physical location.
Destination NE: Module Type/Physical Loc/Interface	Displays the NE ID, the module type at the destination, the slot and port name and numbers (physical location), and the STS number (interface). You can sort this column in ascending or descending order. The sort order is based on the NE ID and physical location.
Circuit Type	Displays the type of circuit selected. SONET circuit types are STS, VT, VT Aggregation, VT Tunnel, VT VCAT (shown as VT-v), STS VCAT (shown as STS-v), DWDM optical channel network connection (OCHNC), DWDM optical channel client connection (OCHCC), optical channel trail (OCHTRAIL), and OCHNC DCN. SDH circuit types are HOP, LOP, LOPA, LOPT, HOV (HO VCAT), LOV (LO VCAT), OCHNC, OCHCC, OCHTRAIL, and OCHNC DCN.
Acpt Threshold	Displays the optical validation acceptance threshold value set for the GMPLS circuit.
Optical Value	Displays the optical validation result for the GMPLS circuit.

Table 7-3 Field Descriptions for the Circuit Table (continued)

Column Name	Description
Circuit Size	Displays the size of the circuit: • SONET circuit sizes are VT1.5, VT2, STS 1, STS 3c, STS 6c, STS 9c, STS 12c, STS 24c, STS 48c, STS 96c, STS 192c, STS-1-*n*v, STS-3c-*n*v, STS-12c-*n*v, and VT1.5-*n*v. • SDH circuit sizes are VC11, VC12, VC3, VC4, VC4-2c, VC4-3c, VC4-4c, VC4-8c, VC4-16c, VC4-32c, VC4-64c, VC4-*n*v, VC4-4c-*n*v, and VC3-*n*v. **Note** *n* can be any value from 0 through 256 (0 is valid when all members of a VCAT circuit are deleted). • FC/FICON circuit sizes are 10GFC, 4GFC, 2GFC, 1GFC, 4GFiCon, 2GFiCon, and 1GFiCon. • Data/Storage circuit sizes are ESCON, ETR-CLO, ISC-PEER, ISC3-PEER-1G, ISC-PEER-2G, ISC-COMPACT, ISC-CHANNEL1, and InfiniBand. • Video circuit sizes are HVDT, SD1/D1, DV6000, and DVB-ASI. • OCHNC circuit size is fixed as *Equipment Not Specific*. • OCHCC circuit sizes are STM1, STM4, STM16, STM64, OC3, OC12, OC48, OC192, 10GE, 1GE, 10GFC, 4GFC, 2GFC, 1GFC, 4GFiCon, 2GFiCon, 1GFiCon, ESCON, ETR-CLO, ISC-PEER, ISC3-PEER-1G, ISC-PEER-2G, ISC-COMPACT, HDVT, SD1/D1, DV6000, or Pass Through. **Note** Not all circuit sizes are supported on all NE releases.
Circuit Direction	Indicates whether the circuit carries unidirectional (one-way) or bidirectional (two-way) traffic.
Customer ID	Optional text field that displays the customer ID of the circuit.
Service ID	Optional text field that displays the service ID of the selected circuit.
Circuit Status	Displays the status of the selected optical circuit: • Discovered—The circuit is completely configured in the network; all components are in place and a complete path exists from the circuit source to the circuit destination. • Partial—The circuit is not complete; one or more cross-connections are not in place or one of the spans is missing. • Creating—Prime Optical is creating the circuit. • Deleting—Prime Optical is deleting the circuit. • Discovered_TL1—A TL1-created circuit or a TL1-like Prime Optical-created circuit is complete and has upgradable cross-connects. A complete path from source to destination(s) exists. • Partial_TL1—A TL1-created circuit or a TL1-like Prime Optical-created circuit with upgradable cross-connects is missing a cross-connect, and a complete path from source to destination(s) does not exist. The circuit cannot be upgraded until the missing cross-connects are in place. • Partial (Split)—The circuit involves NEs that belongs to different network partitions and cannot be fully discovered by Prime Optical.

Table 7-3 Field Descriptions for the Circuit Table (continued)

Column Name	Description
Circuit Service State	The circuit service state is an aggregate of the cross-connect states within the circuit. SONET, SDH, and DWDM circuits have different values. For SONET circuits, values are: • In Service (IS)—All cross-connects in a circuit are in the In Service and Normal (IS-NR) service state. • Out of Service (OOS)—All cross-connects in a circuit are in an Out of Service (OOS) service state, such as Out of Service and Management, Maintenance (OOS-MA,MT); Out of Service and Management, Disabled (OOS-MA,DSBLD); or Out of Service and Autonomous, Automatic In Service (OOS-AU,AINS). • OOS-PARTIAL—PARTIAL is appended to the OOS circuit service state when circuit cross-connect states are mixed and not all in IS-NR. The OOS-PARTIAL state can occur during automatic or manual transitions between states. For example, OOS-PARTIAL appears if you assign the IS,AINS administrative state to a circuit with DS-1 or DS3XM cards as the source or destination. Some cross-connects transition to the IS-NR service state, while others transition to OOS-AU,AINS. OOS-PARTIAL can appear during a manual transition caused by an abnormal event such as a CTC crash or communication error, or if one of the cross-connects could not be changed. The OOS-PARTIAL circuit state does not apply to OCHNC circuit types. For SDH circuits, values are: • Unlocked—All cross-connects in a circuit are in the Unlocked-enabled service state. • Locked—All cross-connects in a circuit are in a Locked state (such as Locked-enabled,maintenance; Unlocked-disabled,automaticInService; or Locked-enabled,disabled). • Locked-partial—Partial is appended to the Locked circuit service state when circuit cross-connect states are mixed and not all in the Unlocked-enabled service state. The Locked-partial state can occur during automatic or manual transitions between states. The Locked-partial service state can appear during a manual transition caused by an abnormal event such as a CTC crash or communication error, or if one of the cross-connects could not be changed. The Locked-partial circuit state does not apply to OCHNC circuit types.

Table 7-3 Field Descriptions for the Circuit Table (continued)

Column Name	Description
Circuit Service State *(continued)*	For DWDM circuits, OCHCCs, OCH trails, and OCHNCs occupy three different optical layers. Each OCH circuit has its own administrative and service states: • The OCHCC service state is the sum of the OCHCC service state and the OCH trail service state. When creating an OCHCC circuit, you can specify an initial state for both the OCHCC and the OCH trail layers, including the source and destination port states. The ANSI/ETSI administrative states for the OCHCC circuits and connections are: – IS/Unlocked – IS,AINS/Unlocked,AutomaticInService – OOS,DSBLD/Locked,disabled • OCH trail ANSI/ETSI administrative states include: – IS/Unlocked – IS,AINS/Unlocked,automaticInService – OOS,DSBLD/Locked,disabled • The OCHNC circuit states are not linked to the OCHCC circuit states. The administrative states for the OCHNC circuit layer are: – IS,AINS/Unlocked,AutomaticInService – OOS,DSBLD/Locked,disabled
Is Monitor	A value of True means that the circuit is a monitor circuit. A value of False means that the circuit is not a monitor circuit.

Table 7-3 Field Descriptions for the Circuit Table (continued)

Column Name	Description
Circuit Protection Type	Indicates the circuit protection scheme. Values are: • 2F BLSR—The circuit is protected by a 2-fiber bidirectional line switch ring (BLSR). • 4F BLSR—The circuit is protected by a 4-fiber BLSR. • BLSR—The circuit is protected by both 2-fiber and 4-fiber BLSR. • UPSR—The circuit is protected by UPSR. • DRI—The circuit is protected by a UPSR dual ring interconnection (DRI). • 1+1—The circuit is protected by a 1+1 protection group. • Y-Cable—The circuit is protected by a transponder or muxponder card Y-cable protection group. • Protected—The circuit is protected by diverse SONET topologies; for example, a BLSR and a UPSR, or a UPSR and 1+1. • Unprotected—The circuit is not protected. • 2F-PCA—The circuit is routed on a protection channel access (PCA) path on a 2-fiber BLSR. PCA circuits are unprotected. • 4F-PCA—The circuit is routed on a PCA path on a 4-fiber BLSR. PCA circuits are unprotected. • PCA—The circuit is routed on a PCA path on both 2-fiber and 4-fiber BLSRs. PCA circuits are unprotected. • SPLITTER—The circuit is protected by a splitter protected transponder (TXPP_MR_2.5G or 2.5G_DMP). • Unknown—Circuit protection types appear in the Circuit Protection Type column of the Circuit table when the circuit status is Discovered. If the circuit is not discovered, the protection type is *Unknown*. • Lost—The circuit was protected, but the protection has been lost due to changes in the network.
Description	Displays a description of the selected circuit.
No. of VLANs	Displays the number of VLANs associated with the circuit.
No. of SPANs	Displays the number of spans for each contiguous concatenation (CCAT) circuit. For VCAT circuits, *N/A* is displayed. You must launch the member table for the parent VCAT to see the number of spans per member VCAT.
Is VCAT or Member Circuit	A value of True means that the circuit is a VCAT circuit. A value of False means that the circuit is a normal CCAT circuit.
OCHNC Wavelength	Indicates the wavelength provisioned for the OCHNC, in nanometers (nm).
OCHNC Direction	Indicates the direction of the OCHNC. Values are east-to-west, west-to-east, or N/A.
VCAT Member State	For VCAT members, indicates whether the members are enabled and active or temporarily disabled. When VCAT members are enabled and active, the value is In Group. If any of the members are disabled temporarily, the value changes to Out of Group. For non-VCAT members, the value of this field is always N/A.

Table 7-3 Field Descriptions for the Circuit Table (continued)

Column Name	Description
Circuit Alias Name	Displays the alias name of the circuit.
Restoration Status	Indicates the status of the circuit. Values are: • None—Circuit does not have any active restoration facility. **Note** A value of "None" does not indicate that the circuit is not restorable. • Restoring—Circuit is restoring and the system is searching for a new optical path. • Restored—Circuit has been successfully restored and a new optical path has been found for the circuit. • Failed—Restoration facility has failed to retrieve a new optical path for the circuit. • Revertible—Circuit has been successfully restored and can be reverted to the original optical path by a specific user action. **Note** The Revertible status can be reached only if the revert option value is Manual.

Note If a card is upgraded or changed on an NE and an existing circuit terminates on the changed card, the Circuit table display does not reflect the new card type for the circuit until Prime Optical next reads the circuit information from the network. You can force all circuits involved with the upgraded card in the Circuit table to update by marking the NE as Out of Service and then In Service.

Caution For TL1 circuits, if you simultaneously mark all of the NEs involved in the circuit as Out of Service, Prime Optical loses the EMS attributes (such as circuit alias, customer ID, and service ID). If you later mark all of the NEs involved in the TL1 circuit as In Service, the circuits are discovered, but the EMS attributes remain missing. To retain EMS attributes, you must upgrade the TL1 circuits to regular CTC circuits before adding EMS attributes and marking the NEs as Out of Service. To do this, select the TL1 circuit in the Circuit table and choose **Configuration > Reconfigure Circuit(s)**.

Note Circuit names are obtained from:

- The source NE (for circuits created in Prime Optical or CTC)
- Cross-connection names (for circuits created via TL1, or if the source NE is not discovered)

However, some NE versions do not support cross-connection names. For these NEs, circuits created in CTC are always discovered with the name "Unknown" in Prime Optical. Also, if the source NE is not connected, and if the only NEs available in Prime Optical are those NE versions that do not support cross-connection names, circuits created with CTC or Prime Optical have the name "Unknown" until the source NE is discovered.

7.2.3 Creating Circuits Using the Circuit Wizard

The Create Circuit wizard (**Configuration > Create Circuit**) allows you to create circuits on CTC-based NEs. Use the Create Circuit wizard to create an end-to-end circuit through a subnetwork. A subnetwork is defined as a set of NEs that are interconnected directly or indirectly through links known by Prime Optical. Prime Optical supports circuit provisioning across a heterogeneous network. Establish a circuit by specifying the A and Z termination points (TPs). You can create multiple circuits using the Create Circuit wizard; however, for VT tunnel circuits, the number you can create is limited by the bandwidth available on the VT tunnel being used. The maximum number of VT circuits that can be routed through a VT tunnel is 28.

Caution When adding CTC-based circuits, examine the links in the network to ensure correct operation. If any links are down, verify that the ports are not data communications channel (DCC) enabled. For information about viewing links, see 3.6.3 Viewing the Link Table, page 3-34.

Note You can create new circuits across subnetworks. To do so, you must first disable automatic grouping of NEs in the Control Panel. See 4.4.8 Configuring Application-Specific Parameters, page 4-57 for more information.

Note In earlier CTM releases, circuit creation failed if you tried to use automatic routing to create a circuit with 20 or more spans. In CTM R9.1 and later, you can use SQL to configure the circuit-autorouting-creation-timeout property in the Prime Optical database. This property increases the reply timeout for CORBA requests when you use automatic routing to create a complex circuit that uses 20 or more spans. You cannot configure the circuit-autorouting-creation-timeout property in the Prime Optical GUI; rather, you must use SQL to configure the value in the CTM_CONFIG_TABLE in the Prime Optical database. The range is from 0 to 600 seconds; the default is 150 seconds. Note that you can configure the value as high as 2,147,483,647 seconds; however, Prime Optical considers anything higher than 600 seconds as invalid. Also, a value of 0 (zero) indicates no timeout (or an instantaneous reply from the server), which is impossible in an actual application. Therefore, Prime Optical ignores a zero value or anything higher than 600 seconds and uses the default value of 150 seconds instead. Configuring the circuit-autorouting-creation-timeout property is helpful in large, complex network topologies when circuits involve 20 or more spans. For more information, see the *Cisco Prime Optical 9.6.3 Database Schema*.

The following table describes the launch points and the expected behavior for the Create Circuit wizard.

Table 7-4 Create Circuit Wizard Launch Points and Expected Behavior

Launch Point	Expected Behavior
Source and destination NE nodes in the Domain Explorer or Subnetwork Explorer	Select the source NE in the Domain Explorer or Subnetwork Explorer and choose **Configuration > Create Circuit** (or right-click the NE and choose **Create Circuit**). The pointer changes to a plus (+) symbol; select the destination NE. The destination NE must be in the same network partition as the source. The Create Circuit wizard opens. Source and destination NEs are preset to the selected source and destination. **Note** If the **Esc** key is pressed while the plus symbol is enabled, the operation is canceled and the plus symbol returns to a pointer.
Source and destination NE nodes in the Network Map	Select the source NE in the Network Map and choose **Configuration > Create Circuit** (or right-click the NE and choose **Create Circuit**). The pointer displays a line extending from the source NE; select the destination NE. The Create Circuit wizard opens. Source and destination NEs in the Create Circuit wizard are preset to the selected source and destination NE nodes in the Network Map.
Configuration > Create Circuit in the Circuit table	Choose **Configuration > Create Circuit** in the Circuit table. The Create Circuit wizard opens. Select source and destination nodes. Destination nodes are filtered based on the source node. Source and destination nodes must be in the same network partition.
Configuration > Create Circuit in the NE Explorer	Choose **Configuration > Create Circuit** in the NE Explorer for CTC-based NEs. The Create Circuit wizard opens with the selected NE as the source node. Source and destination nodes must be in the same subnetwork.

The following table describes the various types of circuits that can be created. The type of circuit that you can create depends on the NEs that you select as the source and destination.

Table 7-5 Circuit Types that Can Be Created Using the Create Circuit Wizard

Task	Description	See
Create an STS (including Ethernet), VT, VT tunnel, or VT aggregation circuit	—	7.2.3.1 Creating an STS (Including Ethernet), STS-V, VT, VT-V, VT Tunnel, or VT Aggregation Circuit, page 7-30
Create a VCAT circuit	You can create regular or open-ended VCAT circuits (STS-v, VT-v, VC_HO_PATH_VCAT_CIRCUIT, or VC_LO_PATH_VCAT_CIRCUIT).	7.2.3.2 Creating a Regular or Open-Ended VCAT Circuit, page 7-37
Create a VC_HO_path circuit	You can create unidirectional or bidirectional, revertive or nonrevertive, high-order path circuits.	7.2.3.3 Creating a VC_HO_Path_Circuit, page 7-45
Create a VC_LO_path circuit	You can create unidirectional or bidirectional, revertive or nonrevertive, low-order path circuits.	7.2.3.4 Creating a VC_LO_Path_Circuit, page 7-51
Create a VC low path tunnel connection	—	7.2.3.5 Creating a VC_LO_Path_Tunnel, page 7-57
Create a VC low path aggregation connection	—	7.2.3.6 Creating a VC_LO_Path_Aggregation Circuit, page 7-62

Table 7-5 Circuit Types that Can Be Created Using the Create Circuit Wizard (continued)

Task	Description	See
Create a DWDM optical channel connection	—	7.2.3.7 Creating a DWDM OCHNC—ONS 15454 MSTP, page 7-67
Create a DWDM optical channel client connection	—	7.2.3.8 Creating a DWDM OCHCC—ONS 15454 MSTP, page 7-72
Create a DWDM optical channel trail	—	7.2.3.9 Creating a DWDM OCH Trail Circuit—ONS 15454 MSTP, page 7-76
Create a monitor circuit	Use the Circuit table to create new circuits from the Prime Optical database and the associated cross-connections between NEs.	7.2.3.10 Creating a Monitor Circuit—CTC-Based NEs, page 7-80
Create a unidirectional drop circuit	Use the Create Drop wizard to create a new protected or unprotected unidirectional circuit drop.	7.2.3.11 Creating a Unidirectional Drop Circuit—CTC-Based NEs, page 7-84
Create a G1000-4 circuit	Provision G1000-4 point-to-point circuits and Ethernet manual cross-connects.	7.2.3.12 Creating G1000-4 Circuits, page 7-85
Create an E-series circuit	Create these configurations and Ethernet manual cross-connects.	7.2.3.13 Creating E-Series Circuits, page 7-97
Create a BLSR DRI or MS-SPRing DRI circuit	—	7.2.3.14 Creating a BLSR DRI or MS-SPRing DRI Circuit Automatically, page 7-127 7.2.3.15 Creating a BLSR DRI or MS-SPRing DRI Circuit Manually, page 7-132

Note Low-order (LO) circuit options are not available for LO_VCAT circuits. Routing a LO_VCAT circuit, by selecting LO routing options to create a LAP/VC tunnel automatically, is not supported. If the LAP/VC tunnel already exists, and bandwidth is available, the LAP/VC tunnel is used to route LO_VCAT circuits.

Note When you create a low-order circuit and choose to create a tunnel automatically (by selecting the VT Tunnel on Transit Nodes option), the alias for the tunnel circuit will be the same as that provided for the low-order circuit. When you create multiple low-order circuits, the alias for the tunnel will be the same as the alias of the first low-order circuit.

The following table describes the fields in the Create Circuit wizard for optical devices.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices

Field	Description
Navigation Pane	
The navigation pane on the left side of the Create Circuit wizard tells you where you are in the process of creating the circuit. The list of tasks shown initially is the default list of all possible tasks. As you move through the circuit creation, you are taken to the appropriate task. You can use the navigation pane to jump quickly from one task to the next, or to an already visited task. Using the navigation pane is faster than using the Back and Next buttons, because you can jump over multiple panes in one step versus clicking Back or Next and moving through the panes sequentially. **Tip** As you proceed through the wizard, the panes you have visited are highlighted in white and identified by a number. Panes that are not applicable to the current circuit creation sequence are shown in strikethrough italics. **Tip** Click the Maximize button to expand the Create Circuit wizard. After you expand the Create Circuit wizard, the Maximize button changes to the Reset Size button. Click the Reset Size button to reduce the Create Circuit wizard to its original size.	

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Type	
Type	Select the type of circuit to create from the Type field. **Note** The circuit type selected is displayed (dimmed) in other panes in the Create Circuit wizard. To change the circuit type you must return to the Type pane and make a new selection. SONET and SDH circuits have different types. For SONET circuits, values are: • OCHCC; see 7.2.3.8 Creating a DWDM OCHCC—ONS 15454 MSTP, page 7-72 • OCHNC; see 7.2.3.7 Creating a DWDM OCHNC—ONS 15454 MSTP, page 7-67 • OCHTRAIL • STS (including Ethernet circuits) • STS-v • VT • VT Aggregation • VT Tunnel • VT-v For SDH circuits, values are: • OCHCC • OCHNC • OCHTRAIL • VC_HO_PATH_CIRCUIT • VC_HO_PATH_VCAT_CIRCUIT • VC_LO_PATH_AGGREGATION • VC_LO_PATH_CIRCUIT • VC_LO_PATH_TUNNEL • VC_LO_PATH_VCAT_CIRCUIT **Note** The available circuit types are based on the types selected for the user during user creation.
Number of Circuits	Enter the number of circuits that you want to create.
Auto-Ranged	If you are creating multiple circuits with the same slot and sequential port numbers, you can use Auto-Ranged to create the circuits automatically. The Auto-Ranged check box is checked automatically for multiple circuits.
For VC3 Port Grouping Only	(For SDH tunnel circuits only) Check this check box to create VC low-order path tunnels for port grouping. Using these circuits, VC4 tunnels can transport VC3 signal rates. Three ports form a port group. For example, in one E3 or one DS3i card, there are four port groups: Ports 1–3 = PG1, ports 4–6 = PG2, ports 7–9 = PG3, and ports 10–12 = PG4.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Attributes	
(fields depend on the circuit type)	
Circuit	
Name	Enter a unique name for the new circuit. The circuit name is a free-format string, up to 80 ASCII characters. In earlier Prime Optical releases, the maximum circuit length was 48 ASCII characters. For VCAT circuits, the maximum circuit name length is 44 ASCII characters. If you leave the field blank, Prime Optical assigns a default name to the circuit. **Note** This field is mandatory if the GMPLS (for OCHxx circuits only) check box is checked. If you enter a character that is not supported by a specific router, a warning dialog box appears before you proceed to the Source tab.
Circuit Alias	Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
Description	Enter a description for the new circuit, up to 256 ASCII characters.
Type	*Display only.* Indicates the type of circuit that you selected in the Type pane. **Note** To change the circuit type you must return to the Type pane and make a new selection.
Size Group	Choose a size for the group that you want to provision. The following options are available: • SONET • SDH • Ethernet • FC/FICON • Data/Storage • Video • Other

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Size	Specify the size of the circuit. SONET circuit sizes are VT 1.5, VT2, STS-1, STS-3c, STS-6c, STS-9c, STS-12c, STS-18c, STS-24c, STS-36c, STS-48c, STS-96c, and STS-192c. SDH circuit sizes are VC11, VC12, VC3, VC4, VC4-2c, VC4-3c, VC4-4c, VC4-6c, VC4-8c, VC4-12c, VC4-16c, VC4-32c, and VC4-64c. If OCHNC is selected in Type, the OCHNC circuit size is Equipment Not Specific. OCHCC circuit sizes are STM1, STM4, STM16, STM64, OC3, OC12, OC48, OC192, 10GE, 1GE, 10GFC, 4GFC, 2GFC, 1GFC, 4GFiCon, 2GFiCon, 1GFiCon, ESCON, ETR-CLO, ISC-PEER, ISC3-PEER-1G, ISC-PEER-2G, ISC-COMPACT, HDVT, SD1/D1, DV6000, or Pass Through. For supported circuit sizes on Ethernet cards, see the *Cisco ONS 15454 Reference Manual*. For single-card EtherSwitch, only STS-1, STS-3c, STS-6c, and STS-12c apply. For multicard EtherSwitch, only STS-1, STS-3c, and STS-6c apply. FC/FICON circuit sizes are 10GFC, 4GFC, 2GFC, 1GFC, 4GFiCon, 2GFiCon, and 1GFiCon. Data/Storage circuit sizes are ESCON, ETR-CLO, ISC-PEER, ISC3-PEER-1G, ISC-PEER-2G, ISC-COMPACT, ISC-CHANNEL1, and InfiniBand. Video circuit sizes are HVDT, SD1/D1, DV6000, and DVB-ASI. **Note** The available circuit sizes are based on the size limitation imposed on the user during user creation.
OCHNC Wavelength	If OCHNC is selected in Type, the wavelength of the OCHNC is selected here. If OCHNC is not selected in Type, this option is not available.
Band	(OCHNC circuits only) Choose the band that you want to provision.
Use OCHNC Direction	Choose whether or not to specify the OCHNC direction. Select the check box to allow you to specify the circuit direction (for NEs up to and including R6.0) in the OCHNC Direction drop-down list. If the check box is unchecked (for R7.0 NEs) the OCHNC Direction drop-down list is disabled.
Channel Group	Choose the channel group that you want to provision.
OCHCC Wavelength	If OCHCC is selected in Type, the wavelength of the OCHCC is selected here. If OCHCC is not selected in Type, this option is not available.
OCHNC Direction	If OCHNC is selected in Type, the east-to-west or west-to-east direction of the OCHNC is selected here. If OCHNC is not selected in Type, this option is not available.
Bidirectional	Check this check box to create a two-way circuit; uncheck it to create a one-way circuit.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
State	Select an administrative state for the new circuit. SONET and SDH circuits have different values. For SONET circuits, values are: • IS (In Service)—The circuit is in service and able to carry traffic. • IS AINS (In Service–Auto In Service)—Alarm reporting is suppressed, but the circuit is able to carry traffic. • OOS DSBLD (Out of Service–Disabled)—The circuit is out of service and unable to carry traffic. • OOS_MT (Out of Service–Maintenance)—The circuit is in maintenance state. The maintenance state does not interrupt traffic flow; it suppresses alarms and conditions and allows loopbacks to be performed on the circuit. For SDH circuits, corresponding values are: • Unlocked • Unlocked,autoInService • Locked,disabled • Locked,maintenance
Apply to Source/Destination Ports, If Allowed	Check this check box to apply the selected state to the source and destination ports.
Trunk Filtering *(available for OCHCC circuit type only)*	
G.709 OTN	Disables or enables the G.709 OTN feature. Check this check box to filter the list of circuits to display only G.709 OTN-compatible circuits.
FEC	Disables or enables forward error correction. OTN must be enabled before you can enable FEC.
SF BER	Allows you to enter the signal fail bit error rate.
SD BER	Allows you to select the signal degrade bit error rate.
Mapping	The card can perform multiplexing per ITU-T G.709. The ODUk (client SONET/SDH payload) can be mapped to the Optical Channel (OTUk) either asynchronously (asynch mapping) or synchronously (synch mapping) with this setting.
Proactive Protection Attributes	
Proactive Protection	Allows you to enable or disable the proactive protection that informs the CRS-1 routers of incoming Forward Error Correction (FEC) errors. By default, proactive protection is disabled.
Trigger Threshold	The maximum BER above which the Fast Re Route (FRR) is triggered. The default value for Enhanced FEC (EFEC) and FEC is 1E-3.
Revert Threshold	The BER value below which the FRR indication is switched off. The default value for EFEC and FEC is 1E-4. **Note** The revert threshold value cannot be higher than the trigger threshold value.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Trigger Window	The time period for which the BER value is monitored to check whether it is higher than the trigger threshold. If the BER value is higher than the trigger threshold, an FRR request is triggered. The default value for EFEC and FEC is 30 ms. The valid trigger window range is from 1 to 10000.
Revert Window	The time period for which the BER value is monitored to check whether it is less than the revert threshold. If the BER value is below the revert threshold, the FRR indication given to the routers is removed. The default value for EFEC and FEC is 2000 ms. The valid revert window range is from 1 to 10000.
Protection	
Protected	If checked, protection is enabled for OCHNC circuits. **Note** The protected OCHNC must be bidirectional; the Bidirectional check box in the Circuit area must be checked. If the Use OCHNC Direction check box is checked, the Protected check box is dimmed.
Customer Information	
Customer ID	Optional text field that displays the customer ID of the circuit. The customer ID can contain 0 to 256 alphanumeric and special characters.
Service ID	Optional text field that displays the service ID of the selected circuit. The service ID can contain 0 to 256 alphanumeric and special characters.
VCAT	
Symmetric	*Display only.* Provisions the same number of members in both directions. For STS VCAT circuits, this check box is checked by default. Members use the same set of time slots but in opposite directions.
Open VCAT	Check this check box to create an open-ended VCAT circuit. **Note** You cannot use open-ended VCAT circuits to create L2 topologies.
Member Size	Select a size for each VCAT member.
Number of Members	Specify the number of members to be configured for the VCAT circuit.
Mode	Choose the protection mode for the VCAT circuit: • None—Provides no protection. A failure on one member causes the entire VCAT circuit to fail. • SW-LCAS—Allows the VCAT circuit to adapt to member failures and keep traffic flowing after failures at a reduced bandwidth. • LCAS—Uses a signaling protocol where the members in a virtual concatenation group (VCG) can be dynamically changed without interrupting the operation of uninvolved members. If implemented correctly, there are no errors. LCAS allows the source and destination nodes of a VCG to signal to each other so that the addition or deletion of a member from the VCG can be synchronized without errors.
Protection	
Protected	Check this check box to specify that circuit endpoints have to be selected only from cards that have embedded splitter-type protection.
Protected Drops (Non-Ethernet)	Specify whether protected drops are indicated. If selected, this option restricts the set of displayed source or destination termination points to those in 1:1, 1:n, or 1+1 protection groups.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Provision Working Go and Return on Primary Path	Check this check box to provision SNCP/UPSR protection routes in a Go and Return fashion as detailed in ITU-T G.841, to avoid too long a delay on another direction of traffic. This feature applies only to bidirectional UPSR/SNCP circuits. Unidirectional UPSR/SNCP circuits are not affected and the shortest path to the destination is always used as the working path.
Revertive	Specify whether traffic is reverted back to its original path when the conditions that diverted the circuit to the protect path are repaired. If you do not choose Revertive, traffic remains on the protect path.
Reversion Time	Specify the amount of time (in minutes) after which traffic reverts back to the original working path when conditions that caused the switch are cleared. The range is from 0.5 to 12.0 minutes. The Cisco default is 5 minutes.
SF Threshold *(for SONET circuits only)*	Set the UPSR path-level signal failure (SF) threshold. **Note** This field is visible only for point-to-point topologies.
SD Threshold *(for SONET circuits only)*	Set the UPSR path-level signal degrade (SD) threshold. **Note** This field is visible only for point-to-point topologies.
Switch on PDI-P *(for SONET circuits only)*	Specify whether traffic should switch based on a received STS payload defect indication. **Note** This field is visible only for point-to-point topologies.
Source	
(fields depend on the NE selected and the circuit type)	
Use Secondary Source	(For DRI, open UPSR, and open-ended SNCP circuits) Check this check box to define a secondary source. Then, specify the slot, port, STS, DS-1, or VT for the secondary source. **Note** The Use Secondary Source check box is disabled when OCH-NC is selected as the circuit type.
NE ID	Select from the list of available NE IDs to specify the source NE ID.
Subnetwork ID	*Display only.* Displays the ID of the subnetwork associated with the circuit source.
Slot	Specify the source slot (only for SONET/SDH circuits).
Port	Specify the source port (only for SONET/SDH circuits).
STS	(For SONET circuits) Specify the source STS.
VT	(For SONET circuits) Specify the source VT.
DS1	(For SONET circuits) Specify the source DS-1.
VC4	(For SDH circuits) Specify the source VC4.
VC3	(For SDH circuits) Specify the source VC3.
VC11	(For SDH circuits) Specify the source VC11.
VC12	(For SDH circuits) Specify the source VC12.
TUG3	(For SDH circuits) Specify the source TUG3.
TUG2	(For SDH circuits) Specify the source TUG2.
Destination	
(fields depend on the NE selected and the circuit type)	

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Use Secondary Destination	(For DRI, open UPSR, and open-ended SNCP circuits) Check this check box to define a secondary destination. Then, specify the slot, port, STS, DS-1, or VT for the secondary destination. **Note** The Use Secondary Destination check box is disabled when OCH-NC is selected as the circuit type.
NE ID	Select from the list of available TPs to specify the destination TP.
Subnetwork ID	*Display only.* Displays the ID of the subnetwork associated with the circuit destination.
Slot	(For SONET and SDH circuits) Specify the destination slot.
Port	(For SONET and SDH circuits) Specify the destination port.
STS	(For SONET circuits) Specify the destination STS.
VT	(For SONET circuits) Specify the destination VT.
DS1	(For SONET circuits) Specify the destination DS-1.
VC4	(For SDH circuits) Specify the destination VC4.
VC3	(For SDH circuits) Specify the destination VC3.
VC11	(For SDH circuits) Specify the destination VC11.
VC12	(For SDH circuits) Specify the destination VC12.
TUG3	(For SDH circuits) Specify the destination TUG3.
TUG2	(For SDH circuits) Specify the destination TUG2.
OCHxx Options	
G.709 OTN	Disable or enable the G.709 OTN feature. Check this check box to filter the list of circuits to display only G.709 OTN-compatible circuits.
FEC	Disable or enable forward error correction. G.709 OTN must be enabled before you can enable FEC.
SD BER	Set the signal degrade bit error rate.
Mapping	The card can perform multiplexing per ITU-T G.709. The ODUk (client SONET/SDH payload) can be mapped to the optical channel (OTUk) either asynchronously (asynch mapping) or synchronously (synch mapping) with this setting.
Revert/Reversion Time	(For protected circuits) Select the splitter-type protection.
Members Destination *(available only for open-ended VCAT circuits)*	
Autoranged	Check this check box if you want to specify only the first member destination, and Prime Optical will automatically choose the remaining destinations. (Note that you will lose previous selections if you switch to Autoranged.) When Autoranged is enabled, available consecutive endpoints are returned, starting from the endpoint that you selected. The destination endpoints can be on different ports only if the source endpoint supports split routing. If you want to specify all of the destinations, leave the Autoranged check box unchecked.
VCAT Member Number	Select the member number to create.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Use Secondary Destination	Check this check box if you want to create a secondary destination. Then, specify the NE ID, subnetwork ID, slot, port, STS, VC, and VT for the primary and secondary destinations. **Note** The Use Secondary Destination check box is dimmed if the source endpoint does not support split routing.
NE ID	Select from the list of available NE IDs to specify the destination NE ID (and secondary NE ID, if applicable).
Subnetwork ID	*Display only.* Displays the ID of the subnetwork associated with the circuit destination (and secondary subnetwork ID, if applicable).
Slot	Specify the destination slot (and secondary slot, if applicable).
Port	Specify the destination port (and secondary port, if applicable).
STS	Specify the destination STS (and secondary STS, if applicable).
VC	Specify the destination VC (and secondary VC, if applicable).
VT	Specify the destination VT (and secondary VT, if applicable).
Add Destination button	Click this button to save the selected endpoint for the member number shown in the VCAT Member Number list box. **Note** An error message warns you if duplicate endpoints are selected.
Show Destinations button	Click this button to launch a table that shows all of the open-ended VCAT primary and secondary destinations by VCAT member number.
Routing Preferences	
Route Automatically	Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. Alternatively, you can disable automatic route selection and manually route the circuit where you specify all the intermediate hops on a hop-by-hop basis (up to 64 hops per circuit). You can manually route the circuit using either one of the following views: • Graphical—Provides a map view that displays the nodes and links you can use to create the circuits. You can select the nodes and links that you need for your circuit from the map view. • Graphical Enhanced—Provides an enhanced map view that includes top-level and detailed views. Top-level view types are subnetworks or groups to which the nodes belong. Each subnetwork or group view type contains a detailed view that displays the nodes and links that belong to the specific subnetwork or group. From the detailed view, you can select the nodes and links that you need for creating the circuit. • Textual—Provides a text view that lists the nodes and links you can use to create the circuits. **Note** If the source and destination of the circuit are on the same node, automatic routing is enabled.
Using Required Nodes/Links	(Available only if Route Automatically is checked) If checked, Prime Optical automatically routes the circuit through the required nodes and/or links. There are several ways you can specify the required nodes and links. Choose one of the following: • Graphical • Graphical Enhanced • Textual

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Review Route Before Creation	(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route in one of the following ways: • Graphical • Graphical Enhanced
VT-DS3 Mapped Conversion	(Available only if Route Automatically is checked) If checked, you can route the circuit using the DS3XM12 card. Not applicable for data cards (ML-series and CE-100T-8 cards). VT-DS3 mapped conversion is for VAP circuits and is automatically selected while creating a VAP circuit using a DS3 port.
Time Slot Restriction	If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical will use to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks. **Note** Time Slot Restriction is not available for OCHCC and OCHNC circuit types. **Note** For VCAT circuits, you must enter multiple STS/VC4 values in the Time Slot Restriction field, in the Member Preferences table. The STS/VC4 values you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.
Common Fiber Routing	(For VCAT circuits) Click this radio button to route each member circuit on the same fiber.
Split Routing	(For VCAT circuits) Click this radio button to route member circuits on separate paths.
Member Preferences	(For VCAT circuits) Specify the following information for member circuits: • Number—Enter a number between 1 and 256 to identify the member. • Name—Enter a unique name to identify the member. The name can contain up to 48 alphanumeric characters, including spaces. • Protection—Specify the member circuit protection type (Fully Protected, PCA, DRI, or Unprotected). • Node Diverse—Specify the node diversity for each member circuit: – Required—Ensures that the primary and alternate paths are node-diverse. – Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse. – Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse. The paths might be node-diverse, but Prime Optical does not check for node diversity. • Set Protection for All—Allows you to choose the same protection type for all members. • Set Node Diversity for All—Allows you to specify the same node diversity for all members.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Fully Protected Path	If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit in a UPSR DRI topology by checking the Dual Ring Interconnect check box. Alternatively, if the circuit must pass across unprotected links, Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications: • Required—Ensures that the primary and alternate paths of the UPSR portions of the complete circuit path are node-diverse. • Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. • Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.
Protection Channel Access	To route the circuit on a BLSR protection channel, if available, uncheck the Fully Protected Path check box, and check the Protection Channel Access check box.
Dual Ring Interconnect	If you selected Fully Protected Path and the circuit will be routed on a DRI, check the Dual Ring Interconnect check box. **Note** For DRI and iDRI manually created circuits, you must double-click the DRI span for it to become DRI. A single-click does not enable the DRI span.
Diverse Shared Risk Link Group (SRLG)	If checked, fully protected circuits are routed through working and protected links that do not share risk groups.
Overlay Ring	Check this check box if your configuration uses multiple cross-connections per node, and you want to provision the circuit across multiple rings. An overlay ring circuit traverses at least one node more than once and results in multiple cross-connections per node, per circuit. An overlay ring circuit can be protected or unprotected. Note that Prime Optical does not support a configuration where the source or destination node requires multiple cross-connections.
Conversion Route Constraints *(available only if VT-DS3 Mapped Conversion is checked)*	
NE ID	Select from the list of available NE IDs to specify the source NE ID.
Subnetwork ID	*Display only.* Displays the ID of the subnetwork associated with the circuit source.
Slot	Specify the source slot that contains the DS3XM12 card.
DS3 Mapped STS	Choose **Circuit Source** or **Circuit Dest**.
VT/VC LO Circuit Options *(available only for VT and VC LO path circuits)*	
VT/VC LO Tunnel on Transit Nodes	This option is available if the VT or VC circuit passes through a node that does not have a low-order tunnel, or if an existing low-order tunnel is full. Low-order tunnels allow VT/VC circuits to pass through NEs without consuming low-order cross-connect card resources. In general, creating tunnels is a good idea if you are creating many low-order circuits from the same source and destination. **Note** For VCAT circuits, the VC LO Tunnel on Transit Nodes check box is disabled if you selected Split Routing as the routing preference and you specified any route constraints in the Route Constraints pane.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
VT Aggregation Point (VAP)/VC LO Aggregation Point (LAP)	(For SONET) This option is available if you are creating a VT1.5 circuit to a DS-1, EC-1, DS3XM-6; or an OC-N port on a BLSR, 1+1, or Unprotected node. A VAP allows VT1.5 circuits to be routed through a node using one STS connection on the cross-connect card matrix rather than multiple connections on the VT1.5 matrix. (For SDH) This option is available if you are creating a VC12 circuit to an STM-N port for handoff to non-SDH networks or equipment, such as an IOF, switch, or DACS. A LAP allows low-order circuits to be routed through a node using one VC4 connection on the cross-connect card high-order matrix rather than multiple connections on the low-order matrix.
Circuit Source is STS/VC4 Grooming Node	Creates the VAP or LAP on the VT or VC circuit source node. This option is available only if the VT circuit originates on a DS-1, EC-1, DS3XM-6, or OC-N card, or if the VC circuit originates on an STM-N card.
Circuit Destination is STS/VC4 Grooming Node	Creates the VAP or LAP on the VT or VC circuit destination node. This option is available only if the VT circuit terminates on a DS-1, EC-1, DS3XM-6, or OC-N card, or if the VC circuit terminates on an STM-N card.
None	Choose this option if you do not want to create a low-order tunnel or a VAP/LAP. This is the only available option if Prime Optical cannot create a low-order tunnel or VAP/LAP.
VLAN Selection *(available only for Ethernet cards or EtherGroups)*	
VLANs	Select from the list of available VLANs to associate an existing VLAN to the circuit. If the Circuit VLANs list is empty, Prime Optical assigns the default VLAN. To create a new VLAN, click the **New VLAN** button. Enter a unique VLAN name and ID. The VLAN ID must be an integer greater than 1 but less than 4093. Click **OK**; then, click **OK** in the Successfully created VLAN confirmation dialog box. The new VLAN appears in the list of VLANs. The list is ordered alphanumerically by VLAN name, where numbers precede letters and uppercase letters precede lowercase ones. **Note** Gigabit Ethernet G-series, ML-series, and E-series cards that are configured in port ML-series mode do not support VLAN assignment.
Enable Spanning Tree	Check this check box to enable spanning tree protection for the circuit. This option is disabled for intranode and multicard Ethernet circuits.
VT/VC LO Grooming Node Selection	
Map view	Allows you to tag a node in the map view as a VT or VC LO grooming node. By clicking a node icon, the node is automatically tagged as a VT or VC LO grooming node.
Manual Provisioning *(available if the Route Automatically check box is unchecked and the Graphical or Graphical Enhanced radio button is selected)*	
VCAT Member Number	(For VCAT circuits) Use the drop-down list to select route constraints for each member circuit.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Map view	Displays the NEs that are available in the subnetwork for circuit creation. Map view also indicates the source and destination NEs (and secondary source and destination NEs, if applicable) selected for circuit creation. The map view is used to manually route the circuit from the source to the destination specified by the addition of the links selected. When you position your mouse cursor over a link, the tooltip displays ring information. Use the right-click menu options to navigate within the map view: • Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area. • Zoom In—Allows you to zoom in on an object in the map view. • Zoom Out—Allows you to zoom out on the map view. • Reset Zoom—Resets the current zoom level to the default. • Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Include list with the default STS or VC4 value. The Add option applies to manual provisioning across all circuit types.
Operation in progress	(*Available if the Graphical Enhanced radio button is selected*) Shows the percentage of the operation that is complete during the calculation of the graphic objects.
Selected view type	(*Available if the Graphical Enhanced radio button is selected*) Select one of the following top-level view types: • Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type. • Group—Allows you to view the group(s) to which the NEs belong.
Current view	(*Display only and available if the Graphical Enhanced radio button is selected*) Displays the detailed view type that you selected.
Available view	(*Available if the Graphical Enhanced radio button is selected*) Allows you to select a detailed view type.
Top view button	(*Available if the Graphical Enhanced radio button is selected*) Click this button to change the top-level view type at any time.
Available Spans	Select a link on the map view (related to the selected node) and its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field. The newly added link appears in blue on the map view.
Selected Spans	Select one or more spans and click **Remove** to remove them from the Selected Spans field. The removed link appears in green to indicate its unselected state. **Note** To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.
Links/Nodes tab	Select the links/nodes in the graphic to populate the selected node field.
BLSR DRI Nodes or MS-SPRing DRI Nodes tab	(For BLSR DRI or MS-SPRing DRI circuits) Click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Manual Provisioning	
(available if the Route Automatically check box is unchecked and the Textual radio button is selected)	
Src NE ID	Displays the circuit source NE.
Dest NE ID	Displays the circuit destination NE.
Current NE ID	Displays the currently selected NE.
Adj NE ID	Displays all the NEs that are adjacent to the currently selected NE.
Available Links	Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
Available Spans	After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
Selected Spans	Select one or more spans and click **Remove** to remove them from the Selected Spans field.
Next Hop	Click **Next Hop** to specify the next intermediate hop.
Reset	Click **Reset** to reset all hop information to the default values.
Alternate Route	Click **Alternate Route** to specify hop information for the alternate circuit route.
Route Constraints	
(applicable only if the Using Required Nodes/Links check box is checked)	
VCAT Member Number	(For VCAT circuits) Use the drop-down list to select route constraints for each member circuit.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Map view	Displays the NEs that are available in the subnetwork for circuit creation. This pane also indicates the source and destination NEs (and secondary source and destination NEs, if applicable) selected for circuit creation. The map view is used for the inclusion and exclusion of links or nodes during the specification of route constraints. The included nodes are shown in blue and the excluded links are shown in magenta. Use the right-click menu options to navigate within the map view: • Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area. • Zoom In—Allows you to zoom in on an object in the map view. • Zoom Out—Allows you to zoom out on the map view. • Reset Zoom—Resets the current zoom level to the default. • Exclude All Nodes—Allows you to exclude all nodes associated with the source and destination nodes. This reduces the time required to calculate the best route. The excluded nodes are dimmed, and are listed in the Excluded Links/Nodes pane. All nodes that are not listed in the Excluded Links/Nodes pane are accounted for while calculating the best route. To include a node again for a route-constraint calculation, select the link from the list and click **Remove**. If you are using the Graphical Enhanced view, to exclude a node while calculating the route constraints, select the node and click **Exclude**. The excluded nodes are dimmed, and are listed in the Excluded Links/Nodes pane. To include a node again for a route-constraint calculation, select the link from the list and click **Remove**. Right-click a link or link bundle and choose **Expand** or **Collapse** from the shortcut menu. If you choose **Collapse**, the links are hidden and the link bundle is displayed. If you choose **Expand**, the link bundle is hidden and the links are displayed. The color of the link bundle represents the link selection status, which has the following order of priority (from highest to lowest): • Magenta—The link bundle contains at least one excluded link. • Blue—The link bundle contains at least one selected link. • White—The link bundle contains at least one selecting link. • Green—All links in the link bundle are selectable. • Red—The link bundle contains at least one unselectable link. The link bundle tooltip reports the number of links in the bundle and the name of each link. The background color of each link name in the tooltip represents the link selection status.
Src NE ID	(For textual manual provisioning) Displays the circuit source NE.
Dest NE ID	(For textual manual provisioning) Displays the circuit destination NE.
Nodes	(For textual manual provisioning) Select **Nodes** if you want to add nodes to your circuit route.
Links	(For textual manual provisioning) Select **Links** if you want to add links to your circuit route.
Current NE ID	(For textual manual provisioning) Displays the currently selected NE.
Adj NE ID	(For textual manual provisioning) Displays all the NEs that are adjacent to the currently selected NE.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Available Links	(For textual manual provisioning) Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
Select Nodes	(For textual manual provisioning) Lists all nodes related to the currently selected NE. Select a node from the list.
Selected Node/Link	Displays the currently selected NE or link.
Included Links/Nodes	Displays the list of links or nodes that are included in the route. All links and nodes listed in this pane are considered while calculating route constraints.
Excluded Links/Nodes	Displays the list of links or nodes that are excluded from the route. To remove the links and nodes from the list (to include the nodes to calculate route constraints), select the node and click **Remove**.
Review Route *(applicable only if the Review Route before creation check box is checked)*	
VCAT Member Number	(For VCAT circuits) Use the drop-down list to view the route chosen for each member circuit.
Map view	Displays the NEs that are available in the subnetwork for circuit creation. This pane also indicates the source and destination NEs (and secondary source and destination NEs, if applicable) selected for circuit creation. The map view is used for the inclusion and exclusion of links or nodes during the specification of route constraints. The included nodes are shown in blue and the excluded links are shown in magenta. Use the right-click menu options to navigate within the map view: • Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area. • Zoom In—Allows you to zoom in on an object in the map view. • Zoom Out—Allows you to zoom out on the map view. • Reset Zoom—Resets the current zoom level to the default.
Review Route	Displays the NEs that are available in the subnetwork for circuit creation. This pane also indicates the source and destination NEs (and secondary source and destination NEs, if applicable) selected for circuit creation. The map view displays information about the spans selected during autorouting in the subnetwork. The selected spans are shown in blue. When you select a span, its corresponding details are displayed in the Selected Span pane. The circuit summary displays the total hops and the cost for working and protect paths for the routed circuit.
Source NE ID	Displays the ID of the NE selected as the source node.
Destination NE ID	Displays the ID of the NE selected as the destination node.
Included Spans	If you enabled automatic route selection in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.
Selected Span	Displays detailed information about the span selected in the Included Spans list.

Table 7-6 Field Descriptions for the Create Circuit Wizard—Optical Devices (continued)

Field	Description
Add and Remove buttons	You can review and modify the automatic route that is selected for circuit creation. Click **Add** to change the automatically selected route by adding a route to the Selected Spans list. Click **Remove** to remove a route from the list. This functionality is similar to manual routing, except that the route from the source to the destination is preselected. **Note** You can modify the review route only for the following circuit types: STS_CIRCUIT, VT_CIRCUIT, VT_TUNNEL, VT_AGGREGATION, STS_VCAT_CIRCUIT, VT_VCAT_CIRCUIT, VC_HO_PATH_CIRCUIT, VC_LO_PATH_CIRCUIT, VC_LO_PATH_TUNNEL, VC_LO_PATH_AGGREGATION, VC_HO_VCAT_CIRCUIT, and VC_LO_VCAT_CIRCUIT.
Circuit Summary	
Circuit Summary	Summarizes the selections you made in the wizard panes. To change the circuit summary, click **Back** and change your selection(s).

7.2.3.1 Creating an STS (Including Ethernet), STS-V, VT, VT-V, VT Tunnel, or VT Aggregation Circuit

Step 1 Select a node for which to create a circuit, and open the Create Circuit wizard. For an explanation of wizard launch points, see Table 7-4 on page 7-12.

Step 2 In the Type pane, choose STS (including Ethernet circuits), STS-v, VT, VT-v, VT Tunnel, or VT Aggregation. (Choose STS for ML-series circuits. For ONS 15454, choose STS for circuits starting and ending at a fiber channel [FCMR] card). In the Number of Circuits field, enter the number of circuits you want to create. The Cisco default is 1. If you enter a number higher than 1, you can use autoranging to create the additional circuits automatically. You can create only one circuit for the following circuit types:

- ML-series
- VT-v
- STS-v
- VT aggregation
- VT tunnel

Step 3 Click **Next**.

Step 4 In the Attributes pane, enter the following information; then, click **Next**:

- Name—Enter a unique name for the new circuit. The circuit name is a free-format string of up to 48 ASCII characters. If you leave the field blank, Prime Optical assigns a default name to the circuit.
- Circuit Alias—Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a circuit description of up to 256 characters.
- Size (STS circuits only)—Specify STS-1, STS-9c, STS-12c, STS-24c, STS-48c, STS-96c, or STS-192c. The valid size for circuits involving the DS3i card is STS-3c. Valid sizes for circuits involving the FC_MR-4 card are STS-1, STS-3c, STS-24c, and STS-48c.

For a single-card EtherSwitch, only STS-1, STS-3c, STS-6c, and STS-12c apply. For a multicard EtherSwitch, only STS-1, STS-3c, and STS-6c apply.

Valid circuit sizes for an ML-series circuit are STS-1, STS-3c, STS6c, STS-9c, STS-12c, STS-24c, and STS-96c.

- Bidirectional—Check this check box to create a two-way circuit; uncheck it to create a one-way circuit. (For STS and VT circuits only; E-series circuits, G-series circuits, ML-series circuits, VAP circuits, and VT tunnels are bidirectional.)
- State—Choose an administrative state to apply to the circuit:
  - IS—The circuit is in service.
  - OOS—The circuit is out of service. Traffic is not passed on the circuit.
  - OOS–AINS—The circuit is out of service until it receives a valid signal, at which time the circuit state automatically changes to in service.
  - OOS–MT—The circuit is in maintenance state. The maintenance state does not interrupt traffic flow; it suppresses alarms and conditions and allows loopbacks to be performed on the circuit.
- Apply to source/destination ports—Check this check box to apply the selected state in the State field to the circuit source and destination ports. Uncheck this check box for ML-series circuits.
- Protected Drops (Non-Ethernet)—Check this check box if you want the circuit routed on protected drops only. If selected, this option restricts the set of displayed source or destination termination points to those in 1:1, 1:N, or 1+1 protection groups. Uncheck this check box for ML-series circuits.
- Provision working go and return on primary path (bidirectional UPSR/SNCP protection only)—Check this check box to provision the working path to go or return to the primary path.

Note Prime Optical currently provisions unidirectional SNCP/UPSR circuits following the GR-1400 standard. For bidirectional SNCP/UPSR circuits, you can check the Provision working go and return on primary path check box to route the working and protect paths in one direction following the ITU-T G.841 standard. Unidirectional UPSR/SNCP circuits are not affected by this new routing, and the shortest path is always used as the working path.

- Path Selectors (UPSR protection only)—If the circuit will be routed on a UPSR, set the UPSR path selectors as follows:
  - Revertive—Check this check box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose Revertive, traffic remains on the protect path.
  - Reversion Time—If Revertive is checked, specify the amount of time (in minutes) after which traffic reverts back to the original working path when the conditions that caused the switch are cleared.
  - SF Threshold (for STS circuits only)—Set the UPSR path-level SF bit error rate (BER) threshold. This field is visible only for point-to-point topologies.
  - SD Threshold (for STS circuits only)—Set the UPSR path-level SD BER threshold. This field is visible only for point-to-point topologies.
  - Switch on PDI-P (for STS circuits only)—Specify whether or not traffic should switch based on a received STS payload defect indication. This field is visible only for point-to-point topologies.
- (Optional) Specify the customer information:
  - Customer ID—Identify the end user of the circuit.

– Service ID—Enter the service ID of the circuit.

Step 5 In the Source pane, enter the following information; then, click **Next**:

- NE ID—Select from the list of available TPs to specify the source TP.
- Source—Specify the source slot, port, STS, DS1-14, and VT.
- Use Secondary Source—Check this check box to create a secondary source. Then, specify the NE ID, slot, port, STS, DS1-14, and VT for the secondary source.

Note The secondary source is applied to open-ended UPSR and DRI.

Step 6 In the Destination pane, enter the following information; then, click **Next**:

- NE ID—Select from the list of available TPs to specify the destination TP.
- Destination—Specify the destination slot, port, STS, DS1-14, and VT.
- Use Secondary Destination—Check this check box to create a secondary destination. Then, specify the slot, port, STS, DS1-14, and VT for the secondary destination.

Note The secondary destination is applied to open-ended UPSR and DRI.

Step 7 In the VLAN Selection pane (available only if an E-series Ethernet card or EtherGroup is chosen as the source or destination slot), do the following; then, click **Next**:

a. Select from the list of available VLANs to associate an existing VLAN to the circuit. If the Circuit VLANs list is empty, Prime Optical assigns the default VLAN.

Note Gigabit Ethernet G-series, ML-series, and E-series cards that are configured in Port Mapped mode do not support VLAN assignment.

b. To create a new VLAN, click the **New VLAN** button. Enter a unique VLAN name and ID. The VLAN ID must be an integer greater than 1 but less than 4093. Click **OK**; then, click **OK** in the Successfully created VLAN confirmation dialog box. The new VLAN appears in the list of VLANs. The list is arranged alphanumerically by VLAN name, where numbers precede letters and uppercase letters precede lowercase ones.

c. Check the Enable Spanning Tree check box to enable spanning tree protection for the circuit. This option is disabled for intranode and multicard Ethernet circuits.

Step 8 In the Routing Preferences pane, do the following; then, click **Next**.

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical
- Graphical Enhanced

d. VT-DS3 Mapped Conversion—(Available only if Route Automatically is checked) If checked, you can route the circuit using the DS3XM12 card. Not applicable for data cards (ML-series and CE-100T-8 cards). VT-DS3 mapped conversion is for VAP circuits and is automatically selected while creating a VAP circuit using a DS3 port.

e. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Time Slot Restriction field, in the Member Preferences table. The STS/VC4 values you enter in the Time Slot Restriction field cannot be identical or circuit creation will fail with an error message.

f. Fully Protected Path—If not selected, choose **Protection Channel Access** to route the circuit on a BLSR protection channel.

g. Fully Protected Path—If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit in a UPSR DRI topology by checking **Dual Ring Interconnect**. Alternatively, if the circuit must pass across unprotected links, Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications:

- Required—Prime Optical ensures that the primary and alternate paths within the UPSR portions of the complete circuit path are node-diverse.
- Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path.
- Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.
- Dual Ring Interconnect—If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

h. Overlay Ring—(*For STS high-order circuits only*) Check this check box if your configuration uses multiple cross-connections per node, and you want to provision the circuit across multiple rings. An overlay ring circuit traverses at least one node more than once and results in multiple cross-connections per node, per circuit. An overlay ring circuit can be protected or unprotected. Note that Prime Optical does not support a configuration where the source or destination node requires multiple cross-connections.

Step 9 In the VT Options pane (available only if you are creating a VT circuit and automatic routing is selected), choose one of the following radio buttons; then, click **Next**:

- VT Tunnel on Transit Nodes

- VAP
- None

Step 10 If you created a VAP, in the VT Grooming pane, select the following:

- STS Grooming Node
- VT Grooming Node

Step 11 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list with the default STS or VC4 value. The Add option applies to manual provisioning across all circuit types.

d. Select a link on the map view (related to the selected node) and its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field. The newly added link appears in blue on the map view.

e. Select one or more spans and click **Remove** to remove them from the Selected Spans field. The removed link appears in green to indicate its unselected state.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

f. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 12 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 13 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the nodes or links to include in the circuit route. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 14 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat these substeps for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 15 In the Review Route pane (available only if Review Route Before Creation is checked), do the following:

a. In the circuit display, review the ID of the source and destination NEs.

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Displays the following information about the span selected in the Included Spans list:

- From—Span source
- To—Span destination
- Source STS—STS value
- VT—VT time slot

Note If you selected VT as the circuit type in the Attributes pane, chose Review Route Before Creation in the Routing Preferences pane, and selected VT Tunnel on Transit Nodes in the VT Options pane, the VT tunnel is created regardless of whether or not you are finished provisioning the circuit. Even if you click the Back button in the Review Route pane and change the VT circuit options, the newly created VT tunnel will not be deleted.

d. (Optional) You can review and modify the automatic route that is selected for circuit creation. Click **Add** to change the automatically selected route by adding a route to the Selected Spans list. Click **Remove** to remove a route from the list.

e. Click **Finish**.

Step 16 In the message box, click **OK**.

Caution It takes several seconds to create a circuit. During that interval, if a new circuit is added with the same name, both circuits might be identified as duplicates. Therefore, be careful not to add a duplicate circuit during the creation of the first circuit.

7.2.3.2 Creating a Regular or Open-Ended VCAT Circuit

This section describes how to create regular and open-ended VCAT circuits (STS-v, VT-v, VC_HO_PATH_VCAT_CIRCUIT, or VC_LO_PATH_VCAT_CIRCUIT).

Prime Optical supports open-ended VCAT circuits that originate on Ethernet or ML-series cards. The destination can be OC-n or STM-n cards. You can route open-ended VCAT circuits to or from any of the cards or ports where VCAT circuits originate or terminate. Compared to a standard VCAT circuit, an open-ended VCAT circuit has only one VCG.

VCAT and open-ended VCAT circuits are supported on the following cards:

- CE-100T-8—Supported on ONS 15454 SONET NEs
- CE-MR-6—Supported on ONS 15310 MA SONET and ONS 15310 MA SDH NEs
- CE-MR-10—Supported on ONS 15454 SONET and ONS 15454 SDH NEs
- E100-WAN-8, GigE-WAN-2, STM-1-1-8-LC—Regular VCAT circuits are supported on ONS 15305 CTC NEs

Note Open-ended VCAT circuits are not supported on ONS 15305 CTC NEs.

- FCMR—Supported on ONS 15454 SONET and ONS 15454 SDH NEs
- ML1000, ML100T, ML-MR-10—Supported on ONS 15454 SONET and ONS 15454 SDH NEs
- ML-100T-8—Supported on ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH NEs

Note Each card supports a different number of members. You can create only bidirectional, revertive/nonrevertive, high-order/low-order path circuits. Prime Optical can route the circuits automatically, or you can route them manually. Also, all members can be routed through a single fiber, or you can specify a split-fiber routing preference. You must choose a destination for each member.

Complete the following steps to create a VCAT or open-ended VCAT circuit:

Step 1 Select a node for which to create a circuit, and open the Create Circuit wizard. For an explanation of wizard launch points, see Table 7-4 on page 7-12.

Step 2 In the Type pane, select STS-v, VT-v, VC_HO_PATH_VCAT_CIRCUIT, or VC_LO_PATH_VCAT_CIRCUIT.

For SDH nodes:

- LO_VCAT circuits from an ONS 15454 SDH CE-100T-8 card to a 15305 E-100 card, and a CE-MR-10 card to another CE-MR-10, ML-series, G1000, or OC*n* card are supported for VCAT circuits
- LO_VCAT (VC3) circuits between a GigE-WAN-2 and ML1000 card (number of members = 2), and between a GigE-WAN-2 card and CE-100T-8 card (number of members = 1) are supported for VCAT circuits

Step 3 In the Number of Circuits field, enter the number of circuits you want to create. The Cisco default is 1. If you enter a number higher than 1, you can use autoranging to create the additional circuits automatically.

Note You can create only one VCAT circuit at a time.

Step 4 In the Attributes pane, enter the following information; then, click **Next**:

- Name—Enter a unique name for the new circuit. For VCAT circuits, the circuit name is a free-format string, up to 44 ASCII characters. If you leave the field blank, Prime Optical assigns a default name to the circuit.
- Circuit Alias—Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a circuit description of up to 256 characters.
- Type—Displays the circuit type.
- Bidirectional—In this release, only bidirectional VCAT circuits are supported.
- State—Specify IS, OOS_DSBLD, OOS_MT, IS_AINS, or OOS_OOG (Out of Service–Out of Group).
- Apply to source/destination ports—Check this check box to apply the selected state to the source and destination ports.
- Symmetric—*Display only.*
- Open VCAT—Check this check box to create an open-ended VCAT circuit. You cannot use open-ended VCAT circuits to create L2 topologies.
- Member Size—Select the size of the member for the VCAT circuit. This is the unit for VCAT circuit size.

- Number of Members—Select the number of members (for the member size previously selected). Different cards support different numbers of members with different sizes.
- Mode—Select the LCAS mode (None, Sw-LCAS, or LCAS) for the VCAT circuit. If you select a mode other than None, only the cards supporting the LCAS mode selected are listed for the source and destination selection.
- Protected Drops—Check this check box if you want the circuit routed to protected drops only; that is, to cards that are in 1:1, 1:N, or 1+1 protection.
- Provision working go and return on primary path (bidirectional UPSR/SNCP protection only)—Check this check box to provision the working path to go and return to the primary path.
- Path Selectors—If the circuit will be routed on an SNCP node, set the defaults as follows:
  - Revertive—Check this check box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If Revertive is not chosen, traffic remains on the protect path.
  - Reversion time—If Revertive is checked, set the reversion time. This is the amount of time that elapses before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared. (The Cisco default reversion time is 5 minutes.)
  - SF threshold—Choose from 1 E-3, 1 E-4, or 1 E-5.
  - SD threshold—Choose from 1 E-5, 1 E-6, 1 E-7, 1 E-8, or 1 E-9.
  - Switch on PDI-P—Not applicable.
- Customer ID (optional)—Identify the end user of the circuit.
- Service ID (optional)—Enter the service ID of the circuit.

Note The customer ID and service ID for the VCAT circuit are applied to all member circuits.

Step 5 In the Source pane, set the circuit source. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed on the node. Enter the following information; then, click **Next**:

- NE ID—Select from the list of available TPs to specify the source TP.
- Source—Specify the following:
  - Source slot.
  - Port.
  - Member—Available only if the source slot is a CE-MR-10 card in Manual mode. Click **Edit Members** to add or remove member CTP(s) of the source TP. In the Member Selection dialog box, you can use the **Add** button to move the CTP(s) to the Selected CTPs list, use the **Remove** button to move the CTP(s) to the Available CTPs list, or click **Up** or **Down** to reorder the Selected CTPs list. Click **OK** to close the Member Selection dialog box.

Step 6 In the Destination pane (available for regular VCAT circuits), set the circuit destination. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed on the node. Enter the following information; then, click **Next**:

- NE ID—Select from the list of available TPs to specify the destination TP.
- Source—Specify the following:
  - Destination slot.
  - Port.

- Member—Available only if the source slot is a CE-MR-10 card in Manual mode. Click **Edit Members** to add or remove member CTP(s) of the source TP. In the Member Selection dialog box, you can use the **Add** button to move the CTP(s) to the Selected CTPs list, use the **Remove** button to move the CTP(s) to the Available CTPs list, or click **Up** or **Down** to reorder the Selected CTPs list. Click **OK** to close the Member Selection dialog box.

Step 7 In the Members Destination pane (available for open-ended VCAT circuits), do the following; then, click **Next**:

a. Specify the destinations:

- To specify only the first member destination, check the Autoranged check box; Prime Optical will automatically choose the remaining destinations. (Note that you will lose previous selections if you switch to Autoranged.) When Autoranged is enabled, available consecutive endpoints are returned, starting from the endpoint that you selected. The destination endpoints can be on different ports only if the source endpoint supports split routing.
- To specify all of the destinations, leave the Autoranged check box unchecked.

b. In the VCAT Member Number list box, select the member number to create.

c. If you want to create a secondary destination, check the Use Secondary Destination check box. Then, specify the NE ID, subnetwork ID, slot, port, STS, VC, and VT for the primary and secondary destinations.

Note The Use Secondary Destination check box is dimmed if the source endpoint does not support split routing.

d. Click the **Add Destination** button to save the selected endpoint for the member number shown in the VCAT Member Number list box.

e. Click the **Show Destinations** button to launch a table that shows all of the open-ended VCAT primary and secondary destinations by VCAT member number.

Step 8 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical

- Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Select the routing preference for VCAT members. If all members are to be routed on a single fiber, choose **Common Fiber Routing**. If members are to be routed through different fibers in case one fiber does not have sufficient bandwidth, choose **Split Routing**.

f. Specify the following member preferences:

- Number—Select the member number, a unique number from 1 to 256.
- Name—Edit the name for the member circuit. By default, *VCAT-NAME_Default MemberNumber* is the member name, where *VCAT-NAME* is the parent VCAT circuit name being created.
- Protection—Select the protection mechanism for member circuits:
  - Fully Protected—To route the circuit on a protected path, choose **Fully Protected** (default). A fully protected circuit route is created based on the diversity option you choose. Fully protected paths might or might not have UPSR/SNCP path segments with primary and alternate paths. The path diversity options apply only to UPSR/SNCP path segments, if any exist.
  - Unprotected—To create an unprotected circuit, choose **Unprotected**.
  - PCA—To route the circuit on a PCA route, choose **PCA**. PCA circuits are unprotected. Once you enable PCA, a label reading PCA will appear on the link.
  - DRI—To configure dual ring interconnect protection on a VCAT circuit, choose **DRI**. All VCAT members must share the same DRI protection type. You cannot assign DRI protection when textual manual provisioning is enabled.
- Node Diversity—Select node diversity for each member circuit.
- Diverse SRLG—Select **True** if fully protected circuits will be routed through working or protected links that do not share risk groups.

g. If you selected Fully Protected Path, choose one of the following options:

- Required—Ensures that the primary and alternate paths within the extended UPSR/SNCP mesh network portions of the complete circuit path are nodally diverse.
- Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended UPSR/SNCP mesh network portion of the complete circuit path.
- Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended UPSR/SNCP mesh network portions of the complete circuit path are needed.
- N/A (Not Applicable)—Prime Optical does not support Dual Ring Interconnect.

Note Node diversity can be set for each member when Fully Protected is selected and Split Fiber Routing is selected.

Step 9 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 10 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 11 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Select the member from the Member list box at the top of the pane. For common fiber routing, there is no Member list box, because constraints are applied to all the members. In split fiber routing, you can select different constraints for different members by selecting a member and then selecting spans or NEs to be included or excluded for routing the circuit. Specify the nodes or links to include in the circuit route. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the VCAT Member Number list box, select the member for which constraints are to be selected.

d. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

e. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

f. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

g. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

h. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

i. Repeat substeps d to h for each node or link that you want to include in the circuit route.

j. (Optional) Repeat substeps c to i for each member.

k. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 12 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 13 In the Review Route pane (available only if Review Route Before Creation is checked), do the following:

Note Member routing information is displayed when a particular member is selected from the list box.

a. In the VCAT Member Number list box, select the member.

b. In the circuit display, review the ID of the source and destination NEs.

c. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

d. Selected Span—Review the span information.

e. (Optional) You can review and modify the automatic route that is selected for circuit creation. Click **Add** to change the automatically selected route by adding a route to the Selected Spans list. Click **Remove** to remove a route from the list.

f. Click **Finish**.

Step 14 In the message box, click **OK**. The VCAT or open-ended VCAT circuit is displayed in the Circuit table.

7.2.3.3 Creating a VC_HO_Path_Circuit

The E1-N-14 card, STM-N cards, and Ethernet cards all use high-order path circuits. You can create unidirectional or bidirectional, revertive or nonrevertive, high-order path circuits. Prime Optical can route the circuits automatically, or you can route them manually. The E3-12 and DS3i-N-12 cards use VC low-order path tunnels.

Step 1 Select a node for which to create a circuit, and open the Create Circuit wizard. For an explanation of wizard launch points, see Table 7-4 on page 7-12.

Step 2 In the Type pane, choose **VC_HO_Path_Circuit**. The circuit type determines the provisioning options that are displayed. In the Number of Circuits field, enter the number of circuits you want to create. The Cisco default is 1. If you enter a number higher than 1, you can use autoranging to create the additional circuits automatically.

Step 3 Click **Next**.

Step 4 In the Attributes pane, enter the following information; then, click **Next**:

- Name—Enter a unique name for the new circuit. The circuit name is a free-format string of up to 48 ASCII characters. If you leave the field blank, Prime Optical assigns a default name to the circuit.
- Circuit Alias—Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a circuit description of up to 256 characters.
- Size—Select the circuit size. VC high-order path circuits can be VC4, VC4-2c, VC4-3c, VC4-4c, VC4-8c, VC4-16c, or VC4-64c for optical cards and for some Ethernet cards (depending on the card type). Of the Ethernet cards, only the G-1000 can use VC4-3c, VC4-8c, and VC4-16c. The “c” indicates concatenated VC4s.
- Bidirectional—Check this check box to create a two-way circuit; uncheck it to create a one-way circuit.
- State—Specify the circuit state. Options vary depending on the type of circuit selected.

- Apply to source/destination ports—Check this check box to apply the selected state to the source and destination ports.
- Protected Drops—Check this check box if you want the circuit routed to protected drops only; that is, to cards that are in 1:1, 1:N, or 1+1 protection.
- Provision working go and return on primary path (bidirectional UPSR/SNCP protection only)—Check this check box to provision the working path to go and return to the primary path.

Note Prime Optical currently provisions unidirectional SNCP/UPSR circuits following the GR-1400 standard. For bidirectional SNCP/UPSR circuits, you can check the Provision working go and return on primary path check box to route the working and protect paths in one direction following the ITU-T G.841 standard. Unidirectional UPSR/SNCP circuits are not affected by this new routing, and the shortest path is always used as the working path.

- Path Selectors (SNCP Protection Only)—If the circuit will be routed on an SNCP node, set the defaults as follows:
  - Revertive—Check this check box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If Revertive is not chosen, traffic remains on the protect path.
  - Reversion time—If Revertive is checked, set the reversion time. This is the amount of time that elapses before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared. (The Cisco default reversion time is 5 minutes.)
  - SF threshold—Choose from 1 E-3, 1 E-4, or 1 E-5.
  - SD threshold—Choose from 1 E-5, 1 E-6, 1 E-7, 1 E-8, or 1 E-9.
  - Switch on PDI-P—Not applicable.
- Customer ID (optional)—Identify the end user of the circuit.
- Service ID (optional)—Enter the service ID of the circuit.

Step 5 In the Source pane, set the circuit source. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed in the node. Click **Use Secondary Source** if you want to create an SNCP bridge/selector circuit entry point in a multivendor SNCP.

Step 6 Click **Next**.

Step 7 In the Destination pane, set the circuit destination. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed in the node. Click **Use Secondary Destination** if you want to create a circuit destination point for unidirectional/bidirectional circuits.

Step 8 Click **Next**.

Step 9 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:
   - Graphical
   - Graphical Enhanced
   - Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:
   - Graphical
   - Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Set the circuit path protection as follows:
   - To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and proceed to the next substep. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.
   - To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 10.
   - To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 10.

f. If you selected **Fully Protected Path**, choose one of the following options:
   - Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.
   - Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
   - Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.
   - Dual Ring Interconnect—Provisions the circuit in a DRI topology. If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.
   - Diverse Shared Risk Link Group—If checked, fully protected circuits are routed through working and protected links that do not share risk groups.

g. Overlay Ring—Check this check box if your configuration uses multiple cross-connections per node, and you want to provision the circuit across multiple rings. An overlay ring circuit traverses at least one node more than once and results in multiple cross-connections per node, per circuit. An overlay ring circuit can be protected or unprotected. Note that Prime Optical does not support a configuration where the source or destination node requires multiple cross-connections.

Step 10 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

l. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 11 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 12 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

   In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 13 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 14 In the Review Route pane (available only if Review Route Before Creation is checked), review the following information; then, click **Finish**:

a. In the circuit display, review the ID of the source and destination NEs.

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

Step 15 In the message box, click **OK**.

7.2.3.4 Creating a VC_LO_Path_Circuit

Step 1 Select a node for which to create a circuit, and open the Create Circuit wizard. For an explanation of wizard launch points, see Table 7-4 on page 7-12.

Step 2 In the Type pane, choose **VC_LO_Path_Circuit**. The circuit type determines the provisioning options that are displayed. In the Number of Circuits field, enter the number of circuits you want to create. The Cisco default is 1. If you enter a number higher than 1, you can use autoranging to create the additional circuits automatically.

Step 3 Click **Next**.

Step 4 In the Attributes pane, enter the following information; then, click **Next**:

- Name—Enter a unique name for the new circuit. The circuit name is a free-format string of up to 48 ASCII characters. If you leave the field blank, Prime Optical assigns a default name to the circuit.
- Circuit Alias—Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a circuit description of up to 256 characters.
- Size—Select **VC3**, **VC11**, or **VC12**.
- Bidirectional—Check this check box to create a two-way circuit; uncheck it to create a one-way circuit.
- State—Specify the circuit state. Options vary depending on the type of circuit selected.
- Apply to source/destination ports—Check this check box to apply the selected state to the source and destination ports.
- Protected Drops—Check this check box if you want the circuit routed to protected drops only; that is, to cards that are in 1:1, 1:N, or 1+1 protection.
- Provision working go and return on primary path (bidirectional UPSR/SNCP protection only)—Check this check box to provision the working path to go and return to the primary path.

Note Prime Optical currently provisions unidirectional SNCP/UPSR circuits following the GR-1400 standard. For bidirectional SNCP/UPSR circuits, you can check the Provision working go and return on primary path check box to route the working and protect paths in one direction following the ITU-T G.841 standard. Unidirectional UPSR/SNCP circuits are not affected by this new routing, and the shortest path is always used as the working path.

- SNCP path selector defaults—If the circuit will be routed on an SNCP node, set the defaults as follows:
  - Revertive—Check this check box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If Revertive is not chosen, traffic remains on the protect path.
  - Reversion time—If Revertive is checked, set the reversion time. This is the amount of time that elapses before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared. (The Cisco default reversion time is 5 minutes.)
  - SF threshold.
  - SD threshold.
  - Switch on PDI-P—Not applicable.
- Customer ID (optional)—Identify the end user of the circuit.
- Service ID (optional)—Enter the service ID of the circuit.

Step 5 In the Source pane, set the circuit source. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed in the node. Click **Use Secondary Source** if you want to create an SNCP bridge/selector circuit entry point in a multivendor SNCP.

Step 6 Click **Next**.

Step 7 In the Destination pane, set the circuit destination. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed in the node. Click **Use Secondary Destination** if you want to create a circuit destination point for unidirectional/bidirectional and VC_LO_Path_Circuits.

Step 8 Click **Next**.

Step 9 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:
- Graphical
- Graphical Enhanced
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:
- Graphical
- Graphical Enhanced
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:
- Graphical
- Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Set the circuit path protection as follows:

- To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and proceed to the next substep. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.
- To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 10.
- To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 10.

f. If you selected **Fully Protected Path**, choose one of the following options:

- Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.
- Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
- Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.
- Dual Ring Interconnect—Provisions the circuit in a DRI topology. If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

Step 10 If you did not select Using Required Nodes/Links in Step 9, specify VC-LO circuit options. In the VC LO Options pane, choose one of the following radio buttons; then, click **Finish** (if you did not check Review Route Before Creation in Step 9) or **Next** (to view the spans included in the route in the Review Route pane):

a. VC LO Tunnel on transit nodes

b. VC LAP

- Circuit source is VC4 grooming node
- Circuit destination is VC4 grooming node

c. None

Step 11 If you created a VC LAP, in the VC LO Options pane, select the following; then, click **Finish** (if you did not check Review Route Before Creation in Step 9) or **Next** (to view the spans included in the route in the Review Route pane).

- VC4 Grooming Node
- VC LO Grooming Node

Step 12 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 13 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 14 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 15 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 16 In the Review Route pane (available only if Review Route Before Creation is checked), do the following:

a. In the circuit display, review the ID of the source and destination NEs.

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically chooses spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

d. (Optional) You can review and modify the automatic route that is selected for circuit creation. Click **Add** to change the automatically selected route by adding a route to the Selected Spans list. Click **Remove** to remove a route from the list.

e. Click **Finish**.

Step 17 In the message box, click **OK**.

7.2.3.5 Creating a VC_LO_Path_Tunnel

Step 1 Select a node for which to create a circuit, and open the Create Circuit wizard. For an explanation of wizard launch points, see Table 7-4 on page 7-12.

Step 2 In the Type pane, choose **VC_LO_Path_Tunnel**. The circuit type determines the provisioning options that are displayed. The E3-12 and DS3i-N-12 cards must use VC low-order path tunnels. In the Number of Circuits field, enter the number of circuits you want to create. The Cisco default is 1. If you enter a number higher than 1, you can use autoranging to create the additional circuits automatically. Check the For VC3 Port Grouping Only check box to create VC low-order path tunnels for port grouping.

Step 3 Click **Next**.

Step 4 In the Attributes pane, enter the following information; then, click **Next**:

- Name—Enter a unique name for the new circuit. The circuit name is a free-format string of up to 48 ASCII characters. If you leave the field blank, Prime Optical assigns a default name to the circuit.
- Circuit Alias—Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a circuit description of up to 256 characters.
- Size—For VC_LO_Path_Tunnel, VC4 is the default setting.
- Bidirectional—For VC_LO_Path_Tunnel, Bidirectional is the default setting.
- State—Specify the circuit state. Options vary depending on the type of circuit selected.
- Apply to source/destination ports—Check this check box to apply the selected state to the source and destination ports.
- Protected Drops—Check this check box if you want the circuit routed to protected drops only; that is, to cards that are in 1:1, 1:N, or 1+1 protection.
- Provision working go and return on primary path—Check this check box to provision the working path to go and return to the primary path.
- SNCP path selector defaults—If the circuit will be routed on an SNCP node, set the defaults as follows:
  - Revertive—Check this check box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If Revertive is not chosen, traffic remains on the protect path.
  - Reversion time—If Revertive is checked, set the reversion time. This is the amount of time that elapses before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared. (The Cisco default reversion time is 5 minutes.)
  - SF threshold—Choose from 1 E-3, 1 E-4, or 1 E-5.
  - SD threshold—Choose from 1 E-5, 1 E-6, 1 E-7, 1 E-8, or 1 E-9.
  - Switch on PDI-P—Not applicable.

- Customer ID (optional)—Identify the end user of the circuit.
- Service ID (optional)—Enter the service ID of the circuit.

Step 5 In the Source pane, set the circuit source. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed in the node. Click **Use Secondary Source** if you want to create an SNCP bridge/selector circuit entry point in a multivendor SNCP.

Step 6 Click **Next**.

Step 7 In the Destination pane, set the circuit destination. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed in the node. Click **Use Secondary Destination** if you want to create a circuit destination point for unidirectional/bidirectional.

Step 8 Click **Next**.

Step 9 If port grouping is disabled, do the following in the Routing Preferences pane; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

Note Route Automatically is disabled if port grouping is enabled.

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical
- Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Step 10 Set the circuit path protection as follows:

- To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and go to Step 11. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.
- To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 12.

- To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 12.

Step 11 If you selected **Fully Protected Path**, choose one of the following options:

- Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.
- Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
- Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.

Step 12 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 13 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 14 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

   In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 15 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 16 In the Review Route pane (available only if Review Route Before Creation is checked), do the following:

a. In the circuit display, review the ID of the source and destination NEs.

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically chooses spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

d. (Optional) You can review and modify the automatic route that is selected for circuit creation. Click **Add** to change the automatically selected route by adding a route to the Selected Spans list. Click **Remove** to remove a route from the list.

e. Click **Finish**.

Step 17 In the message box, click **OK**.

7.2.3.6 Creating a VC_LO_Path_Aggregation Circuit

Step 1 Select a node for which to create a circuit, and open the Create Circuit wizard. For an explanation of wizard launch points, see Table 7-4 on page 7-12.

Note VC_LO_path_aggregation circuits are not supported by the ONS 15305 CTC.

Step 2 In the Type pane, choose **VC_LO_Path_Aggregation**. The circuit type determines the provisioning options that are displayed. In the Number of Circuits field, enter the number of circuits you want to create. The Cisco default is 1. If you enter a number higher than 1, you can use autoranging to create the additional circuits automatically.

Step 3 Click **Next**.

Step 4 In the Attributes pane, enter the following information; then, click **Next**:

- Name—Enter a unique name for the new circuit. The circuit name is a free-format string of up to 48 ASCII characters. If you leave the field blank, Prime Optical assigns a default name to the circuit.
- Circuit Alias—Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a circuit description of up to 256 characters.
- Size—For VC_LO_Path_Aggregation, VC4 is the default setting.
- Bidirectional—For VC_LO_Path_Aggregation, Bidirectional is the default setting.
- State—Specify the circuit state. Options vary depending on the type of circuit selected.
- Apply to source/destination ports—Check this check box to apply the selected state to the source and destination ports.
- Protected Drops—Check this check box if you want the circuit routed to protected drops only; that is, to cards that are in 1:1, 1:N, or 1+1 protection.
- SNCP path selector defaults—If the circuit will be routed on an SNCP node, set the defaults as follows:
  - Revertive—Check this check box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If Revertive is not chosen, traffic remains on the protect path.

  - Reversion time—If Revertive is checked, set the reversion time. This is the amount of time that elapses before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared. (The Cisco reversion time is 5 minutes.)
  - SF threshold—Choose from 1 E-3, 1 E-4, or 1 E-5.
  - SD threshold—Choose from 1 E-5, 1 E-6, 1 E-7, 1 E-8, or 1 E-9.
  - Switch on PDI-P—Not applicable.
- Customer ID (optional)—Identify the end user of the circuit.
- Service ID (optional)—Enter the service ID of the circuit.

Step 5 In the Source pane, set the circuit source. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed in the node.

Step 6 Click **Next**.

Step 7 In the Destination pane, enter the appropriate information for the circuit destination.

Step 8 Click **Next**.

Step 9 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical
- Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Set the circuit path protection as follows:

- To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and proceed to the next substep. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.
- To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 10.
- To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 10.

f. If you selected **Fully Protected Path**, choose one of the following options:

- Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.
- Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
- Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.
- Dual Ring Interconnect—Provisions the circuit in a DRI topology. If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

Step 10 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 11 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 12 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 13 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 14 In the Review Route pane (available only if Review Route Before Creation is checked), do the following:

a. In the circuit display, review the ID of the source and destination NEs.

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

d. (Optional) You can review and modify the automatic route that is selected for circuit creation. Click **Add** to change the automatically selected route by adding a route to the Selected Spans list. Click **Remove** to remove a route from the list.

e. Click **Finish**.

Step 15 In the message box, click **OK**.

7.2.3.7 Creating a DWDM OCHNC—ONS 15454 MSTP

Prime Optical creates an OCHNC between two optical nodes upon a specified C-band wavelength through the ports residing on the 32WSS, 40-WSS-C, 40-WSS-CE, 32DMX, 40-DMX-C, 40-DMX-CE, 40-SMR1-C, 40-SMR2-C, 80-WXC-C, 15216-MD-40-EVEN, and 15216-MD-40-ODD wavelength selective switches, multiplexers, demultiplexers, and add/drop cards.

Note You cannot create an OCHNC DCN circuit from Prime Optical. You must use CTC to create OCHNC DCN circuits.

Step 1 Select a node for which to create a circuit, and open the Create Circuit wizard. For an explanation of wizard launch points, see Table 7-4 on page 7-12.

Step 2 In the Type pane, choose **OCHNC**. The circuit type determines the provisioning options that are displayed.

Step 3 Check the Generalized Multiprotocol Label Switching (GMPLS) check box (only if you require GMPLS provisioning) and click **Next**.

Step 4 In the Attributes pane, enter the following information; then, click **Next**:

- Name—Enter a unique name for the new circuit. The circuit name is a free-format string of up to 48 ASCII characters. If you leave the field blank, Prime Optical assigns a default name to the circuit.

Note This field is mandatory if the GMPLS check box (for OCHxx circuits only) is checked.

- Circuit Alias—Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a circuit description of up to 256 characters.
- Size—*Display only*. Displays Equipment Not Specific.
- OCHNC Wavelength—Choose the OCHNC wavelength that you want to provision. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected.
- Channel Group—Choose the channel group that you want to provision.
- Use OCHNC Direction—Choose whether or not to specify the OCHNC direction. Select the check box to allow you to specify the circuit direction (for NEs up to and including R6.0) in the OCHNC Direction drop-down list. If the check box is unchecked (for R7.0 NEs and later releases), the OCHNC Direction drop-down list is disabled.
- OCHNC Direction—Choose whether the OCHNC direction is east-to-west to west-to-east.
- Bidirectional—Check this check box to create a bidirectional OCHNC, or uncheck it to create a unidirectional OCHNC. Bidirectional circuits have been supported since CTM R5.0.
- State—Specify the circuit state.
- Protection—Check to create a protected OCHNC. There are two possible scenarios, depending on whether the GMPLS check box is unchecked or checked.
  - When the GMPLS check box is *unchecked*:

    Protected—Check this check box to select source/destination ports from protected cards only (TXPP/MXPP).
  - When the GMPLS check box is *checked*:

    GMPLS Protection Type—Set the protection type. Values are:

    – Not Defined—For unprotected services.

    – PSM—When a PSM card is connected to a TXP card.

    Optical Validation—Set the validation mode:

    – Validation—Set the validation mode. See Table 7-7 for a listing of validation modes.

    – Required—Set the optical validation threshold value for the GMPLS circuit for the working path. The circuit is created if the actual optical validation result is greater than or equal to the value set in this field. See Table 7-8 for a listing of validation threshold values.

    – Required (protect)—Set the optical validation threshold value for the protected GMPLS circuit for the protected path.

Table 7-7 Validation Modes

Validation Mode	Description
Full	The circuit is created when the circuit validation result is greater than or equal to the acceptance threshold value.
None	The circuit is created without considering the acceptance threshold value. The Opt Valid column in the Circuits tab displays the value “No Valid.”

The GMPLS control plane validates the optical feasibility of an OCH circuit to ensure that the circuit is operational after provisioning. Optical feasibility is determined based on optical impairments. Table 7-8 describes the validation thresholds.

Table 7-8 Validation Thresholds

Color	Description
Green	Indicates that the channel failure risk is 0%.
Yellow	Indicates that the channel failure risk is between 0% and 16%.
Orange	Indicates that the channel failure risk is between 16% and 50%.
Red	Indicates that the channel failure risk is greater that 50%.

- (Optional) Restoration Configuration—Defines the restoration and revertive parameters required for creating a GMPLS circuit (OCHNC and OCH Trail). See 7.2.27 Restoration of GMPLS Circuits.
  - Restoration Balloon icon—Displays the most relevant current restoration value. See 7.2.27.1 Restoration Balloon Icon for more information.
  - Open GMPLS Restore/Revert Dialog button—When clicked, the Restoration Pop Up Dialog box opens. See 7.2.27.2 Restoration Configuration Pane for more information.
- Customer ID (optional)—Identify the end user of the circuit.
- Service ID (optional)—Enter the service ID of the circuit.

Note The remaining fields in the Attributes pane are unavailable.

Step 5 In the Source pane, set the circuit source (shelf, slot, or port; shelf only in the case of NEs configured as multishelf); then, click **Next**.

When you select OCHNC as the circuit type, you can also select a local drop endpoint along with the circuit source when the OCHNC is bidirectional.

Note
- If the Use OCHNC Direction check box was unchecked (for R7.0 NEs and later) in Step 4, you must select a shelf, slot, and port. If the Use OCHNC Direction check box was checked (for R6.0 NEs and earlier), you need only select the source NE.
- The OCHNC circuit endpoints must be selected on channel ports, express add/drop ports, or add/drop ports. If other ports are selected, a warning is displayed, prompting you to change the circuit type.

The Circuit Wizard can manage the alien wavelength for the source and destination panels. After the ports are selected, if the GMPLS check box is checked, the Alien Wavelength Selection pane is displayed, showing options for the RX and TX channels at the endpoints of the circuit.

To add an alien wavelength to the circuit wizard in the Alien Wavelength Selection pane:

a. From the Alien Wavelength drop-down list, choose Alien Wavelength.

b. From the FEC drop-down list, choose the Forward Error Correction (FEC) mode.

c. Click **Add** to add the alien wavelength for both the RX and TX channels. See 7.12.15 Creating Alien Wavelength and 7.12.16 Editing Alien Wavelength for more information.

   The alien wavelength is added and displayed in the circuit wizard.

d. Click **Apply** in the Alien Wavelength Selection pane to save the settings.

Note The Alien Wavelength is applicable only for OCHNC services. An OCHNC GMPLS service can be provisioned only if the corresponding alien wavelength has been configured.

Step 6 For R6.0 NEs and earlier, click **Finish**. For R7.0 NEs and later, proceed to Step 7.

Step 7 In the Destination pane, enter the circuit destination information; then, click **Next**.

When you select OCHNC as the circuit type, you can also select a local source endpoint along with the circuit destination when the circuit is bidirectional.

Note In the Routing Preferences pane, some check boxes are checked and cannot be unchecked.

Step 8 In the Routing Preferences pane, the Route Automatically check box is checked by default. You can finish circuit creation at this point by clicking **Finish**. Alternatively, you can do the following; then, click **Next**:

a. Using Required Nodes/Links—Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:
   - Graphical
   - Graphical Enhanced
   - Textual

b. Review Route Before Creation—Check this check box to review the route before it is created. You can review the route using one of the following views:
   - Graphical
   - Graphical Enhanced

Step 9 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the network is displayed, including source and destination nodes. You can add route constraints in this pane. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:
   - Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
   - Group—Allows you to view the group(s) to which the NEs belong.

   The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

   In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node in the route. The node appears in the Included Nodes list.

e. Click **Exclude** to exclude the selected node from the route. The node appears in the Excluded Nodes list.

f. Click **Remove** to remove the selected node from the Included Nodes or Excluded Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. (Optional) Select an NE from the Included Nodes list and click **Side**. Specify the in/out sides to be included in the route and click **OK**.

i. Repeat substeps c to h for each node or link that you want to include in the circuit route.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, proceed to Step 11.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 10 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, proceed to Step 11.

Step 11 Click **Next**. The routing for the OCHNC circuit is calculated.

Step 12 In the Review Route pane, review the following information; then, click **Finish**:

a. In the circuit display, review the ID of the source and destination NEs.

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all of the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

Step 13 In the message box, click **OK**.

After the circuit status has been verified, the DISCOVERED status appears in the Status column of the circuit table.

Caution It takes several seconds to create a circuit. During that interval, if a new circuit is added with the same name, both circuits might be identified as duplicates. Therefore, be careful not to add a duplicate circuit during the creation of the first circuit.

7.2.3.8 Creating a DWDM OCHCC—ONS 15454 MSTP

Prime Optical allows you to create OCHCC circuits between two ONS 15454 MSTP NEs. OCHCC increases ONS 15454 MSTP platform functionalities, allowing you to create a new end-to-end circuit layer with transponder/muxponder client ports or ITU-T line card trunk ports as endpoints.

OCHCC can be created in a peer-to-peer setup, where the trunk ports are directly connected by a routable virtual link, or in an MSTP setup, where the circuit is routed through a tunnel circuit, which is created between the trunk ports (OCH trail tunnel), and which contains an OCHNC-type circuit.

Step 1 Select the source and destination nodes for which to create a circuit and open the Create Circuit wizard. For an explanation of wizard launch points, see Table 7-4 on page 7-12.

Step 2 In the Type pane, choose **OCHCC**. The circuit type determines the provisioning options that are displayed.

Step 3 If you require GMPLS provisioning, check the GMPLS check box; then, click **Next**.

Step 4 In the Attributes pane, enter the following information; then, click **Next**:

- Name—Enter a unique name for the new circuit. The circuit name is a free-format string of up to 48 ASCII characters. If you leave the field blank, Prime Optical assigns a default name to the circuit.

Note This field is mandatory if the GMPLS check box (for OCHxx circuits only) is checked.

- Circuit Alias—Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a circuit description of up to 256 characters.
- Type—*Display only.* Displays the circuit type.
- Size Group—Choose the type of interface that you want to provision. Size Group and Size are used together to select the circuit size. (Because there are many possible sizes, they have been grouped.)
- Size—Choose the layer rate.
- OCHCC Wavelength—Choose the OCHCC wavelength that you want to provision.
- Channel Group—Choose the channel group that you want to provision.
- Bidirectional—*Display only.* OCHCC circuits are always bidirectional.
- State—Specify the circuit state.
- Apply to source/destination ports, if allowed—Check this check box to apply the status value indicated for the circuit to the client/trunk ports that are involved in the circuit.
- Protection—Check to create a protected OCHCC. There are two possible scenarios, depending on whether the GMPLS check box is unchecked or checked.
  - When the GMPLS check box is *unchecked*:

Protected—Check this check box to select source/destination ports from protected cards only (TXPP/MXPP).

- When GMPLS check box is *checked*:

  GMPLS Protection Type—Set the protection type. Values are:

  – Not Defined—For unprotected services.

  – PSM—When a PSM card is connected to a TXP card.

  – Y CABLE—The circuit is protected by a transponder or muxponder card in a Y-cable protection group.

  – SPLITTER—When a MXPP/TXPP card is used. The circuit source and destination are on MXPP_MR_2.5G and TXPP_MR_2.5G cards. These cards provides splitter (line-level) protection (trunk protection typically on TXPP or MXPP transponder cards).

- **Optical Validation**—Set the validation mode.

  – Validation—Set the validation mode. See Table 7-7 for a listing of validation modes.

  – Required—Set the optical validation threshold value for the GMPLS circuit for the working path. The circuit is created if the actual optical validation result is greater than or equal to the value set in this field. See Table 7-8 for a listing of validation thresholds.

  – Required (protect)—Set the optical validation threshold value for the protected GMPLS circuit for the protected path.

- Restoration Configuration—Defines the restoration and revertive parameters required for creating a GMPLS circuit (OCHNC and OCH Trail). See 7.2.27 Restoration of GMPLS Circuits.
  - Restoration Balloon icon—Displays the most relevant current restoration value. See 7.2.27.1 Restoration Balloon Icon for more information.
  - Open GMPLS Restore/Revert Dialog button—When clicked the Restoration Pop Up Dialog box opens. See 7.2.27.2 Restoration Configuration Pane.
- Customer ID (optional)—Identify the end user of the circuit.
- Service ID (optional)—Enter the service ID of the circuit.

Step 5 In the Source pane, select the circuit source (shelf, slot, card, and port; shelf applies to multishelf NEs). Then, click **Next**.

Step 6 In the Destination pane, enter the circuit destination information; then, click **Next**.

Note Circuit creation will fail if the source or destination endpoints are in Unmanaged state. Circuit creation is not allowed between NEs in Out of Service or Unmanaged states.

Step 7 In the OCHxx Options pane, specify the following attributes for the trunk ports that are involved in the circuit; then, click **Next**:

- G.709 OTN—Disables or enables the G.709 OTN feature.
- FEC—Disables or enables forward error correction. G.709 OTN must be enabled before you can enable FEC.
- SD BER—Sets the signal degrade bit error rate.
- Mapping—The card can perform multiplexing per ITU-T G.709. The ODUk (client SONET/SDH payload) can be mapped to the optical channel (OTUk) either asynchronously (asynch mapping) or synchronously (synch mapping) with this setting.
- OTU Mapping—Sets the client payload mapping to the trunk.

- Revert/Reversion Time—Only for protected circuits (splitter-type protection).

If GMPLS check box is checked and if Y-cable is chosen as the protection type, the circuit wizard creates both the working and the protected paths in a single operation.

After a port is selected in the map as the source or destination endpoint, the Working Port Parameters pane, or Protected Port Parameters pane, or both are displayed depending on whether the selected ports are on the working or protect path. The working and protect port parameters on the source and destination endpoints must match with each other. Otherwise, the mismatched parameters are displayed in red in the port parameters pane. If feasible, align the parameters by using the various drop-down lists available in this pane.

Define the working or protect port parameters. Click **Apply** in the Working Port Parameters pane and Protected Port Parameters pane, to apply the settings.

Step 8 In the Routing Preferences pane, the Route Automatically check box is checked by default. You can finish circuit creation at this point by clicking **Finish**. Alternatively, you can do the following; then, click **Next**:

a. Using Required Nodes/Links—Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Review Route Before Creation—Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical
- Graphical Enhanced

Step 9 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the network is displayed, including source and destination nodes. You can add route constraints in this pane. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node in the route. The node appears in the Included Nodes list.

e. Click **Exclude** to exclude the selected node from the route. The node appears in the Excluded Nodes list.

f. Click **Remove** to remove the selected node from the Included Nodes or Excluded Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. (Optional) Select an NE from the Included Nodes list and click **Side**. Specify the in/out sides to be included in the route and click **OK**.

i. (Optional) Click the **Protected** tab. Repeat substeps d through h. This allows you to provide different constraints for both working and protected paths.

j. Repeat substeps c to i for each node or link that you want to include in the circuit route.

k. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, proceed to Step 11.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 10 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, proceed to Step 11.

Step 11 Click **Next**. The routing for the OCHCC circuit is calculated.

Step 12 The Review Route pane displays the selected route. Click **Finish** to create the circuit, **Back** to return to the Route Constraints pane, or **Cancel** to cancel the circuit creation.

If the circuit is being created for an AR_MXP, AR_XPE or AR_XP card with MXP_MR (low or high rate) or MXPP_MR (low or high rate) operating mode, select the ODU1/ODU0 and the respective time slot within the selected ODU1. Table 7-9 describes the bandwidth utilization for the selected payload.

Note You cannot select the ODU1 or the time slot parameters for any other cards or card modes.

Table 7-9 Bandwidth Utilization for the Selected Payload

Payload	Number of ODU1s Required	Number of Timeslot Required/ODU1
OC3 FE	1	1
OC12	1	4
OC48	1	16
FC2 ISC3-2G	1	14
ESCON	1	2
GE FC1 ISC3-1G	1	7
FC4G	2	16

Click **Finish**. The OCHCC and its OCH trail appear in the Circuits page. After the circuit status has been verified, the DISCOVERED status appears in the Status column.

Step 13 In the message box, click **OK**. You can view the OCHCC circuit information in the Circuit table. See 7.2.2 Viewing the Circuit Table, page 7-4. After the circuit status has been verified, the DISCOVERED status appears in the Status column of the circuit table. For a graphical representation of the circuit, view the circuit trace. See 7.2.20 Tracing Circuits, page 7-159.

Caution It takes several seconds to create a circuit. During that interval, if a new circuit is added with the same name, both circuits might be identified as duplicates. Therefore, be careful not to add a duplicate circuit during the creation of the first circuit.

7.2.3.9 Creating a DWDM OCH Trail Circuit—ONS 15454 MSTP

Prime Optical allows you to create independent OCH trail circuits between two ONS 15454 MSTP NEs. For transponder and muxponder cards, OCH trail circuits are created automatically when an OCHCC is created. You can create independent OCH trail circuits for the following cards:

- ADM-10G
- Protection Switch Module (PSM)
- XP_10GE, XP_GE (when configured as an L2 switch)
- CRS-1, and CRS-3 routers

For OCH trails connecting ADM-10G cards, the OCH trail provides the low-layer path to route STS or VC circuits over ADM-10G cards.

For OCH trails connecting GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards in L2-over-DWDM mode, the OCH trail provides the links associated to the SVLAN entities.

For OCH trails connecting CRS-1, and CRS-3 routers, the OCH trail provides end-to-end circuit connectivity between the CRS-1, and CRS-3 routers passing through an MSTP network.

Complete the following steps to create a DWDM OCH trail circuit:

Step 1 Select a node for which to create a circuit, and open the Create Circuit wizard. For an explanation of wizard launch points, see Table 7-4 on page 7-12.

Step 2 In the Type pane, choose **OCHTRAIL**. The circuit type determines the provisioning options that are displayed.

Step 3 If you require GMPLS provisioning, check the GMPLS check box; then, click **Next**.

Step 4 In the Attributes pane, enter the following information; then, click **Next**:

- Name—Enter a unique name for the new circuit. The circuit name is a free-format string of up to 48 ASCII characters. If you leave the field blank, Prime Optical assigns a default name to the circuit.

Note This field is mandatory if the GMPLS check box (for OCHxx circuits only) is checked.

- Circuit Alias—Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a circuit description of up to 256 characters.
- Type—*Display only.*
- Size—*Display only.*
- OCHCC Wavelength—Choose the wavelength that you want to provision.
- Channel Group—Choose the channel group that you want to provision.
- Bidirectional—*Display only.* OCHCC circuits are always bidirectional.
- State—Specify the circuit state.
- Apply to source/destination ports, if allowed—Check this check box to apply the status value indicated for the circuit to the trunk ports that are involved in the circuit.
- Protection—Displayed only when the GMPLS check box is checked.
  - GMPLS Protection Type—Choose the protection type. Value is Not Defined.
  - Optical Validation—Set the validation mode.
    a. Validation—Choose the validation mode. The validation modes are listed in Table 7-7.
    b. Required—Set the optical validation threshold value for the GMPLS circuit for the working path. The circuit is created if the actual optical validation result is greater than or equal to the value set in this field. The Validation Threshold values are listed in Table 7-8.
- Restoration Configuration—Defines the restoration and revertive parameters required for creating a GMPLS circuit (OCHNC and OCH Trail). See 7.2.27 Restoration of GMPLS Circuits.
  - Restoration Balloon icon—Displays the most relevant current restoration value. See 7.2.27.1 Restoration Balloon Icon for more information.
  - Open GMPLS Restore/Revert Dialog button—When clicked, the Restoration Pop Up Dialog box opens. See 7.2.27.2 Restoration Configuration Pane for more information.
- Customer ID (optional)—Identify the end user of the circuit.
- Service ID (optional)—Enter the service ID of the circuit.

Step 5 In the Source pane, select the circuit source (shelf, slot, card, and port; shelf applies to multishelf NEs). Then, click **Next**.

Step 6 In the Destination pane, enter the circuit destination information; then, click **Next**.

Step 7 In the OCHxx Options pane, specify the following attributes for the trunk ports that are involved in the circuit; then, click **Next**.

- G.709 OTN—Disables or enables the G.709 OTN feature.
- FEC—Disables or enables forward error correction. G.709 OTN must be enabled before you can enable FEC.
- SD BER—Sets the signal degrade bit error rate.
- Mapping—The card can perform multiplexing per ITU-T G.709. The ODUk (client SONET/SDH payload) can be mapped to the optical channel (OTUk) either asynchronously (asynch mapping) or synchronously (synch mapping) with this setting.

Step 8 In the Routing Preferences pane, the Route Automatically check box is checked by default. You can finish circuit creation at this point by clicking **Finish**. Alternatively, you can do the following; then, click **Next**:

a. Using Required Nodes/Links—Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Review Route Before Creation—Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical
- Graphical Enhanced

Step 9 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the network is displayed, including source and destination nodes. You can add route constraints in this pane. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node in the route. The node appears in the Included Nodes list.

e. Click **Exclude** to exclude the selected node from the route. The node appears in the Excluded Nodes list.

f. Click **Remove** to remove the selected node from the Included Nodes or Excluded Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. (Optional) Select an NE from the Included Nodes list and click **Side**. Specify the in/out sides to be included in the route and click **OK**.

i. Repeat substeps c to h for each node or link that you want to include in the circuit route.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, proceed to Step 11.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 10 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, proceed to Step 11.

Step 11 Click **Next**.

Step 12 The Review Route pane displays the selected route. Click **Finish** to create the circuit, **Back** to return to the Route Constraints pane, or **Cancel** to cancel the circuit creation.

Step 13 In the message box, click **OK**. You can view the OCH trail circuit information in the Circuit table. See 7.2.2 Viewing the Circuit Table, page 7-4. After the circuit status has been verified, the DISCOVERED status appears in the Status column of the circuit table. For a graphical representation of the circuit, view the circuit trace. See 7.2.20 Tracing Circuits, page 7-159.

Caution It takes several seconds to create a circuit. During that interval, if a new circuit is added with the same name, both circuits might be identified as duplicates. Therefore, be careful not to add a duplicate circuit during the creation of the first circuit.

7.2.3.10 Creating a Monitor Circuit—CTC-Based NEs

Use the Create Monitor Circuit wizard to create a new monitor circuit on CTC-based NEs.

Note A monitor circuit's alias is based on the alias of the original circuit. Prime Optical does not generate unique numbers; therefore, two monitor circuits created on the same circuit have the same alias, while their names are different (including two unique numbers appended in the network).

Step 1 Select the CTC-based NE where you want to create a monitor circuit and open the Circuit table. For an explanation of Circuit table launch points, see Table 7-2 on page 7-4.

Step 2 In the Circuit table, select the bidirectional circuit to be monitored.

Step 3 Choose **Configuration > Modify Circuit** (or click the **Modify** tool). The Modify Circuit dialog box opens.

Step 4 In the Modify Circuit dialog box, click the **Monitor** tab. The Monitor tab displays the ports that can be used to monitor the circuit selected in Step 2.

Step 5 In the Monitor tab, select the monitor source and click **Create Monitors**. The Create Monitor Circuit wizard opens.

Step 6 In the Create Monitor Circuit wizard, enter the following monitor circuit information; then, click **Next**:

- Name—Enter the monitor circuit name.
- Circuit Alias—Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
- State—Specify the circuit state. Options vary depending on the type of circuit selected.

Step 7 In the Source pane, choose the source node, slot, port, STS, VT, or DS-1 for the monitored circuit; then, click **Next**.

Step 8 In the Destination pane, choose the destination node, slot, port, STS, VT, or DS-1 for the monitored circuit; then, click **Next**.

Step 9 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical
- Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Set the circuit path protection as follows:

- To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and proceed to the next substep. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.
- To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 10.
- To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 10.

f. If you selected **Fully Protected Path**, choose one of the following options:

- Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.
- Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
- Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.
- Dual Ring Interconnect—Provisions the circuit in a DRI topology. If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

Step 10 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical radio button is selected), do the following; then, click **Next**:

a. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.

- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

b. In the VCAT Member Number list box, select the member for which the route is to be selected.

c. In the circuit display, select the span to use for the next hop.

d. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

e. Click **Add**. The span is added to the Selected Spans list.

f. Repeat substeps b to d for each intermediate NE until the destination NE is reached.

g. Repeat substeps a to e for each member until all members are routed.

h. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

i. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Step 11 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 12 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

b. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

c. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

d. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

e. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

f. Repeat substeps a to e for each node or link that you want to include in the circuit route.

g. (Optional) Repeat substeps a to f for each intermediate NE until the destination NE is reached.

h. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 13 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to g for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 14 In the Review Route pane (available only if Review Route Before Creation is checked), review the following information; then, click **Finish**:

a. In the circuit display, review the ID of the source and destination NEs.

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

Step 15 In the message box, click **OK**.

Step 16 In the confirmation dialog box, click **OK**.

Step 17 In the Modify Circuit dialog box, click **Close**. The new monitor circuit is displayed in the Circuit table.

7.2.3.11 Creating a Unidirectional Drop Circuit—CTC-Based NEs

Use the Create Drop wizard to create a new protected or unprotected unidirectional circuit drop. A circuit drop can also be created on bidirectional Ethernet circuits. For all other types of circuits, drop creation is possible only on unidirectional circuits.

Step 1 Select the CTC-based NE where you want to create a new unidirectional circuit drop and open the Circuit table. For an explanation of Circuit table launch points, see Table 7-2 on page 7-4.

Step 2 In the Circuit table, select the unidirectional circuit where you want to create the drop.

Step 3 Choose **Configuration > Modify Circuit** (or click the **Modify** tool). The Modify Circuit dialog box opens.

Step 4 In the Modify Circuit dialog box, click the **Drops** tab, which displays the existing drops on the selected circuit.

Step 5 In the Drops tab, click **Create**. The Create Drop wizard opens.

Step 6 In the Create Drop wizard, fill in the following fields; then, click **Next**.

Note Fields shown depend on the type and size of the selected circuit.

- NE ID—Select the NE ID.
- Slot—Specify the drop slot.
- Port—Specify the drop port.
- STS—(For SONET circuits) Specify the drop STS.
- VT—(For SONET circuits) Specify the drop VT.
- DS1—(For SONET circuits) Specify the drop DS-1.
- VC4—(For SDH circuits) Specify the drop VC4.
- VC3—(For SDH circuits) Specify the drop VC3.
- VC11—(For SDH circuits) Specify the drop VC11.
- VC12—(For SDH circuits) Specify the drop VC12.
- TUG3—(For SDH circuits) Specify the drop TUG3.
- TUG2—(For SDH circuits) Specify the drop TUG2.
- Target Circuit State—Select an administrative state for the new circuit drop. SONET and SDH circuits have different values. For SONET circuits, values are:
  - IS
  - OOS DSBLD

  - IS AINS
  - OOS MT

  For SDH circuits, values are:

  - Unlocked
  - Locked, disabled
  - Unlocked, automaticInService
  - Locked, maintenance

- Apply to drop ports—Check this check box to apply the selected state to the drop port.

Step 7 (For protected unidirectional circuits) In the Routing Preferences pane, specify the routing and protection preferences for the new drop.

The Routing Preferences pane in the Create Drop wizard is similar to the Routing Preferences pane in the Create Circuit wizard, except that for a drop, the Fully Protected Path check box is unchecked (disabled) for Ethernet circuits and unchecked (enabled) for all other circuits. You can check or uncheck the Fully Protected Path check box. If the existing circuit is protected and during drop creation you check or uncheck the Fully Protected Path check box, an error message is returned after you click Next. You must change the protection option if the error message indicates that all drops must have the same protection.

Subsequent panes in the Create Drop wizard are identical to the panes in the Create Circuit wizard (see Table 7-6 on page 7-14).

Step 8 Click **Finish**.

Step 9 In the message box, click **OK**.

Step 10 In the Modify Circuit dialog box, click **Close**.

7.2.3.12 Creating G1000-4 Circuits

This section explains how to provision G1000-4 point-to-point circuits and Ethernet manual cross-connects. Ethernet manual cross-connects allow you to cross-connect individual Ethernet circuits to an STS channel on the ONS 15454 SONET or ONS 15454 SDH optical interface and to bridge non-ONS SONET network segments.

7.2.3.12.1 G1000-4 Point-to-Point Ethernet Circuits

G1000-4 cards support point-to-point circuit configuration. Provisionable circuit sizes are STS-1, STS-3c, STS-6c, STS-9c, STS-12c, STS-24c, and STS-48c. Each Ethernet port maps to a unique STS circuit on the SONET side of the G1000-4.

The G1000-4 card supports any combination of up to four circuits from the list of valid circuit sizes; however, the circuit sizes can add up to no more than 48 STSs. Due to hardware constraints, the initial release of the G1000-4 card (software release 3.2) imposes additional restrictions on the combinations of circuits that can be dropped onto a G1000-4 card. These restrictions are transparently enforced by the ONS 15454 SONET and ONS 15454 SDH, so there is no need to keep track of restricted circuit combinations.

- The restriction occurs when a single STS-24c is dropped on a card. In this instance, the remaining circuits on that card can be another single STS-24c or any combination of circuits of STS-12c size or smaller that add up to no more than 12 STSs (that is, a total of 36 STSs on the card).
- No circuit restrictions are present if STS-24c circuits are not being dropped on the card. The full 48 STSs of bandwidth can be used (for example, a single STS-48c circuit or 4 STS-12c circuits).
- Since the restrictions apply only when STS-24c circuits are involved but do not apply when two STS-24c circuits are on the same card, the impact of these restrictions can be easily minimized. Group the STS-24c circuits together on a card separate from circuits of other sizes. The grouped circuits can be dropped onto other G1000-4 cards on the ONS 15454 SONET or ONS 15454 SDH. The G1000-4 uses STS cross-connects only. No VT-level cross-connects are used. All SONET-side STS circuits must be contiguous.

Caution G1000-4 circuits connect with OC-N cards or other G1000-4 cards. G1000-4 cards do not connect with E-series Ethernet cards.

Caution The G1000-4 card requires the XC10G card to operate. The G1000-4 card is not compatible with XC or XCVT cards.

Complete the following steps to create G1000-4 point-to-point Ethernet circuits:

Step 1 In the Domain Explorer, select the ONS 15454 SONET or ONS 15454 SDH NE to use as one of the Ethernet circuit endpoints.

Step 2 Do the following in the Domain Explorer:

a. Select the source circuit.

b. Choose **Configuration > Create Circuit**.

c. Select the destination circuit. The Create Circuit wizard opens.

Step 3 From the Type field, choose **STS**; then, click **Next**. The Attributes pane opens.

Note The VT and VT Tunnel types do not apply to Ethernet circuits.

Step 4 In the Name field, enter a name for the circuit.

Step 5 In the Circuit Alias field, enter a unique alias name for the circuit. The alias name can contain alphanumeric characters. International character sets are also supported.

Step 6 From the Size field, choose the size of the circuit. The valid circuit sizes for a G1000-4 circuit are STS-1, STS-3c, STS-6c, STS-9c, STS-12c, STS-24c, and STS-48c.

Step 7 Verify that the **Bidirectional** check box is checked.

Note The states of the Number of Circuits check box and the Protected Drops check box are provided.

Caution If provisioning a G1000-4 circuit on a UPSR, do not check the Switch on PDI-P check box. Checking the Switch on PDI-P check box might cause unnecessary UPSR protection switches.

Step 8 (Optional) Specify the customer information:

- Customer ID
- Service ID

Step 9 Click **Next**.

Step 10 In the Source pane, choose the circuit source node. Either end node can be the circuit source.

Step 11 From the Slot field, choose the slot containing the G1000-4 card to use as one end of the point-to-point circuit.

Step 12 In the Port field, choose a port.

Step 13 Click **Next**.

Step 14 In the Destination pane, choose the circuit destination node.

Step 15 In the Slot field, choose the slot containing the G1000-4 card to use as the other end of the point-to-point circuit.

Step 16 From the Port field, choose a port.

Step 17 Click **Next**. The Routing Preferences pane opens.

Step 18 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical
- Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Set the circuit path protection as follows:

- To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and proceed to the next substep. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.
- To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 19.
- To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 19.

f. If you selected **Fully Protected Path**, choose one of the following options:

- Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.
- Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
- Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.
- Dual Ring Interconnect—Provisions the circuit in a DRI topology. If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

Step 19 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 20 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 21 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 22 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 23 In the Review Route pane (available only if Review Route Before Creation is checked), review the following information; then, click **Finish**:

a. In the circuit display, verify the following information about the point-to-point circuit:

- Circuit name
- Circuit type
- Circuit size
- ONS 15454 SONET or ONS 15454 SDH nodes are included in the circuit

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

Step 24 In the message box, click **OK**.

Step 25 To change the slot property information for the Ethernet card, see C.4.16 Slot Properties—G1000-4, page C-906.

Note To change the capacity of a G1000-4 point-to-point circuit, delete the original circuit and reprovision a new, larger circuit.

7.2.3.12.2 G1000-4 Manual Cross-Connects

ONS 15454 SONET and ONS 15454 SDH NEs require end-to-end CTC visibility between nodes for normal provisioning of Ethernet circuits. When equipment from other vendors is placed between the ONS 15454 SONET and ONS 15454 SDH, equipment based on Open System Interconnection/Target Identifier Address Resolution Protocol (OSI/TARP) does not allow tunneling of the ONS 15454 SONET or ONS 15454 SDH TCP/IP-based data communications channel (DCC). To circumvent a lack of continuous DCC, the Ethernet circuit must be manually cross-connected to an STS channel riding through the non-ONS network. This allows an Ethernet circuit to run from ONS node to ONS node while utilizing the non-ONS network.

Note In this topic, cross-connect and circuit have the following meanings: *Cross-connect* refers to the connections that occur within a single ONS 15454 SONET or ONS 15454 SDH to allow a circuit to enter and exit an ONS 15454 SONET or ONS 15454 SDH. *Circuit* refers to the series of connections from a traffic source (where traffic enters the ONS 15454 SONET or ONS 15454 SDH network) to the drop or destination (where traffic exits an ONS 15454 SONET or ONS 15454 SDH network).

Step 1 In the Domain Explorer, select the ONS 15454 SONET and ONS 15454 SDH Ethernet circuit endpoint nodes.

Step 2 Do the following in the Domain Explorer:

a. Select the source circuit.

b. Choose **Configuration > Create Circuit**.

c. Select the destination circuit. The Create Circuit wizard opens.

Step 3 From the Type field, choose **STS**; then, click **Next**. The Attributes pane opens.

Note The VT and VT Tunnel types do not apply to Ethernet circuits.

Step 4 In the Name field, enter a name for the circuit.

Step 5 In the Circuit Alias field, enter a unique alias name for the circuit. The alias name can contain alphanumeric characters. International character sets are also supported.

Step 6 From the Size field, choose the size of the circuit. The valid circuit sizes for a G1000-4 circuit are STS-1, STS-3c, STS-6c, STS-9c, STS-12c, STS-24c, and STS-48c.

Step 7 Verify that the **Bidirectional** check box is checked.

Step 8 (Optional) Specify the customer information:

- Customer ID
- Service ID

Step 9 Click **Next**.

Step 10 In the Source pane, choose the circuit source node.

Step 11 From the Slot field, choose the slot containing the Ethernet card.

Step 12 From the Port field, choose a port.

Step 13 Click **Next**.

Step 14 In the Destination pane, choose the current node as the circuit destination.

Step 15 From the Slot field, choose the optical card that will carry the circuit.

Step 16 Choose the STS that will carry the circuit from the STS field; then, click **Next**. The Routing Preferences pane opens.

Note For Ethernet manual cross-connects, the same ONS 15454 SONET or ONS 15454 SDH serves as both source and destination.

Step 17 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:
   - Graphical
   - Graphical Enhanced
   - Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:
   - Graphical
   - Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Set the circuit path protection as follows:
   - To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and proceed to the next substep. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.
   - To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 18.
   - To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 18.

f. If you selected **Fully Protected Path**, choose one of the following options:
   - Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.
   - Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
   - Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.
   - Dual Ring Interconnect—Provisions the circuit in a DRI topology. If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

Step 18 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 19 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 20 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Right-click the line, and click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Right-click the line, and click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 21 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Right-click the line, and click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Right-click the line, and click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 22 In the Review Route pane (available only if Review Route Before Creation is checked), review the following information; then, click **Finish**:

a. In the circuit display, verify the following information about the point-to-point circuit:

- Circuit name
- Circuit type
- Circuit size
- ONS 15454 SONET or ONS 15454 SDH nodes are included in the circuit

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

Step 23 In the message box, click **OK**.

Step 24 Provision the Ethernet ports. For port provisioning instructions, see 6.5.1 Provisioning E-Series Ethernet Ports for VLAN Membership, page 6-8.

Step 25 To complete the procedure, repeat Steps 1 to 23 for the second ONS 15454 SONET or ONS 15454 SDH.

Note The appropriate STS circuit must exist in the non-ONS 15454 SONET or non-ONS 15454 SDH equipment to connect the two STSs from the ONS 15454 SONET or ONS 15454 SDH Ethernet manual cross-connect endpoints.

Caution If a CARLOSS alarm repeatedly appears and clears on an Ethernet manual cross-connect, the two Ethernet circuits might have a circuit-size mismatch. For example, a circuit size of STS-3c might have been configured on the first ONS 15454 SONET or ONS 15454 SDH, and a circuit size of STS-12c might have been configured on the second ONS 15454 SONET or ONS 15454 SDH. To troubleshoot the cause of the CARLOSS alarm, see the "Alarm Troubleshooting" chapter of the *Cisco ONS 15454 Troubleshooting Guide* or *Cisco ONS 15454 SDH Troubleshooting Guide*.

7.2.3.13 Creating E-Series Circuits

Ethernet circuits can link ONS nodes through point-to-point, shared packet ring, or hub-and-spoke configurations. Two nodes usually connect with a point-to-point configuration. More than two nodes usually connect with a shared packet ring configuration or a hub-and-spoke configuration. This section includes procedures for creating these configurations and also explains how to create Ethernet manual cross-connects. Ethernet manual cross-connects allow you to cross-connect individual Ethernet circuits to an STS channel on the ONS 15454 SONET or ONS 15454 SDH optical interface and also to bridge non-ONS SONET network segments.

Note Before creating Ethernet connections, choose an STS-1, STS-3c, STS-6c, or STS-12c circuit size.

Note When creating an STS-12c Ethernet circuit, Ethernet cards must be configured as single-card EtherSwitch. Multicard mode does not support STS-12c Ethernet circuits.

7.2.3.13.1 Provisioning E-Series EtherSwitch Point-to-Point Ethernet Circuits (Multicard, Single-Card, or Port-Mapped)

The ONS 15327, ONS 15454 SONET, and ONS 15454 SDH can set up a point-to-point (straight) Ethernet circuit as single-card or multicard. Multicard EtherSwitch is limited to STS-6c of bandwidth between two Ethernet circuit points, but allows you to add nodes and cards and create a shared packet ring. Single-card EtherSwitch allows a full STS-12c of bandwidth between two Ethernet circuit points.

Step 1 Select an ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NE and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the ONS 15327, ONS 15454 SONET, or ONS 15454 SDH Ethernet circuit endpoint nodes.

Step 3 Click the **Identification** tab.

Step 4 If you are building a multicard EtherSwitch point-to-point circuit:

a. In the Card Mode field, choose **Multicard EtherSwitch Group**.

b. In the message box, click **OK**.

c. Repeat Step 2 to Step 4 for each Ethernet card in the ONS 15327, ONS 15454 SONET, or ONS 15454 SDH that will carry the circuit.

Step 5 If you are building a single-card EtherSwitch circuit:

a. In the Card Mode field, choose **Single-card EtherSwitch**.

b. In the message box, click **OK**.

Step 6 If you are building a port mapped circuit:

a. In the Card Mode field, choose **Port Mapped**.

b. In the message box, click **OK**.

Step 7 Navigate to the other ONS 15327, ONS 15454 SONET, or ONS 15454 SDH Ethernet circuit endpoint.

Step 8 Repeat Step 1 to Step 7 for the other ONS 15327, ONS 15454 SONET, or ONS 15454 SDH Ethernet circuit endpoint.

Step 9 Do the following in the Domain Explorer:

a. Select the source circuit.

b. Choose **Configuration > Create Circuit**.

c. Select the destination circuit. The Create Circuit wizard opens.

Step 10 In the Type field, choose **STS**; then, click **Next**. The Attributes pane opens.

Note The VT and VT Tunnel types do not apply to Ethernet circuits.

Step 11 In the Name field, enter a name for the circuit.

Step 12 In the Circuit Alias field, enter a unique alias name for the circuit. The alias name can contain alphanumeric characters. International character sets are also supported.

Step 13 From the Size field, choose the size of the circuit.

- The valid circuit sizes for an Ethernet multicard circuit are STS-1, STS-3c, and STS-6c.
- The valid circuit sizes for an Ethernet single-card circuit are STS-1, STS-3c, STS-6c, and STS-12c.

Step 14 Verify that the **Bidirectional** check box is checked.

Step 15 (Optional) Specify the customer information:

- Customer ID
- Service ID

Step 16 Click **Next**. The Source pane opens.

a. From the Slot field, choose the circuit source. Either end node can be the circuit source.

b. When building a multicard EtherSwitch circuit, choose **Ethergroup** from the Slot field and click **Next**.

c. When building a single-card EtherSwitch circuit, from the Slot field choose the Ethernet card where the single-card EtherSwitch was enabled and click **Next**.

d. When building a circuit in port-mapped mode, from the Slot field choose the slot containing the E-series card that you will use for one end of the point-to-point circuit. Choose a port from the Port drop-down list and click **Next**.

Step 17 The Destination pane opens.

a. From the Slot field, choose the circuit destination. Choose the node that is not the source.

b. When building a multicard EtherSwitch circuit, choose **Ethergroup** from the Slot field and click **Next**.

c. When building a **single-card EtherSwitch** circuit, from the Slot field choose the Ethernet card where the single-card EtherSwitch was enabled and click **Next**.

d. When building a circuit in port-mapped mode, from the Slot field choose the slot containing the E-series card that you will use for the other end of the point-to-point circuit. Choose a port from the Port drop-down list and click **Next**. The VLAN Selection pane opens.

Step 18 Create the VLAN.

a. Click the **New VLAN** button. The Define New VLAN dialog box opens.

b. Assign an easily identifiable name to the VLAN.

c. Assign a VLAN ID.

Note The VLAN ID should be the next available number from 2 to 4093 that is not already assigned to an existing VLAN. Each ONS 15327, ONS 15454 SONET, or ONS 15454 SDH network supports a maximum of 509 user-provisionable VLANs.

d. Click **OK**.

e. Highlight the VLAN name and click the **Add** button to move the available VLAN to the Circuit VLANs list box.

Note A maximum of 509 VLANs are supported on a DCC-connected network.

Step 19 Check the **Enable Spanning Tree** check box to enable spanning tree protection.

Step 20 Click **Next**. The Routing Preferences pane opens.

Step 21 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical
- Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Set the circuit path protection as follows:

- To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and proceed to the next substep. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.
- To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 22.
- To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 22.

f. If you selected **Fully Protected Path**, choose one of the following options:

- Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.
- Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
- Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.
- Dual Ring Interconnect—Provisions the circuit in a DRI topology. If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

Step 22 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:
   - Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
   - Zoom In—Allows you to zoom in on an object in the map view.
   - Zoom Out—Allows you to zoom out on the map view.
   - Reset Zoom—Resets the current zoom level to the default.
   - Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:
   - From—Displays the source of the span
   - To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 23 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:
   - Src NE ID—*Display only.*
   - Dest NE ID—*Display only.*
   - Current NE ID—*Display only.*

- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 24 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Right-click the line, and click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Right-click the line, and click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 25 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 26 In the Review Route pane (available only if Review Route Before Creation is checked), review the following information; then, click **Finish**:

a. In the circuit display, verify the following information about the point-to-point circuit:

- Circuit name
- Circuit type
- Circuit size
- VLANS on the circuit
- ONS 15454 SONET or ONS 15454 SDH nodes are included in the circuit

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

Step 27 In the message box, click **OK**.

Step 28 Provision the Ethernet ports and assign ports to VLANs. For information about changing the slot properties, see C.4 Ethernet Cards, page C-832. For information about assigning ports to VLANs, see 6.5.10 E-Series Spanning Tree Protocol (IEEE 802.1D), page 6-19. For information about provisioning circuits manually, see 7.2.3.13.4 E-Series Ethernet Manual Cross-Connects, page 7-114.

7.2.3.13.2 Provisioning E-Series Shared Packet Ring Ethernet Circuits

Step 1 Select an ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the ONS 15327, ONS 15454 SONET, or ONS 15454 SDH Ethernet circuit endpoint nodes.

Step 3 Click the **Identification** tab.

Step 4 In the Card Mode field, choose **Multicard EtherSwitch Group**.

Step 5 Click **Apply**.

Step 6 Repeat Step 2 to Step 5 for each Ethernet card in the ONS 15327, ONS 15454 SONET, or ONS 15454 SDH that will carry the shared packet ring.

Step 7 Navigate to the other ONS 15327, ONS 15454 SONET, or ONS 15454 SDH endpoint.

Step 8 Repeat Step 2 to Step 7 for the other ONS 15327, ONS 15454 SONET, or ONS 15454 SDH endpoint.

Step 9 Do the following in the Domain Explorer:

- **a.** Select the source circuit.
- **b.** Choose **Configuration > Create Circuit**.
- **c.** Select the destination circuit. The Create Circuit wizard opens.

Step 10 In the Type field, choose **STS**; then, click **Next**. The Attributes pane opens.

Note The VT and VT Tunnel types do not apply to Ethernet circuits.

Step 11 In the Name field, enter a name for the circuit.

Step 12 In the Circuit Alias field, enter a unique alias name for the circuit. The alias name can contain alphanumeric characters. International character sets are also supported.

Step 13 From the Size field, choose the size of the circuit. For shared packet ring Ethernet, valid circuit sizes are STS-1, STS-3c, and STS-6c.

Step 14 Verify that the **Bidirectional** check box is checked.

Note When building a shared packet ring configuration, the circuits must be provisioned manually.

Step 15 Click **Next**. The Source pane opens.

Step 16 From the Slot field, choose the circuit source. Any shared packet ring node can serve as the circuit source.

Step 17 Choose **Ethergroup** from the Slot field and click **Next**. The Destination pane opens.

Step 18 Choose the circuit destination from the Slot field. Except for the source node, any shared packet ring node can serve as the circuit destination.

Step 19 Choose **Ethergroup** from the Slot field and click **Next**. The VLAN Selection pane opens.

Step 20 Create the VLAN.

- **a.** Click the **New VLAN** button. The Define New VLAN dialog box opens.
- **b.** Assign an easily identifiable name to the VLAN.
- **c.** Assign a VLAN ID.

Note The VLAN ID number must be unique. It should be the next available number from 2 to 4093 that is not already assigned to an existing VLAN. Each ONS 15327, ONS 15454 SONET, or ONS 15454 SDH network supports a maximum of 509 user-provisionable VLANs.

d. Click **OK**.

e. Highlight the VLAN name and click the **Add** button to move the VLAN from the Available VLANs column to the Circuit VLANs list box. When you move the VLAN from the Available VLANs column to the Circuit VLANs column, all of the VLAN traffic is forced to use the shared packet ring circuit that was created.

Step 21 Click **Next**.

Step 22 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical
- Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Set the circuit path protection as follows:

- To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and proceed to the next substep. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.

- To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 23.
- To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 23.

f. If you selected **Fully Protected Path**, choose one of the following options:

- Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.
- Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
- Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.
- Dual Ring Interconnect—Provisions the circuit in a DRI topology. If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

Note If you selected VT as the circuit type in the Attributes pane and unchecked Route Automatically, the new VT tunnel is created when circuit provisioning is finished.

Step 23 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:
   - From—Displays the source of the span
   - To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 24 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:
   - Src NE ID—*Display only.*
   - Dest NE ID—*Display only.*
   - Current NE ID—*Display only.*
   - Adj NE ID—*Display only.*
   - Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
   - Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
   - Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 25 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 26 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 27 In the Review Route pane (available only if Review Route Before Creation is checked), review the following information; then, click **Finish**:

a. In the circuit display, verify that the new circuit is configured correctly.

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

Step 28 In the message box, click **OK**.

Step 29 Provision the Ethernet ports and assign ports to VLANs. For information about changing the slot properties, see C.4 Ethernet Cards, page C-832. For information about assigning ports to VLANs, see 6.5.10 E-Series Spanning Tree Protocol (IEEE 802.1D), page 6-19.

7.2.3.13.3 Provisioning E-Series Hub-and-Spoke Ethernet Circuits

This section provides steps for creating a hub-and-spoke Ethernet circuit configuration. The hub-and-spoke configuration connects point-to-point circuits (the spokes) to an aggregation point (the hub). In many cases, the hub links to a high-speed connection and the spokes are Ethernet cards.

Step 1 Select an ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NE and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the ONS 15327, ONS 15454 SONET, or ONS 15454 SDH Ethernet circuit endpoint nodes.

Step 3 Click the **Identification** tab.

Step 4 Under Card Mode, choose **Single-card EtherSwitch** and click **Apply**.

Step 5 Navigate to the other ONS 15327, ONS 15454 SONET, or ONS 15454 SDH endpoint and repeat Step 2 to Step 4.

Step 6 Do the following in the Domain Explorer:

a. Select the source circuit.

b. Choose **Configuration > Create Circuit**.

c. Select the destination circuit. The Create Circuit wizard opens.

Step 7 From the Type field, choose **STS**; then, click **Next**. The Attributes pane opens.

Note The VT and VT Tunnel types do not apply to Ethernet circuits.

Step 8 In the Name field, enter a name for the circuit.

Step 9 In the Circuit Alias field, enter a unique alias name for the circuit. The alias name can contain alphanumeric characters. International character sets are also supported.

Step 10 From the Size field, choose the size of the circuit.

Step 11 Verify that the **Bidirectional** check box is checked and click **Next**. The Source pane opens.

Step 12 Choose the circuit source. Either end node can be the circuit source.

Step 13 From the Slot field, choose the Ethernet card where the single-card EtherSwitch was enabled and click **Next**. The Destination pane opens.

Step 14 Choose the circuit destination. Choose the node that is not the source.

Step 15 From the Slot field, choose the Ethernet card where the single-card EtherSwitch was enabled and click **Next**. The VLAN Selection pane opens.

Step 16 Create the VLAN.

a. Click the **New VLAN** button. The Define New VLAN dialog box opens.

b. Assign an easily identifiable name to the VLAN.

c. Assign a VLAN ID.

Note The VLAN ID number must be unique. It should be the next available number from 2 to 4093 that is not already assigned to an existing VLAN. Each ONS 15327, ONS 15454 SONET, or ONS 15454 SDH network supports a maximum of 509 user-provisionable VLANs.

d. Click **OK**.

e. Highlight the VLAN name and click the **Add** button to move the VLAN from the Available VLANs column to the Circuit VLANs column.

Step 17 Click **Next**. The Routing Preferences pane opens.

Step 18 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical

- Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Set the circuit path protection as follows:

- To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and proceed to the next substep. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.
- To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 19.
- To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 19.

f. If you selected **Fully Protected Path**, choose one of the following options:

- Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.
- Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
- Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.
- Dual Ring Interconnect—Provisions the circuit in a DRI topology. If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

Step 19 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 20 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.

- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 21 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 22 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 23 In the Review Route pane (available only if Review Route Before Creation is checked), review the following information; then, click **Finish**:

a. In the circuit display, verify the following information about the point-to-point circuit:

- Circuit name
- Circuit type
- Circuit size
- VLANs that will be transported across this circuit
- ONS 15327, ONS 15454 SONET, or ONS 15454 SDH nodes are included on this circuit

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

Step 24 In the message box, click **OK**.

Step 25 Provision the second circuit and attach it to the already created VLAN.

Step 26 Provision the Ethernet ports and assign ports to VLANs. For information about changing the slot properties, see C.4 Ethernet Cards, page C-832. For information about assigning ports to VLANs, see 6.5.10 E-Series Spanning Tree Protocol (IEEE 802.1D), page 6-19.

7.2.3.13.4 E-Series Ethernet Manual Cross-Connects

ONS 15327, ONS 15454 SONET, and ONS 15454 SDH NEs require end-to-end CTC visibility between nodes for normal provisioning of Ethernet circuits. When equipment from other vendors is positioned between ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NEs, equipment based on OSI/TARP does not allow tunneling of the ONS 15327, ONS 15454 SONET, or ONS 15454 SDH TCP/IP-based

DCC. To circumvent this lack of continuous DCC, the Ethernet circuit must be manually cross-connected to an STS channel riding through the non-ONS network. This allows an Ethernet circuit to run from ONS node to ONS node by utilizing the non-ONS network.

Note Provisioning manual cross-connects for *multicard* EtherSwitch circuits is a separate procedure from provisioning manual cross-connects for *single-card* EtherSwitch circuits. Both procedures are provided in the following sections.

7.2.3.13.5 Provisioning a Single-Card EtherSwitch Manual Cross-Connect

Step 1 Select an ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the ONS 15327, ONS 15454 SONET, or ONS 15454 SDH Ethernet circuit endpoint nodes.

Step 3 Click the **Identification** tab.

Step 4 In Card Mode field, choose **Single-card EtherSwitch** and click **Apply**.

Step 5 Do the following in the Domain Explorer:

- **a.** Select the source circuit.
- **b.** Choose **Configuration > Create Circuit**.
- **c.** Select the destination circuit. The Create Circuit wizard opens.

Step 6 From the Type field, choose **STS**; then, click **Next**. The Attributes pane opens.

Note The VT and VT Tunnel types do not apply to Ethernet circuits.

Step 7 In the Name field, enter a name for the circuit.

Step 8 In the Circuit Alias field, enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.

Step 9 From the Size field, choose the size of the circuit. The valid circuit sizes for an Ethernet single-card circuit are STS-1, STS-3c and STS-6c.

Step 10 Verify that the **Bidirectional** check box is checked and click **Next**. The Source pane opens.

Step 11 Choose the current node as the circuit source.

Step 12 From the Slot field, choose the Ethernet card that will carry the circuit and click **Next**. The Destination pane opens.

Step 13 Choose the current node as the circuit destination.

Step 14 From the Slot field, choose the optical card that will carry the circuit.

Step 15 Choose the STS that will carry the circuit from the STS field and click **Next**. The VLAN Selection pane opens.

Note For Ethernet manual cross-connects, the same node serves as both source and destination.

Step 16 Create the VLAN.

- **a.** Click the **New VLAN** button. The Define New VLAN dialog box opens.

b. Assign an easily identifiable name to the VLAN.

c. Assign a VLAN ID.

Note The VLAN ID should be the next available number from 2 to 4093 that is not already assigned to an existing VLAN. Each ONS 15327, ONS 15454 SONET, or ONS 15454 SDH network supports a maximum of 509 user-provisionable VLANs.

d. Click **OK**.

e. Highlight the VLAN name and click the **Add** button to move the VLAN from the Available VLANs column to the Circuit VLANs column.

Step 17 Click **Next**. The Routing Preferences pane opens.

Step 18 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical
- Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Set the circuit path protection as follows:

- To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and proceed to the next substep. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.
- To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 19.
- To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 19.

f. If you selected **Fully Protected Path**, choose one of the following options:

- Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.
- Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
- Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.
- Dual Ring Interconnect—Provisions the circuit in a DRI topology. If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

Step 19 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 20 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 21 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 22 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 23 In the Review Route pane (available only if Review Route Before Creation is checked), review the following information; then, click **Finish**:

a. In the circuit display, verify the following information about the point-to-point circuit:

- Circuit name
- Circuit type
- Circuit size
- VLANs on this circuit
- ONS 15327, ONS 15454 SONET, or ONS 15454 SDH nodes are included on this circuit

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

Step 24 In the message box, click **OK**.

Step 25 Provision the Ethernet ports and assign ports to VLANs. For information about changing the slot properties, see C.4 Ethernet Cards, page C-832. For information about assigning ports to VLANs, see 6.5.10 E-Series Spanning Tree Protocol (IEEE 802.1D), page 6-19.

Step 26 After assigning the ports to the VLANs, repeat Step 1 to Step 25 at the second ONS 15327, ONS 15454 SONET, or ONS 15454 SDH Ethernet manual cross-connect endpoint.

Note The appropriate STS circuit must exist in the non-ONS 15454 SONET equipment to connect the two STSs from the ONS 15454 SONET Ethernet manual cross-connect endpoints.

Caution If a CARLOSS alarm repeatedly appears and clears on an Ethernet manual cross-connect, the two Ethernet circuits might have a circuit-size mismatch. For example, a circuit size of STS-3c might have been configured on the first ONS 15454 SONET or ONS 15454 SDH, and a circuit size of STS-12c might have been configured on the second ONS 15327, ONS 15454 SONET, or ONS 15454 SDH. To troubleshoot the CARLOSS alarm, see the CARLOSS alarm troubleshooting procedure in the "Alarm Troubleshooting" chapter of the *Cisco ONS 15454 Troubleshooting Guide* or *Cisco ONS 15454 SDH Troubleshooting Guide*.

7.2.3.13.6 Provisioning an E-Series Multicard EtherSwitch Manual Cross-Connect

Step 1 Select an ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the ONS 15327, ONS 15454 SONET, or ONS 15454 SDH Ethernet circuit endpoint nodes.

Step 3 Click the **Identification** tab.

Step 4 In the Card Mode field, choose **Multicard EtherSwitch Group** and click **Apply**.

Step 5 Repeat Step 2 to Step 4 for each Ethernet card in the ONS 15327, ONS 15454 SONET, or ONS 15454 SDH that will carry the circuit.

Step 6 Do the following in the Domain Explorer:

- **a.** Select the source circuit.
- **b.** Choose **Configuration > Create Circuit**.
- **c.** Select the destination circuit. The Create Circuit wizard opens.

Step 7 From the Type field, choose **STS**; then, click **Next**. The Attributes pane opens.

Note The VT and VT Tunnel types do not apply to Ethernet circuits.

Step 8 In the Name field, enter a name for the circuit.

Step 9 In the Circuit Alias field, enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.

Step 10 From the Size field, choose the size of the circuit. The valid circuit sizes for an Ethernet multicard circuit are STS-1, STS-3c, and STS-6c.

Step 11 Verify that the **Bidirectional** check box is checked and click **Next**. The Source pane opens.

Step 12 Choose the current node as the circuit source.

Step 13 Choose **Ethergroup** from the Slot field and click **Next**. The Destination pane opens.

Step 14 Choose the current node as the circuit destination.

Step 15 Choose the Ethernet card that will carry the circuit from the Slot field and click **Next**. The VLAN Selection pane opens.

Note For the Ethernet manual cross-connect, the destination and source should be the same node.

Step 16 Create the VLAN.

- **a.** Click the **New VLAN** button. The Define New VLAN dialog box opens.
- **b.** Assign an easily identifiable name to the VLAN.
- **c.** Assign a VLAN ID.

Note The VLAN ID should be the next available number from 2 to 4093 that is not already assigned to an existing VLAN. Each ONS 15327, ONS 15454 SONET, or ONS 15454 SDH network supports a maximum of 509 user-provisionable VLANs.

d. Click **OK**.

e. Highlight the VLAN name and click the **Add** button to move the VLAN from the Available VLANs column to the Circuit VLANs column.

Step 17 Click **Next**. The Routing Preferences pane opens.

Step 18 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. You can review the route using one of the following views:

- Graphical
- Graphical Enhanced

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Set the circuit path protection as follows:

- To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and proceed to the next substep. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.
- To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 19.
- To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 19.

f. If you selected **Fully Protected Path**, choose one of the following options:

- Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.

- Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
- Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.
- Dual Ring Interconnect—Provisions the circuit in a DRI topology. If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

Step 19 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 20 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 21 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 22 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 23 In the Review Route pane (available only if Review Route Before Creation is checked), review the following information; then, click **Finish**:

a. In the circuit display, verify the following information about the point-to-point circuit:

- Circuit name
- Circuit type

- Circuit size
- VLANs on this circuit
- ONS 15327, ONS 15454 SONET, or ONS 15454 SDH nodes are included on this circuit

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

Step 24 In the message box, click **OK**.

Step 25 Provision the Ethernet ports and assign ports to VLANs. For information about changing the slot properties, see C.4 Ethernet Cards, page C-832. For information about assigning ports to VLANs, see 6.5.10 E-Series Spanning Tree Protocol (IEEE 802.1D), page 6-19. Return to Step 26 of this procedure after assigning the ports to VLANs.

Step 26 Highlight the circuit and click **Edit**. The Edit Circuit dialog box opens.

Step 27 Click **Drops**; then, click **Create**. The Define New Drop dialog box opens.

Step 28 From the Slot field, choose the optical card that links the ONS 15454 SONET or ONS 15454 SDH to the non-ONS 15454 equipment.

Step 29 From the Port field, choose the appropriate port.

Step 30 From the STS field, choose the STS that matches the STS of the connecting non-ONS 15454 equipment.

Step 31 Click **OK**. The Edit Circuit dialog box opens.

Step 32 Confirm the circuit information that is displayed in the Circuit Information dialog box and click **Close**.

Step 33 Repeat Step 1 to Step 32 at the second ONS 15327, ONS 15454 SONET, or ONS 15454 SDH Ethernet manual cross-connect endpoint.

Note The appropriate STS circuit must exist in the non-ONS 15454 equipment to connect the two ONS 15454 SONET or ONS 15454 SDH Ethernet manual cross-connect endpoints.

Caution If a CARLOSS alarm repeatedly appears and clears on an Ethernet manual cross-connect, the two Ethernet circuits might have a circuit-size mismatch. For example, a circuit size of STS-3c might have been configured on the first ONS 15454 SONET or ONS 15454 SDH, and a circuit size of STS-12c might have been configured on the second ONS 15454 SONET or ONS 15454 SDH. To troubleshoot the CARLOSS alarm, see the CARLOSS alarm troubleshooting procedure in the "Alarm Troubleshooting" chapter of the *Cisco ONS 15454 Troubleshooting Guide* or *Cisco ONS 15454 SDH Troubleshooting Guide*.

7.2.3.14 Creating a BLSR DRI or MS-SPRing DRI Circuit Automatically

The BLSR/MS-SPRing DRI feature allows you to provision a circuit in a DRI topology to provide the required protection when transitioning traffic between two rings, where at least one ring is a BLSR or MS-SPRing.

Step 1 Select a node for which to create a circuit, and open the Create Circuit wizard. For an explanation of wizard launch points, see Table 7-4 on page 7-12.

Step 2 In the Type pane, choose **VC_HO_Path_Circuit** for SDH circuits or **STS** for SONET circuits. In the Number of Circuits field, enter the number of circuits you want to create. The default is 1. If you enter a number higher than 1, you can use autoranging to create the additional circuits automatically.

Step 3 Click **Next**.

Step 4 In the Attributes pane, enter the following information; then, click **Next**:

- Name—Enter a unique name for the new circuit. The circuit name is a free-format string of up to 48 ASCII characters. If you leave the field blank, Prime Optical assigns a default name to the circuit.
- Circuit Alias—Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a circuit description of up to 256 characters.
- Size—Select the circuit size. VC high-order path circuits can be VC4, VC4-2c, VC4-3c, VC4-4c, VC4-8c, VC4-16c, or VC4-64c for optical cards and for some Ethernet cards (depending on the card type). Of the Ethernet cards, only the G-1000 can use VC4-3c, VC4-8c, and VC4-16c. The “c” indicates concatenated VC4s.
- Bidirectional—Check this check box to create a two-way circuit; uncheck it to create a one-way circuit.
- State—Specify the circuit state. Options vary depending on the type of circuit selected.
- Apply to source/destination ports—Check this check box to apply the selected state to the source and destination ports.
- Protected Drops—Check this check box if you want the circuit routed to protected drops only; that is, to cards that are in 1:1, 1:N, or 1+1 protection.
- Provision working go and return on primary path (bidirectional UPSR/SNCP protection only)—Check this check box to provision the working path to go and return to the primary path.

  Note Prime Optical currently provisions unidirectional SNCP/UPSR circuits following the GR-1400 standard. For bidirectional SNCP/UPSR circuits, you can check the Provision working go and return on primary path check box to route the working and protect paths in one direction following the ITU-T G.841 standard. Unidirectional UPSR/SNCP circuits are not affected by this new routing, and the shortest path is always used as the working path.

- SNCP path selector defaults—If the circuit will be routed on an SNCP node, set the defaults as follows:
  - Revertive—Check this check box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If Revertive is not chosen, traffic remains on the protect path.

  - Reversion time—If Revertive is checked, set the reversion time. This is the amount of time that elapses before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared. (The Cisco default reversion time is 5 minutes.)
  - SF threshold—Choose from 1 E-3, 1 E-4, or 1 E-5.
  - SD threshold—Choose from 1 E-5, 1 E-6, 1 E-7, 1 E-8, or 1 E-9.
  - Switch on PDI-P—Not applicable.
- Customer ID (optional)—Identify the end user of the circuit.
- Service ID (optional)—Enter the service ID of the circuit.

Step 5 In the Source pane, set the circuit source. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed in the node. Click **Use Secondary Source** if you want to create an SNCP bridge/selector circuit entry point in a multivendor SNCP.

Step 6 Click **Next**.

Step 7 In the Destination pane, set the circuit destination. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed in the node. Click **Use Secondary Destination** if you want to create a circuit destination point for unidirectional/bidirectional circuits.

Step 8 Click **Next**.

Step 9 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

Check the Route Automatically check box.

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links. You can specify the required nodes and links using one of the following views:

- Graphical
- Graphical Enhanced
- Textual

c. Check the **Review Route Before Creation** check box to review the route before it is created. You can review the route using one of the following views:

- Graphical
- Graphical Enhanced

d. To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default). A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist. When you select **Fully Protected Path**, Required is selected automatically.

e. Check the **Dual Ring Interconnect** check box.

Step 10 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 11 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 12 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 13 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route. The BLSR/MS-SPRing DRI dialog box opens. Use this dialog box to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Check the **Use RIP bandwidth on secondary path** check box to use RIP protection for the BLSR or MS-SPRing DRI circuit. Click **OK**. The information you specified in the BLSR/MS-SPRing DRI dialog box is shown in the Route Constraints pane, in the Included Links/Nodes field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 14 After clicking Next, if you did not check the Revertive check box in the Attributes pane, a dialog box opens with the message “This Circuit Is Configured As Non-Revertive.” If you do not want to specify reversion settings, click **OK** without filling in the fields in the dialog box. If you want to specify reversion settings, check the **Revertive** check box, specify the reversion time in 0.5-minute increments, and click **OK**.

Step 15 In the Review Route pane, review the following information; then, click **Finish**:

a. In the circuit display, review the ID of the source and destination NEs.

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Review the span information.

Step 16 In the message box, click **OK**.

7.2.3.15 Creating a BLSR DRI or MS-SPRing DRI Circuit Manually

The BLSR/MS-SPRing DRI feature allows you to provision a circuit in a DRI topology to provide the required protection when transitioning traffic between two rings, where at least one ring is a BLSR or MS-SPRing.

Step 1 Select a node for which to create a circuit, and open the Create Circuit wizard. For an explanation of wizard launch points, see Table 7-4 on page 7-12.

Step 2 In the Type pane, choose **VC_HO_Path_Circuit** for SDH circuits or **STS** for SONET circuits. In the Number of Circuits field, enter the number of circuits you want to create. The default is 1. If you enter a number higher than 1, you can use autoranging to create the additional circuits automatically.

Step 3 Click **Next**.

Step 4 In the Attributes pane, enter the following information; then, click **Next**:

- Name—Enter a unique name for the new circuit. The circuit name is a free-format string of up to 48 ASCII characters. If you leave the field blank, Prime Optical assigns a default name to the circuit.
- Circuit Alias—Enter a unique alias name for the new circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a circuit description of up to 256 characters.
- Size—Select the circuit size. VC high-order path circuits can be VC4, VC4-2c, VC4-3c, VC4-4c, VC4-8c, VC4-16c, or VC4-64c for optical cards and for some Ethernet cards (depending on the card type). Of the Ethernet cards, only the G-1000 can use VC4-3c, VC4-8c, and VC4-16c. The “c” indicates concatenated VC4s.
- Bidirectional—Check this check box to create a two-way circuit; uncheck it to create a one-way circuit.
- State—Specify the circuit state. Options vary depending on the type of circuit selected.
- Apply to source/destination ports—Check this check box to apply the selected state to the source and destination ports.
- Protected Drops—Check this check box if you want the circuit routed to protected drops only; that is, to cards that are in 1:1, 1:N, or 1+1 protection.
- Provision working go and return on primary path (bidirectional UPSR/SNCP protection only)—Check this check box to provision the working path to go and return to the primary path.

Note Prime Optical currently provisions unidirectional SNCP/UPSR circuits following the GR-1400 standard. For bidirectional SNCP/UPSR circuits, you can check the Provision working go and return on primary path check box to route the working and protect paths in one direction following the ITU-T G.841 standard. Unidirectional UPSR/SNCP circuits are not affected by this new routing, and the shortest path is always used as the working path.

- SNCP path selector defaults—If the circuit will be routed on an SNCP node, set the defaults as follows:
  - Revertive—Check this check box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If Revertive is not chosen, traffic remains on the protect path.
  - Reversion time—If Revertive is checked, set the reversion time. This is the amount of time that elapses before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared. (The Cisco default reversion time is 5 minutes.)
  - SF threshold—Choose from 1 E-3, 1 E-4, or 1 E-5.
  - SD threshold—Choose from 1 E-5, 1 E-6, 1 E-7, 1 E-8, or 1 E-9.
  - Switch on PDI-P—Not applicable.
- Customer ID (optional)—Identify the end user of the circuit.
- Service ID (optional)—Enter the service ID of the circuit.

Step 5 In the Source pane, set the circuit source. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed in the node. Click **Use Secondary Source** if you want to create an SNCP bridge/selector circuit entry point in a multivendor SNCP.

Step 6 Click **Next**.

Step 7 In the Destination pane, set the circuit destination. The options displayed depend on the circuit type, the circuit properties selected in the Attributes pane, and the cards installed in the node. Click **Use Secondary Destination** if you want to create a circuit destination point for unidirectional/bidirectional circuits.

Step 8 Click **Next**.

Step 9 In the Routing Preferences pane, do the following; then, click **Next**:

a. Uncheck the **Route Automatically** check box to disable automatic route selection. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:
- Graphical
- Graphical Enhanced
- Textual

b. To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default). A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist. When you select **Fully Protected Path**, Required is selected automatically.

c. Check the **Dual Ring Interconnect** check box.

Step 10 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical or Graphical Enhanced radio button is selected), do the following; then, click **Next**:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:

- Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
- Zoom In—Allows you to zoom in on an object in the map view.
- Zoom Out—Allows you to zoom out on the map view.
- Reset Zoom—Resets the current zoom level to the default.
- Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

d. In the VCAT Member Number list box, select the member for which the route is to be selected.

e. In the circuit display, select the span to use for the next hop.

f. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

g. Click **Add**. The span is added to the Selected Spans list.

h. Repeat substeps d to f for each intermediate NE until the destination NE is reached.

i. Repeat substeps c to g for each member until all members are routed.

j. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

k. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 11 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Current NE ID—*Display only.*
- Adj NE ID—*Display only.*
- Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 12 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical or Graphical Enhanced radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. (Applicable if the Graphical Enhanced radio button is selected) Select one of the following top-level view types from the **Selected View Type** list:

- Subnetwork—Allows you to view the subnetwork(s) to which the NEs belong. This is the default view type.
- Group—Allows you to view the group(s) to which the NEs belong.

The Current View field is set to Top.

b. (Applicable if the Graphical Enhanced radio button is selected) Select a detailed view type from the **Available Views** list, or right-click a subnetwork or group and choose **View**. The Current View field is set to the detailed view type that you selected.

In a complex network, it might take several minutes or longer to calculate and display the graphic objects in the map view. The progress bar at the top of the map tracks the percentage of completion while the map is updated.

c. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps c to g for each node or link that you want to include in the circuit route.

i. (Optional) Repeat substeps c to h for each intermediate NE until the destination NE is reached.

j. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Note If the Graphical Enhanced radio button is selected and you want to change the top-level view type at any time, click **Top View**. The map view reverts to the default Subnetwork view type.

Step 13 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route. The BLSR/MS-SPRing DRI dialog box opens. Use this dialog box to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Check the **Use RIP bandwidth on secondary path** check box to use RIP protection for the BLSR or MS-SPRing DRI circuit. Click **OK**. The information you specified in the BLSR/MS-SPRing DRI dialog box is shown in the Route Constraints pane, in the Included Links/Nodes field.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 14 After clicking Finish, if you did not check the Revertive check box in the Attributes pane, a dialog box opens with the message “This Circuit Is Configured As Non-Revertive.” If you do not want to specify reversion settings, click **OK** without filling in the fields in the dialog box. If you want to specify reversion settings, check the **Revertive** check box, specify the reversion time in 0.5-minute increments, and click **OK**.

Step 15 In the message box, click **OK**.

7.2.4 Modifying Circuits on CTC-Based NEs

Use the Modify Circuit dialog box to modify properties of an existing circuit.

Step 1 Select the node that contains the circuit to be modified and open the Circuit table. For an explanation of Circuit table launch points, see Table 7-2 on page 7-4.

Step 2 In the Circuit table, select the circuit to be modified and choose **Configuration > Modify Circuit** (or click the **Modify** tool). The Modify Circuit dialog box opens.

The tabs shown in the Modify Circuit dialog box depend on the type of circuit selected. The following table provides descriptions.

Table 7-10 Field Descriptions for the Modify Circuit Dialog Box

Field	Description
General	
Circuit ID	Enter a new circuit ID.
Circuit Alias	Enter a new alias name for the circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
Description	Enter a new description of the selected circuit.
Customer ID	Optional text field that displays the customer ID of the circuit. The customer ID can contain 0 to 256 alphanumeric and special characters. For VCAT member circuits, the Customer ID and Service ID fields are disabled. You cannot edit the customer ID or service ID for individual VCAT member circuits; rather, the individual circuits inherit this information from the parent VCAT circuit. The customer ID of the VCAT circuit is applied to all member circuits. When the Customer ID field is changed for the parent VCAT circuit, the new value is applied to all members. The Customer ID text field is disabled in the VCAT Member Circuit Edit area. You can still edit the member circuit ID (Name), Description, and Circuit Admin State. When a new VCAT member circuit is added, the parent VCAT circuit's customer ID is also applied to the new member circuit.

Table 7-10 Field Descriptions for the Modify Circuit Dialog Box (continued)

Field	Description
Service ID	Optional text field that displays a service ID of the selected circuit. The service ID can contain 0 to 256 alphanumeric and special characters. For VCAT member circuits, the Customer ID and Service ID fields are disabled. You cannot edit the customer ID or service ID for individual VCAT member circuits; rather, the individual circuits inherit this information from the parent VCAT circuit. The service ID of the VCAT circuit is applied to all member circuits. When the Service ID field is changed for the parent VCAT circuit, the new value is applied to all members. The Service ID text field is disabled in the VCAT Member Circuit Edit area. You can still edit the member circuit ID (Name), Description, and Circuit Admin State. When a new VCAT member circuit is added, the parent VCAT circuit's service ID is also applied to the new member circuit.
Circuit Service State	*Display only.* The circuit service state is an aggregate of the cross-connect states within the circuit. SONET, SDH, and DWDM circuits have different values; see Table 7-3.
Circuit Admin State	Specify the administrative state to set for the selected circuit. SONET and SDH circuits have different values. For SONET circuits, values are: • IS (In Service)—The circuit is in service and able to carry traffic. • IS AINS (In Service-Auto In Service)—Alarm reporting is suppressed, but the circuit is able to carry traffic. • OOS DSBLD (Out of Service–Disabled)—The circuit is Out of Service and unable to carry traffic. • OOS MT (Out of Service–Maintenance)—The circuit is in maintenance state. The maintenance state does not interrupt traffic flow; it suppresses alarms and conditions and allows loopbacks to be performed on the circuit. • OOS OOG (Out of Service–Out of Group)—The VCAT member cross-connection is no longer used for carrying VCAT group traffic, but the cross-connection still exists. • No Change For SDH circuits, corresponding values are: • Unlocked • Unlocked,autoInService • Locked,disabled • Locked,maintenance • No Change
Apply to source/ destination ports, if allowed	Check this check box to apply the selected state to the source and destination ports.
Routing Preferences *(VCAT circuits only)*	*Display only.* Indicates the type of routing for VCAT member circuits: • Common Route—Each member circuit in the selected VCAT circuit is routed on the same fiber. • Split Route—Member circuits are routed on separate paths.

Table 7-10 Field Descriptions for the Modify Circuit Dialog Box (continued)

Field	Description
VCAT Attributes *(VCAT circuits only)*	*Display only.* Displays the attributes that have been assigned to the selected VCAT circuit, including: • Node—Node name. • VCG Name—Virtual concatenation group name. • Mode—Circuit mode (None, SW-LCAS, or LCAS). • No. of Members—Number of members that have been configured for the VCAT circuit.
Monitor	
Select Monitor Sources	Select a circuit monitor source from the list. Click **Create Monitors** to create a new monitor source for the circuit.
Drops (Unidirectional and stitched Ethernet circuits only)	

Drops	Displays the list of circuit drops. By default, the drop list has only one original destination point of the circuit. You can create additional drop points to avoid excessive traffic in the circuit.
	Follow these steps to create an additional drop point:
	1. Click **Create** to open the Create Drop wizard.
	2. Select a drop from the Destination panel.
	3. Click **Next**.
	4. Click **Finish** in the Routing Preference Panel.
	The following message appears in the dialog box. Click **OK**.
	`Successfully submitted circuit creation request.`
	Note Verify that the new drop point has been added in the Circuit table.
	Follow these steps to delete a drop point:
	1. Select a drop from the Destination panel.
	2. Click **Delete**.
	The following message appears in the dialog box. Click **Yes**.
	`Deleting drops may be service affecting. Really delete the selected drops?`
	Note Ensure that the Delete button is disabled only if one destination point is listed.

Nodes (Stitched Ethernet circuits only)	
Nodes	Displays the source nodes of the selected circuit. Select a node and click **Remove** to remove the node from the circuit. Click **Add** to open the Add Circuit Node window, where you can add a new node as a source NE.
VLANs (E-series cards in single-card and multicard mode only)	
Available VLANs	Displays the list of available VLANs. Select one or more VLANs and click **Add** to add them to the Circuit VLANs field. Click **New VLAN** to open the Define New VLAN window, where you can enter a name and ID for a new VLAN for the selected circuit.
Circuit VLANs	Displays the list of selected VLANs. Select one or more VLANs and click **Remove** to remove them from the Circuit VLANs field. If the Circuit VLANs list is empty, Prime Optical assigns the default VLAN.
Enable Spanning Tree	Check this check box to enable spanning tree protection for the circuit.

Table 7-10 Field Descriptions for the Modify Circuit Dialog Box (continued)

Field	Description
UPSR, SNCP (UPSR is for CTC-based SONET protected circuits, SNCP is for CTC-based SDH protected circuits)	
Note UPSR and SNCP attributes are editable only for VCAT member circuits, not for the VCAT parent circuit.	
Node ID	Displays the name of the node.
Working Path	One of the two paths entering the selector function. In a revertive system, this is the preferred path. In a nonrevertive system, this is the path that is specified as the working path.
Protect Path	One of the two paths entering the selector function. In a revertive system, this is the nonpreferred path. In a nonrevertive system, this is the path that is not specified as the working path.
Reversion Time	Controls whether traffic reverts to the working path when conditions that diverted it to the protect path are repaired. If you choose Never, traffic does not revert. Choosing a time sets the amount of time that elapses before traffic reverts to the working path.
SF BER Level	(STS and VC4 circuits only) Sets the UPSR SF BER threshold.
SD BER Level	(STS and VC4 circuits only) Sets the UPSR SD BER threshold.
PDI-P	(STS and VC4 circuits only) When checked, traffic switches if an STS payload defect indication is received.
Switch State	Switches circuit traffic between the working and protect paths. The color of the Working Path and Protect Path fields indicates the active path (the path selected at an exit node) versus the standby path (the path not selected at an exit node). Normally, the working path is green and the protect path is purple. If the protect path is green, working traffic has switched to the protect path. • CLEAR—Removes a previously set switch command. • LOCKOUT OF PROTECT—Prevents traffic from switching to the protect circuit path under any circumstances. Of all switch states, LOCKOUT has the highest priority. • FORCE TO WORKING—Forces traffic to switch to the working circuit path, even if the path has SD or SF conditions. FORCE switch states have a higher priority than MANUAL switch. • FORCE TO PROTECT—Forces traffic to switch to the protect circuit path, even if the path has SD or SF conditions. FORCE switch states have a higher priority than MANUAL switch. • MANUAL TO WORKING—Switches traffic to the working circuit path if the path has an error rate less than the SD. • MANUAL TO PROTECT—Switches traffic to the protect circuit path if the path has an error rate less than the SD. ⚠ **Caution** The FORCE and LOCKOUT commands override normal protection switching mechanisms. Applying these commands incorrectly can cause traffic outages.
Hold Off Time	(DRI path selectors only) Sets the hold off time. Values are 0 to 10000 milliseconds, in increments of 100 milliseconds.

Use the tabs in the Modify Circuit dialog box as follows:

- Use the **General** tab to edit the circuit ID and circuit description.

- Use the **Monitor** tab to create monitors for the source drops. Select a drop in the Select Monitor Sources list and click **Create Monitors**. The Create Circuit wizard opens, with the source node and drops preset. See 7.2.3.1 Creating an STS (Including Ethernet), STS-V, VT, VT-V, VT Tunnel, or VT Aggregation Circuit, page 7-30 to create a new circuit.
- Use the **Drops** tab to create multiple drops on existing unidirectional circuits. This feature is used to support different types of applications that could be routed from the same source to different destinations (video, voice, and so on). The multiple drops are provisioned on the destination side of the circuit. The source drop remains the same. In the Drops tab, select the required drops and click **Create** to provision a multidrop circuit. Make the selections and click **OK**.
- Use the **UPSR** tab to edit UPSR selector attributes.

Note UPSR selectors can be edited on a circuit basis, but not on a span basis.

- Use the **Nodes** tab to add or delete nodes in multicard Ethernet circuits. Select a node from the list and click **Add** or **Remove**.
- Use the **VLANs** tab to edit VLANs for a VLAN-capable circuit.

Note If you make a mistake while editing VLANs, click the **Reset** button. This clears the selections entered, and you can restart the VLAN selection.

Step 3 Click **Apply**. (If the Apply button is not visible, proceed to Step 4.)

Step 4 Click **Close**.

Changes are visible in the Circuit table after the window has been refreshed.

7.2.5 Modifying Circuits on ONS 15530 or ONS 15540 NEs

Step 1 In the Domain Explorer, Subnetwork Explorer, or Network Map, select an ONS 15530 or ONS 15540 (or a group or domain containing an ONS 15530 or ONS 15540) and choose **Configuration > ONS 155XX > Circuit Table**. The Circuit table opens.

Step 2 Select a circuit and choose **Configuration > Modify Circuit**. The Modify Circuit dialog box opens.

Step 3 Change the circuit name or description. For ONS 15530 and ONS 15540 circuits, the circuit name can contain up to 64 characters, and the circuit description can contain up to 256 characters.

Step 4 Click **Apply**.

Changes are visible in the Circuit table after the window has been refreshed.

7.2.6 Summary of Edit Circuit Options

The following table summarizes the options to edit circuits.

Table 7-11 Summary of Edit Circuit Options

Circuits	Edit Option	Type	Comments
All	Edit circuit ID, description, state, customer ID, and service ID	All	Change the circuit ID, but the ID must be unique. The description can contain up to 256 characters.
STS/VC_HO_PATH_CIRCUIT and VT/VC_LO_PATH_CIRCUIT in a UPSR ring	Change UPSR/SNCP selector attributes	Unidirectional and bidirectional	Change UPSR/SNCP selector attributes for STS/VC_HO_PATH_CIRCUIT and VT/VC_LO_PATH_CIRCUIT bidirectional circuits.
STS/VC_HO_PATH_CIRCUIT	Add drops	Unidirectional STS/VC_HO_PATH_CIRCUIT and unidirectional VT/VC_LO_PATH_CIRCUIT	Add a drop and verify it in the Prime Optical database or in the Circuit table.
	Add drops to Ethernet circuits	Bidirectional STS/VC_HO_PATH_CIRCUIT	Add a drop and verify it in the Prime Optical database or in the Circuit table.
	Add monitor circuits to STS circuits	Bidirectional STS/VC_HO_PATH_CIRCUIT	Monitor circuits must be unidirectional. Create a maximum of four monitor circuits for each STS circuit.
	Add nodes to multicard Ethernet circuits	Multicard circuits	—
	Add VLANs to Ethernet circuits	Bidirectional STS/VC_HO_PATH_CIRCUIT	Associate VLANs with the circuit and verify.
SDH circuits	Add monitor circuits	Bidirectional VC LO path tunnel	—

7.2.7 Updating Circuits

You must update circuits after adding nodes to the network.

Step 1 In the Domain Explorer tree, select the CTC-based NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Update Circuit**. A message appears, stating that Prime Optical has successfully updated the circuit.

Step 2 Click **OK**.

7.2.8 Merging Circuits

Use the circuit merge feature to merge different circuits into one or more new circuits. This feature enables you to merge many circuits (including TL1 and OCHNC DCN circuits), thereby ensuring that the aligned sections are spliced into one circuit.

Step 1 In the Domain Explorer tree, select the CTC-based NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Circuit Table**.

Step 2 In the Circuit table, select a circuit; this circuit will be the master circuit.

Step 3 Choose **Configuration > Merge Table**. The fields in the Circuit Merge table are identical to the fields in the Circuit table (Table 7-3 on page 7-5). The Circuit Merge table displays the circuits that are path aligned with the master circuit. These circuits are called *slave circuits*. The Circuit Merge table shows circuits (slave circuits) that are the same size as the master circuit.

Note You must merge *n* selected slave circuits with one selected master circuit. When circuits are merged from Prime Optical, EMS attributes such as customer ID, service ID, description, and comments are retained only for master circuits. If the circuit merge is done through CTC, the EMS attributes are not retained in Prime Optical.

Note Circuits are allowed to merge only if the following conditions exist:
— Their connections are path aligned.
— They have compatible circuit type, size, and direction.
— They do not have different VLAN assignments.
— They do not have different nondefault SLA values.
— They have compatible circuit endpoints.
— They do not form an invalid circuit.

Step 4 To refresh any new aligned circuits with the selected circuit, choose **Configuration > Refresh Lined Up Circuits** (or click the **Refresh Lined Up Circuits** tool).

Step 5 Specify the circuit(s) that you want to merge with the selected circuit and choose **Configuration > Merge** (or click the **Merge** tool).

Step 6 If the selected circuit(s) cannot be merged completely into the current circuit, the following message appears:

```
The selected circuit(s) cannot be merged completely into the current circuit. Disjointed
remnants of the selected circuit(s) might remain after the merge. Click OK to continue.
```

Step 7 Click **OK** to continue with the merge, or click **Cancel** to cancel the operation.

7.2.9 Reconfiguring Circuits

Use the reconfigure circuit(s) feature to upgrade TL1 circuits to regular circuits.

Step 1 In the Domain Explorer tree, select the CTC-based NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Circuit Table**.

Step 2 Select the TL1 circuit(s) to reconfigure and choose **Configuration > Reconfigure Circuit(s)**.

Tip Hold down the **Shift** key to select more than one option sequentially, or hold down the **Ctrl** key to select more than one option nonsequentially.

Step 3 In the confirmation dialog box, click **OK**.

A progress bar tracks the status of the reconfiguration. A failed or succeeded message displays the results of the reconfiguration. When the operation succeeds, the Circuit Status field in the Circuit table changes from *Discovered-TL1* to *Discovered*.

Note The EMS attributes of the circuits are lost after the circuit reconfiguration.

7.2.10 Repairing Circuits

The Alarm Interface Panel (AIP) provides surge protection for CTC-based NEs. This pane has a nonvolatile memory chip that stores the unique node address known as the MAC address. The MAC address identifies the nodes that support circuits. It allows Prime Optical to determine circuit sources, destinations, and spans. If an AIP fails, an alarm is generated and the LCD display on the fan tray assemblies of the NEs becomes blank. To perform an in-service replacement of the AIP, you must contact the Cisco Technical Assistance Center (TAC). For contact information, visit the TAC website at http://www.cisco.com/tac.

You can replace the AIP on an in-service system without affecting traffic by using the circuit repair feature. If the AIP card needs to be replaced, you will need to repair circuits affected by the MAC address change on the NE. Circuit repair will work when all nodes are running the same software version. Each individual AIP replacement requires an individual circuit repair; if AIPs are replaced on two NEs, the circuit repair must be performed twice. Repairing circuits allows you to change the MAC address of all circuits originating at an NE to a user-provided NE ID.

To repair a Prime Optical circuit when an AIP card is changed, restart the Prime Optical server or complete the following steps:

Note
- While completing the following steps, do not create or delete any circuits using Prime Optical.
- The following procedure applies to circuits on CTC-based NEs.

Step 1 See the *Cisco ONS 15454 Reference Manual* to replace the AIP card.

Note Reset both Timing Communications and Control (TCC) cards after the AIP card is replaced.

Step 2 In the Domain Explorer, choose **Administration > Control Panel**.

Step 3 Expand **NE Service**.

Step 4 Select **CTC-Based SONET NEs** or **CTC-Based SDH NEs** and deactivate the network service. Click **Save**.

Step 5 Activate the network service again and click **Save**.

Step 6 In the Domain Explorer, select the CTC-based NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Repair Circuit**. The Repair Circuit dialog box opens.

The Repair Circuit dialog box allows you to change the MAC address of all circuits originating at the selected NE with a user-provided NE ID. MAC addresses are a subset of data link layer addresses. MAC addresses identify network entities in LANs implementing the IEEE MAC sublayer of the data link layer. The following table provides descriptions.

Step 7 After making your selections, click **OK**.

Table 7-12 Field Descriptions for the Repair Circuit Dialog Box

Field	Description
Old MAC Address	Enter the current MAC address of the NE. MAC addresses are 48 bits in length and are expressed as 12 hexadecimal digits (0-9, a-f): • The first 6 hexadecimal digits are the manufacturer identification (or vendor code), called the Organizational Unique Identifier (OUI). These 6 digits are administered by the IEEE. • The last 6 hexadecimal digits are the interface serial number or another value administered by the specific vendor.
New MAC Address	Enter the new MAC address of the NE.

7.2.11 Deleting Circuits

Use the Circuit table to delete an existing circuit or multiple circuits from the Prime Optical database and remove the associated cross-connections from the NEs.

Note
- You cannot delete VT tunnel and VAP circuits that are in use.
- You cannot delete OCHNC DCN circuits from Prime Optical. If you try to delete an OCHNC DCN circuit, Prime Optical returns the following error message: “Circuit deletion failed. Failed to delete the following circuit(s). Circuit details: You cannot remove a DCN OCHNC circuit from CTM.” You must use CTC to delete OCHNC DCN circuits.
- You cannot delete OCH trail circuits that are created automatically upon OCHCC circuit creation. OCH trail circuits are removed automatically when the corresponding OCHCC circuit is removed.

Complete the following steps to delete circuits:

Step 1 Select the node that contains the circuit to be deleted and open the Circuit table. For an explanation of Circuit table launch points, see Table 7-2 on page 7-4.

Step 2 In the Circuit table, select the circuit(s) to be deleted and choose **Configuration > Delete Circuit** (or click the **Delete** tool).

Step 3 (For CTC-based NEs) In the Delete Circuit(s) confirmation box, do the following:

a. Check the **Change drop port admin state** check box.

b. Select the state of the source or destination port from the drop-down list. For SONET and OCHCC circuits, the available states are:

- IS (In Service)—The circuit is in service and able to carry traffic.
- IS,AINS (In Service–Auto In Service)—Alarm reporting is suppressed, but the circuit is able to carry traffic.
- OOS,DSBLD (Out of Service–Disabled)—The circuit is out of service and unable to carry traffic.
- OOS,MT (Out of Service–Maintenance)—The circuit is in maintenance state. The maintenance state does not interrupt traffic flow; it suppresses alarms and conditions and allows loopbacks to be performed on the circuit.

For SDH circuits, the corresponding values are:

- Unlocked
- Unlocked,autoInService
- Locked,disabled
- Locked,maintenance

Step 4 Click **Yes**.

Step 5 In the message box, click **OK**.

Note When deleting multiple circuits, if an error occurs during the deletion of a particular circuit, the operation continues with the deletion of the remaining selected circuits.

7.2.12 Viewing Circuit Spans

In the Circuit table, you can select a circuit and choose **Configuration > Open Circuit Span** (or click the **Open Circuit Span** tool). The Circuit Span table opens, showing information about all spans associated with the selected circuit. The following table provides descriptions.

Table 7-13 Field Descriptions for the Circuit Span Table

Column Name	Description
Circuit Name	Displays the name of the selected circuit.
Circuit Type	Displays the type of circuit that the span belongs to.
Circuit Alias	Enter a new alias name for the circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
Circuit Size	Displays the size of the circuit that the span belongs to.
Source Network Element	Displays the NE ID of the span source.
Source Module Type/Physical Loc/Interface	Displays the module type at the span source, the slot and port name and numbers (physical location), and the STS number (interface).
Source State	Displays the state of the circuit span according to the source circuit node. Valid values are: • Inactive—The circuit is inactive and the segment cannot be used. • Stranded—Bandwidth is not available and the segment cannot be used. • Routed—Circuit is being routed, but not provisioned, meaning that cross-connects have not been provisioned on the node/TCC. • Tentative—Cross-connects have been created on the node, but circuit information is incomplete or has not been updated correctly. This is not a complete circuit. • Active—Segment is in use.
Destination Network Element	Displays the NE ID of the span destination.
Destination Module Type/Physical Loc/Interface	Displays the module type at the span destination, the slot and port numbers (physical location), and the STS number (interface).
Destination State	Displays the state of the circuit span from the destination circuit node point of view. Valid values are Inactive, Stranded, Routed, Tentative, and Active.
Span Part of UPSR Ring	Indicates whether or not the circuit span is part of a UPSR.
Span Part of SNCP Ring *(ONS 15454 SDH only)*	Indicates whether or not the circuit span is part of an SNCP.
Span Active State	Indicates whether or not the circuit span carries active traffic.
Span Protection State	Displays the last successful span protection operation performed on the selected circuit span. Values are Clear, Manual, Force, and Lockout. This field only applies to circuit spans that are part of an SNCP ring.

7.2.13 Viewing VLAN Information

For CTC-based NEs, you can select a circuit in the Circuit table and choose **Configuration > VLAN Table**. The VLAN table opens, showing VLAN information associated with the selected circuit. The following table provides descriptions.

Table 7-14 Field Descriptions for the VLAN Table

Field	Description
VLAN ID	Displays the numerical ID of the VLAN. The VLAN ID range is from 1 to 4093.
VLAN Name	Displays the user-assigned name of the VLAN.

7.2.14 Viewing the ONS 15530 and ONS 15540 Circuit Table

The Circuit table displays circuit information for a network of ONS 15530 and ONS 15540 NEs. A circuit is an end-to-end connection between two ONS 15530 or ONS 15540 ports in terms of lambda (wavelength). The ONS 15530 and ONS 15540 provide transport for traffic over fiber, using dense wavelength division multiplexing (DWDM) technology to multiplex many lambdas over the same fiber.

By using circuit services, you can:

- Find all end-to-end connections between ONS 155xx NEs in terms of client ports, provided the entire path is traversed within ONS 155xx NEs.
- View each circuit's protection information.
- For all circuits, view directional-based paths that have been configured and are in use.
- For protected circuits, view active and standby paths that have been configured and are in use.
- Filter the Circuit table display by choosing **File > Filter**.
- Modify a circuit name or description by selecting the circuit and choosing **Configuration > Modify Circuit**.
- Display ONS 15530 contained circuits (if any) by selecting a circuit and choosing **Configuration > Show Contained Circuits**.
- Display the paths in a circuit by selecting the circuit and choosing **Configuration > Open Circuit Path Table**.

Complete the following steps to view the ONS 15530 and ONS 15540 Circuit table:

Step 1 In the Domain Explorer, Subnetwork Explorer, or Network Map, select the ONS 15530 or ONS 15540 group and choose **Configuration > ONS 155XX > Circuit Table**.

The Circuit table opens, showing circuit information for the selected NEs. Only those circuits for which the selected ONS 15530 or ONS 15540 is either the source or the destination are listed. See Table 7-15 for descriptions.

Step 2 To filter the Circuit table, choose **File > Filter**. The filter dialog box opens, containing circuits that you can filter in the following ways:

- By circuit name.
- By type and size of circuit.
- By NE ID.
- By active/inactive status—Filters out inactive circuits.
- By passthrough status—Filters out passthrough circuits (circuits that pass through a node without being dropped).

Step 3 To display contained circuits on an ONS 15530 or ONS 15540, select a circuit in the Circuit table and choose **Configuration > Show Contained Circuits**. Another Circuit table opens, showing any circuits contained within the selected circuit.

Table 7-15 Field Descriptions for the Circuit Table–ONS 15530 and ONS 15540

Field	Description
Circuit Name	The name of the circuit.
Circuit Description	The circuit description.
Note	Displays any comments that have been entered for the selected circuit. Allows you to add additional comments.
Circuit Type	The type of circuit selected. Values are: • SONET • Gigabit Ethernet • 10-Gigabit Ethernet (GE) • Fiber Channel • FICON • ESCON • SDH • ISC Compatible • ISC Peer • SYSPLEX • DWDM Transparent—A circuit associated with the transparent port • DWDM Wavelength—A circuit associated with the OSC channel • Fast Ethernet • FDDI • 2.5-GE Trunk Wavelength • 10-GE Trunk Wavelength • 10-GE Trunk

Table 7-15 Field Descriptions for the Circuit Table–ONS 15530 and ONS 15540 (continued)

Field	Description
Circuit Size	The size of the circuit. Values are: • STS1 • STS3C • STS12C • STS48C • DWDM_2.5G • DWDM_10G • FIBERCHANNEL1 • FIBERCHANNEL2 • FICON • ESCON • SYSPLEX • FAST_ETHERNET • GIGABIT_ETHERNET • 10_GIGABIT_ETHERNET • FDDI • STM1C • STM4C • STM16C • ISC_COMPATIBLE • ISC_PEER • SYSPLEX_TIMER_ETR • SYSPLEX_TIMER_CLO
Circuit Direction	Whether the circuit carries unidirectional (one-way) or bidirectional (two-way) traffic.
Circuit State	The state of the circuit. Values are: • Active—The circuit is active and completely discovered. • Incomplete—The circuit was not completely discovered; that is, Prime Optical was not able to trace the circuit all the way from source to destination. • Errored—The circuit was discovered but it might be down. A circuit in this state might be operating and carrying traffic because circuits are shown as errored when one or more paths are down. Check the Circuit Path table (**Configuration > Open Circuit Path Table**) to find out whether any paths are still carrying traffic. • Inactive—The source or destination port(s) have been shut down administratively.
Source Network Element	The source NE ID.
Source Interface	The module type at the circuit source node, the slot and port numbers (physical location), and the interface name.

Table 7-15 Field Descriptions for the Circuit Table–ONS 15530 and ONS 15540 (continued)

Field	Description
Secondary Source Interface	The module type of the secondary source node, the slot and port numbers (physical location), and the interface name. The secondary source node is on the same device as the source module. Note that a secondary source is displayed only when the circuit has Y-cable protection at the source side.
Destination Network Element	The destination NE ID.
Destination Interface	The module type at the destination node, the slot and port numbers (physical location), and the interface name.
Source Protection Type	The type of protection at the source. Values are: • Not Protected—There is no protection at the source • Splitter Protection • Y-cable/Line-Card Protection • Trunk Protection
Destination Protection Type	The type of protection at the destination. Values are: • No Protection—There is no protection at the destination • Splitter Protection • Y-cable/Line-Card Protection • Trunk Protection
Additional Information	Wavelength, frequency, channel number, and band name of the source and secondary source. Secondary source information is applicable only when the circuit has Y-cable or line-card protection.
CDL Flow ID	(ONS 15530 only) The ID of the converged data link layer.

7.2.15 Viewing Circuits in the Circuit Path Table—ONS 15530 and ONS 15540

The Circuit Path table displays information about all of the paths associated with the selected circuit or link.

Step 1 In the Domain Explorer, choose **Configuration > Link Table**.

Step 2 In the Link table, choose **Configuration > Circuit Path Table**. The Circuit Path table opens. The following table provides descriptions.

Table 7-16 Field Descriptions for the Circuit Path Table

Field	Description
Circuit Name	The circuit name of the circuit associated with the path.
Circuit Alias	The alias name for the circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
Circuit Path Number	The unique path number associated with the path.
Source NE ID	The source NE system ID for the path.
Source Interface	The source interface name for the path.
Destination NE ID	The destination NE system ID for the path.
Destination Interface	The destination interface name for the path.
Path Status	The overall status of the path: • Active—The path is active and completely discovered. The possible paths for a circuit are Active-Working, Active-Protected, Standby-Working, or Standby-Protected. • Incomplete—The path is active but not completely discovered. Prime Optical cannot trace the path all the way from source to destination. • Errored—The path was discovered but one or more interfaces are down.
Working Path	Whether the path is configured to be working or protected.
Active Path	Whether the path is active or on standby.
Down Interfaces	If the path is in the errored state, the list of interfaces that are causing this state.
Destination Optical Power (dBm)	The optical power level at the destination. This value is not refreshed automatically. By default, the value shown is the value obtained at the last discovery. To refresh the value in this column, choose **File > Refresh Circuit Power Levels**.

7.2.16 Viewing Circuits in the Circuit Path Span Table—ONS 15530 and ONS 15540

The Circuit Path Span table displays detailed lightpath information about all spans associated with the selected circuit. Each entry in the Circuit Path Span table displays a cross-connect (span within the NE) or segment (span between NEs) being used by the selected circuit.

Step 1 In the Domain Explorer, choose **Configuration > Link Table**.

Step 2 In the Link table, choose **Configuration > Circuit Path Table**.

Step 3 Select a circuit path and choose **Configuration > Open Circuit Path Span Table**. The Circuit Path Span table opens. The following table provides descriptions.

Table 7-17 Field Descriptions for the Circuit Path Span Table

Field	Description
Circuit Name	The circuit name.
Circuit Alias	The alias name for the circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
Circuit Type	The type of the selected circuit.
Circuit Size	The size of the selected circuit.
Path Number	The number of the cross-connect or segment.
Path Hop Number	The hop number of the cross-connect or segment.
Source Network Element	The name of the NE where the circuit span originates.
Source Interface	The name of the interface that is the source for the cross-connect or segment.
Destination Network Element	The name of the NE where the circuit span terminates.
Destination Interface	The name of the interface that is the destination of the cross-connect or segment.

7.2.17 Viewing VCAT Member Circuits

Use the VCAT Member table to view members of a VCAT circuit.

Step 1 Select a CTC-based NE in the Domain Explorer tree and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Circuit Table**.

Step 2 In the Circuit table, choose **Configuration > Member Circuits**. The VCAT Member table opens. The following table provides descriptions.

Table 7-18 Field Descriptions for the VCAT Member Table

Field	Description
Circuit Name	Displays the VCAT member name. **Note** If there are multiple circuits with the same name displayed in the Circuit table, the label *Duplicate* appears in this column.
Circuit Alias	Displays the alias name for the circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
Note	Displays comments that have been entered for the selected VCAT member circuit. Allows you to add additional comments.
Source NE—Module Type/Physical Loc/Interface	Displays the NE ID and module type at the span source, the slot and port name and numbers (physical location), and the STS number (interface).
Destination NE—Module Type/Physical Loc/Interface	Displays the NE ID, the module type at the destination, the slot and port name and numbers (physical location), and the STS number (interface).

Table 7-18 Field Descriptions for the VCAT Member Table (continued)

Field	Description
Circuit Type	Displays the type of VCAT member circuit selected. SONET circuit types are STS, VT, VT Aggregation, VT Tunnel, VT VCAT (shown as VT-v), STS VCAT (shown as STS-v), DWDM OCHNC, and DWDM OCHCC. SDH circuit types are HOP, LOP, LOPA, LOPT, HOV (HO VCAT), LOV (LO VCAT), OCHNC, and OCHCC.
Circuit Size	Displays the size of the VCAT member circuit. • SONET circuit sizes are VT1.5, VT2, STS 1, STS 3c, STS 6c, STS 9c, STS 12c, STS 24c, STS 48c, and STS 192c. • SDH circuit sizes are VC11, VC12, VC3, VC4, VC4-2c, VC4-3c, VC4-4c, VC4-8c, VC4-16c, and VC4-64c. • OCHNC circuit sizes are multirate, 2.5 Gb/s FEC, 2.5 Gb/s No FEC, 10 Gb/s FEC, and 10 Gb/s No FEC. • OCHCC circuit sizes are STM1, STM4, STM16, STM64, OC3, OC12, OC48, OC192, 10GE, 1GE, 10GFC, 4GFC, 2GFC, 1GFC, 4GFiCon, 2GFiCon, 1GFiCon, ESCON, ETR-CLO, ISC-PEER, ISC3-PEER-1G, ISC-PEER-2G, ISC-COMPACT, HDVT, SD1/D1, DV6000, or Pass Through. **Note** Not all circuit sizes are supported on all NE releases.
Circuit Direction	Indicates whether the VCAT member circuit carries unidirectional or bidirectional traffic.
Customer ID	Optional text field that displays the customer ID of the VCAT member circuit.
Service ID	Optional text field that displays the service ID of the VCAT member circuit.
Circuit Status	Displays the status of the selected VCAT member circuit: • Discovered—The circuit is completely configured in the network; all components are in place and a complete path exists from the circuit source to the circuit destination. • Partial—The circuit is not complete; one or more cross-connections are not in place. • Creating—Prime Optical is creating the circuit. • Deleting—Prime Optical is deleting the circuit. • Discovered_TL1—A TL1-created circuit or a TL1-like Prime Optical-created circuit is complete and has upgradable cross-connects. A complete path from source to destination(s) exists. • Partial_TL1—A TL1-created circuit or a TL1-like Prime Optical-created circuit with upgradable cross-connects is missing a cross-connect, and a complete path from source to destination(s) does not exist. The circuit cannot be upgraded until the missing cross-connects are in place.
Circuit Service State	The circuit service state is an aggregate of the cross-connect states within the circuit. SONET, SDH, and DWDM circuits have different values; see Table 7-3.
Is Monitor	A value of True means that the VCAT member circuit is a monitor circuit. A value of False means that the VCAT member circuit is not a monitor circuit.

Table 7-18 Field Descriptions for the VCAT Member Table (continued)

Field	Description
Circuit Protection Type	Indicates the VCAT member circuit protection scheme. Options are: • 2F BLSR—The circuit is protected by a 2-fiber BLSR. • 4F BLSR—The circuit is protected by a 4-fiber BLSR. • BLSR—The circuit is protected by both 2-fiber and 4-fiber BLSR. • UPSR—The circuit is protected by UPSR. • DRI—The circuit is protected by a UPSR dual ring interconnection. • 1+1—The circuit is protected by 1+1 protection group. • Y-Cable—The circuit is protected by a transponder or muxponder card Y-cable protection group. • Protected—The circuit is protected by diverse SONET topologies; for example, a BLSR and a UPSR, or a UPSR and 1+1. • Unprotected—The circuit is not protected. • 2F-PCA—The circuit is routed on a PCA path on a 2-fiber BLSR. PCA circuits are unprotected. • 4F-PCA—The circuit is routed on a PCA path on a 4-fiber BLSR. PCA circuits are unprotected. • PCA—The circuit is routed on a PCA path on both 2-fiber and 4-fiber BLSRs. PCA circuits are unprotected. • Unknown—Circuit protection types appear in the Circuit Protection Type column of the Circuit table when the circuit status is Discovered. If the circuit not discovered, the protection type is *Unknown*. • Lost—The circuit was protected, but the protection has been lost due to changes in the network.
Description	Displays the description of the selected VCAT member circuit.
No. of VLANs	Displays the number of VLANs associated with the VCAT member circuit.
Is VCAT or Member Circuit	A value of True means that the circuit is a VCAT member circuit.
OCHNC Wavelength	Indicates the wavelength provisioned for the OCHNC, in nanometers (nm).
OCHNC Direction	Indicates the direction of the OCHNC. Values are east-to-west or west-to-east.

7.2.18 Creating VCAT Member Circuits

Use the Add Member wizard to add new members to an existing VCAT or open-ended VCAT circuit.

Note
- You can launch the Add Member wizard only for VCAT circuits that allow reconfiguration.
- VCAT circuits created through TL1 cannot be reconfigured (**Add/Delete Member**) until the parent VCAT circuit is reconfigured (**Configuration > Reconfigure Circuit(s)** in the Circuit table).

- To specify member endpoints for VCAT circuit endpoints on CE-MR-10 cards, the Add Member wizard shows the Endpoint Selection pane (with slot/port/STS, Member Selection button, and a link for circuit creation).

Complete the following steps to create VCAT member circuits:

Step 1 Select a CTC-based NE in the Domain Explorer tree and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Circuit Table**.

Step 2 In the Circuit table, choose **Configuration > Member Circuits**.

Step 3 In the VCAT Member table, choose **Configuration > Add Member**. The Add Member wizard opens. The following table provides descriptions.

Step 4 In the Add Members pane, specify the number of members to add to the existing VCAT circuit. Choose the administrative state for the new VCAT member circuit. All of the other panes (Routing Preferences, Manual Provisioning, Route Constraints, Review Route, and so on) are identical to the Create Circuit wizard. (See Table 7-6 on page 7-14.)

Step 5 Click **Next** to proceed through the wizard panes. After finalizing your selections, click **Finish**.

Table 7-19 Field Descriptions for the Add Member Wizard

Field	Description
Add Members	
Current Circuit Size	Displays the current size of the circuit.
Number of Members	Enter the number of members to add to the existing VCAT circuit.
New Circuit Size	Displays the new size of the circuit.
State	Select an administrative state for the new VCAT member circuit. SONET and SDH circuits have different values. For SONET circuits, values are: • IS—The circuit is in service and able to carry traffic. • IS AINS—Alarm reporting is suppressed, but the circuit is able to carry traffic. • OOS DSBLD—The circuit is out of service and unable to carry traffic. • OOS_MT—The circuit is in maintenance state. The maintenance state does not interrupt traffic flow; it suppresses alarms and conditions and allows loopbacks to be performed on the circuit. For SDH circuits, corresponding values are: • Unlocked • Unlocked, autoInService • Locked, disabled • Locked, maintenance
Add to Drop Ports	Check this check box to apply the selected state to the drop ports.
Circuit Summary	Summarizes the selections you made in the wizard panes. To change the circuit summary, click **Back** and change your selection(s).

7.2.19 Filtering the Circuit Table

Use the Circuit table filter to filter circuit data according to criteria that you select.

Step 1 In the Domain Explorer tree, select the NE for which to view circuit information.

Step 2 From the **Configuration** menu, choose **CTC-Based SONET NEs**, **CTC-Based SDH NEs**, or **ONS 155xx**; then, choose **Circuit Table** from the submenu. The Circuit table opens, showing circuit information for the selected NE.

Step 3 Choose **File > Filter** (or click the **Filter Data** tool). The Circuit table filter opens. The following table provides descriptions. Fields shown depend on the type of NE selected.

Step 4 After making your selections, click **OK**. The filtered circuit data is displayed in the Circuit table.

Table 7-20 Field Descriptions for the Circuit Table Filter Dialog Box

Field	Description
Circuit Names	Displays the list of available circuit names. Click **Add** and **Remove** to move circuit names to and from the Selected Names list. If you check **Ignore Circuit Names**, Prime Optical ignores all circuit names and the Available Names and Selected Names lists and Add and Remove buttons are disabled. This is equivalent to selecting all the names in the Available Names list of the Circuit Names tab.
Circuit Alias	Enter a new alias name for the circuit. The alias name can contain alphanumeric characters. International character sets are also supported.
Type and Size (CTC-based SONET NEs)	Allows you to specify the type and size of circuit to display. Select **All** to display circuit data for all Ethernet, STS, VT, VT Aggregation, VT Tunnel, VT VCAT (shown as VT-v), STS VCAT (shown as STS-v), DWDM OCHNC, and DWDM OCHCC circuits. Select **Size All** to display circuit data for all VT1.5, VT2, STS-1, STS-3c, STS-6c, STS-9c, STS-12c, STS-18c, STS-24c, STS-36c, STS-48c, STS-96c, and STS-192c interfaces. OCHNC and OCHCC sizes (shown only when the OCHNC or OCHCC circuit type is selected, not when the All option is selected) include multirate, 2.5 Gb/s FEC, 2.5 Gb/s No FEC, 10 Gb/s FEC, and 10 Gb/s No FEC. **Note** When you select All, all circuit types and sizes for the specific NE model are displayed. **Note** When circuit size is selected for filtering circuits, a VCAT circuit will be filtered if the size matches its member circuit size.

Table 7-20 Field Descriptions for the Circuit Table Filter Dialog Box (continued)

Field	Description
Type and Size (CTC-based SDH NEs)	Allows you to specify the type and size of circuit to display. Select **Type All** to display circuit data for all HOP, LOP, LOPA, LOPT, HOV (HO VCAT), LOV (LO VCAT), OCHNC and OCHCC circuits. Select **Size All** to display circuit data for all VC11, VC12, VC3, VC4, VC4-2c, VC4-3c, VC4-4c, VC4-6c, VC4-8c, VC4-12c, VC4-16c, VC4-32c, and VC4-64c interfaces. OCHNC, and OCHCC sizes (shown only when the OCHNC, or OCHCC circuit type is selected, not when the All option is selected) include multirate, 2.5 Gb/s FEC, 2.5 Gb/s No FEC, 10 Gb/s FEC, and 10 Gb/s No FEC.
Type and Size (ONS 15530 and ONS 15540 NEs)	Allows you to specify the type and size of circuit to display. Select **All** to display circuit data for all 2.5 GB interfaces.
NE ID	Displays the list of available NE IDs. Click **Add** and **Remove** to move NEs to and from the Selected NE IDs list, and then run the filter.
Links (CTC-based NEs)	Displays all available links. **Note** If you open the Circuit table from the Find window or the Domain Explorer, the Links tab is disabled. The tab is enabled only if you open the Circuit table from the Link table.
Description (CTC-based NEs)	Allows you to filter by circuit description.
Circuit State (ONS 15530 and ONS 15540 NEs)	Allows you to specify whether to display active or inactive circuits.
Passthru Circuits (ONS 15530 and ONS 15540 NEs)	Allows you to specify whether to display passthrough circuits. If checked, all circuits that pass through the selected node without being dropped are displayed. If unchecked, only the circuits being dropped at the node are displayed.
Customer ID	Displays a list of available customer IDs. Click **Add** and **Remove** to move customer IDs to and from the Selected Customer IDs list, and then run the filter. If you check **Ignore All Customer IDs**, Prime Optical ignores the customer IDs in the filter criteria.
Service ID	Displays a list of available service IDs. Click **Add** and **Remove** to move service IDs to and from the Selected Service IDs list, and then run the filter. If you check **Ignore All Service IDs**, Prime Optical ignores the service IDs in the filter criteria.
No. of VLANs	Displays filter criteria for the VLAN count. Enter the VLAN count in the text box and specify one of the options for comparison: Greater than or equal to, Less than or equal to, or Equal to.
SRLG	Displays a list of available SRLGs. Click **Add** and **Remove** to move SRLG entries to and from the Selected SRLG Entries list, and then run the filter. If you check **Ignore SRLG**, Prime Optical ignores the SRLGs in the filter criteria.

7.2.20 Tracing Circuits

Use the Circuit Trace window to trace the connectivity of a circuit by showing the source node, the destination node, and any intermediate nodes in graphical format. In addition, the Circuit Trace window displays the primary and secondary circuit paths. A circuit trace report is available only for ONS 15305 and CTC-based NEs.

7.2.20.1 Tracing High-Level Circuits

Prime Optical displays a High-Level Circuit Trace window, where:

- A graphic map uses high-level span information such as NEs and links to display the circuit trace.
- The graphic map displays *logical* and *physical* high-level views:
  - Logical view—The circuit is traced on the map using logical links. For example, OCHCC circuits use OCH trail links for the trace.
  - Physical view—The circuit is traced on the map using physical links. For example, OCHCC circuits use OTS links for the trace.
- Links are highlighted according to the high-level view that is selected.
- Link color corresponds to link status. For example, working links are shown in green.
- The window does not trace the following link types:
  - 2-fiber BLSR with protection channel access (PROT_BLSR_2F_PCA)
  - 4-fiber BLSR with protection channel access (PROT_BLSR_4F_PCA)

To view a high-level circuit trace, complete the following steps:

Step 1 Select the node that contains the circuit to be traced and open the Circuit table. For an explanation of Circuit table launch points, see Table 7-2 on page 7-4.

Step 2 In the Circuit table, select the circuit to be traced, and choose **Configuration > Trace High-Level Circuit** (or click the **High-Level Trace** tool). The High-Level Circuit Trace window opens. Based on the NEs involved in the circuit, all links that belong to the subnetwork are retrieved and displayed.

Note You cannot trace STS VCAT, VT VCAT, VC HO VCAT, and VC LO VCAT circuits, or circuits with a status other than Active or Roll Pending.

Step 3 By default, the High-Level Circuit Trace window opens with the logical view displayed. Choose **View > WDM Topology** to switch to the physical view. The window highlights the relevant links according to your selection.

Step 4 When multiple links belong to the same NE object, a link bundle is created automatically to manage the set of links. You can right-click a link or link bundle and choose **Expand** or **Collapse** from the shortcut menu. If you choose **Collapse**, the links are hidden and the link bundle is displayed. If you choose **Expand**, the link bundle is hidden and the links are displayed. The color of the link bundle represents the link selection status, which has the following order of priority (from highest to lowest):

- Magenta—The link bundle contains at least one excluded link.
- Blue—The link bundle contains at least one selected link.
- White—The link bundle contains at least one selecting link.
- Green—All links in the link bundle are selectable.

- Red—The link bundle contains at least one unselectable link.

Step 5 Position your mouse cursor over a link. The tooltip reports the following information, if available:

- Link type.
- Source NE name, slot number, card name, port number, side information.
- Destination NE name, slot number, card name, port number, side information.
- Protection type.

Note When you move the cursor over an NE for a high level circuit, the tooltip displays the fiber information for that NE. In case of invalid values such as a different forward and backward lengths, the background of the tooltip is shown in red color.

Step 6 To adjust the zoom level within the map view, do any of the following:

- Choose **Edit > Zoom In**, **Zoom Out**, or **Zoom Area**.
- In the toolbar, click the **Zoom In**, **Zoom Out**, or **Zoom Area** tool.
- Right-click an empty area of the map and choose **Zoom In**, **Zoom Out**, or **Zoom Area** from the popup menu.

The zoom tools work as follows:

- Zoom In—Allows you to zoom in on an object in the map view. This tool increases the size of all of the graphic objects on the map.
- Zoom Out—Allows you to zoom out on the map view. This tool decreases the size of all of the graphic objects on the map.
- Zoom Area—Allows you to pan and zoom the view to a different region of the map. Hold down the left mouse button and use the Zoom Area box to highlight an area on the map. When you release the left mouse button, the zoom is applied on the selected area of the map.

Step 7 Click an NE object to open the NE Explorer window for that NE.

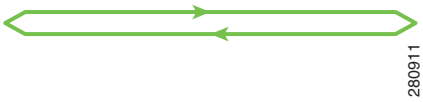
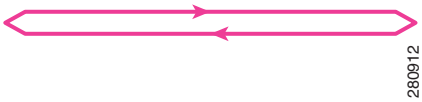
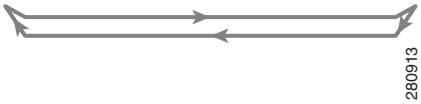
Step 8 Choose **View > Detailed View** to open a detailed Circuit Trace window from the current window. For information about the detailed view, see 7.2.20.2 Tracing Detailed Circuits, page 7-162.

The following table describes the icons in the High-Level Circuit Trace window.

Table 7-21 Object Icon Descriptions for the High-Level Circuit Trace Window

Object	Icon
The color of the NE represents the highest alarm severity on that entity. For icon colors, see Table A-2 on page A-3. The label under the NE icon shows the NE name.	
While the NE is initializing, a small hourglass is shown to the right of the NE. The hourglass icon disappears when the NE state changes to In Service.	

Table 7-21 Object Icon Descriptions for the High-Level Circuit Trace Window (continued)

Object	Icon
Circuit source, where *n* indicates the source number.	
Circuit destination, where *n* indicates the destination number.	
Solid green link with bidirectional arrows: The link is active and bidirectional, and supports the working (main) span.	
Solid magenta link with bidirectional arrows: The link is active and bidirectional, and supports the protected (standby) span.	
Solid green link with unidirectional arrows: A single arrow in the middle of the link shows the direction of the source or destination.	
Solid magenta link with unidirectional arrows: A single arrow in the middle of the link shows the direction of the source or destination.	
Solid gray link: The link is active but is not directly involved in the circuit.	
Dashed-line link: A dashed line represents an invalid link or a logical link, such as an OCH trail link. **Note** If the logical link is involved in a circuit, the circuit type is shown above the dashed line.	
Dashed-line link that uses triple dots with spacing: While the NE is being discovered, the links are created but might remain invalid. In this case, the link is shown on the map as a dashed line that uses triple dots with spacing.	

The Refresh Data tool flashes when updates are available. Or, if the automatic Refresh Data feature is enabled, the High-Level Circuit Trace window refreshes automatically whenever updates occur. The following table shows which events prompt a real-time update to the High-Level Circuit Trace window.

Table 7-22 Events that Cause a Real-Time Update to the High-Level Circuit Trace Window

Event	Action
Add a link	The graphic object representing the link is added to the map.
Modify a link	If the link validity changes, the corresponding graphic object is updated.
Delete a link	The graphic object representing the link is deleted from the map.
Change the NE state to Out of Service	The NE icon color changes to gray. All links that belong to the NE are deleted and removed from the map.
Change the NE state to In Maintenance	The NE icon color changes. All links that belong to the NE are deleted and removed from the map.
Change the NE state to In Service	The NE icon color reflects the highest alarm severity on that entity, and the hourglass icon disappears. All links that belong to the NE are discovered and shown on the map.
Change the NE state to Initializing	A small hourglass is shown to the right of the NE while the NE initializes.
Change the circuit name	The window title updates to show the new circuit name.
Delete a circuit	A warning message informs you that the circuit has been deleted. Then, the High-Level Circuit Trace window closes automatically.

Note If you are trying to trace subnetwork information but there are insufficient map coordinates for the Subnetwork Explorer, the graphic objects are placed randomly on the Circuit Trace window. To fix this problem, open the Subnetwork Explorer map view and click **Save** to save the graphic objects' positions.

7.2.20.2 Tracing Detailed Circuits

In addition to high-level circuit traces, Prime Optical displays detailed circuit traces. To view a detailed circuit trace, complete the following steps:

Step 1 Select the node that contains the circuit to be traced and open one of the following:

- Circuit table. For an explanation of Circuit table launch points, see Table 7-2 on page 7-4.
- Link Utilization table. To launch the Link Utilization table, see 3.6.9 Viewing Link Utilization, page 3-47.

Step 2 In the Circuit table, select the circuit to be traced, and choose **Configuration > Trace Circuit** (or click the **Trace** tool). The Circuit Trace window opens.

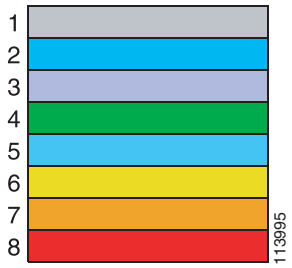
Step 3 In the Link Utilization table, select the circuit to be traced, and choose **View > Circuit Trace**. The Circuit Trace window opens.

Step 4 In the Circuit Trace window, choose **Edit > Zoom In**, **Zoom Out**, or **Zoom Area** to adjust the zoom level. You can also click the **Zoom In**, **Zoom Out**, or **Zoom Area** tool.

Note Prime Optical traces the connectivity of circuits in Partial state. However, if the source or destination node information is not available during circuit discovery, Prime Optical cannot start the circuit trace and generates an error message.

The following figure shows the color scheme used to represent the port state and alarm status in the Circuit Trace window. The color of the NEs and ports represents the highest alarm severity on that entity.

Figure 7-1 Colors of Port State and Alarm Status



Row	Color	Port State	Port State Abbreviation	Alarm Status
1	Gray	Out of Service	OOS_DSBLD	—
2	Cyan	Out of Service–Maintenance	OOS_MT	—
3	Purple	In Service	IS_AINS	—
4	Green	In Service	IS	Clear
5	Light blue	In Service	IS	Warning
6	Yellow	In Service	IS	Minor
7	Orange	In Service	IS	Major
8	Red	In Service	IS	Critical

Note
- The administrative state color (OOS_DSBLD, OOS_MT, IS_AINS) overrides the alarm state color.
- For in-service (IS) ports, the alarm state color overrides the administrative state color.

The following table describes the icons in the detailed Circuit Trace window.

Table 7-23 Object Icon Descriptions for the Detailed Circuit Trace Window

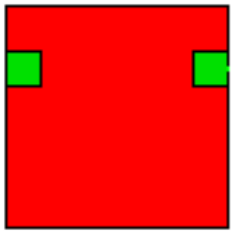
Object	Icon
Circuit source, where *n* indicates the source number	
Circuit destination, where *n* indicates the destination number	
NE	<Cross-connect size>  <Node name>
Active span **Note** Arrows indicate the direction of traffic flow, with green indicating active traffic.	
Standby span **Note** Arrows indicate the direction of traffic flow, with purple indicating standby traffic.	
PCA, VT tunnel, or VAP span **Note** Each span is tagged with a *Tunnel*, *VAP*, or *PCA* label.	
Rolled path **Note** The rolled path could be the source, the destination, or one or more spans. All entities that have been added to a circuit are shown in orange once the roll is created.	

Table 7-23 Object Icon Descriptions for the Detailed Circuit Trace Window (continued)

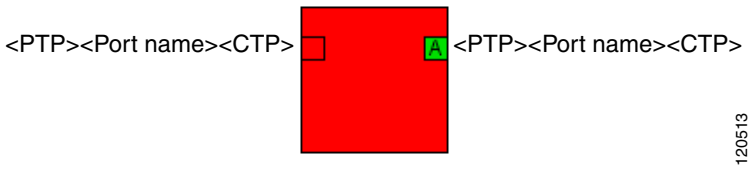
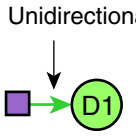
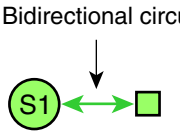
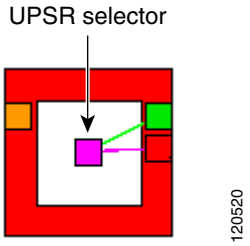
Object	Icon
Port **Note** If there are multiple ports displayed, the ports on the top of the NE icon have a left-right to bottom-top association with the port name.	
Unidirectional circuit	
Bidirectional circuit	
UPSR selector **Note** The color of the UPSR selector represents the switch state. Green indicates that the selector is using the traffic from the working path; purple indicates that the selector is using traffic from the protected path.	
(For UPSR selectors) Switched state is *Locked*	
(For UPSR selectors) Switched state is *Forced*	
(For UPSR selectors) Switched state is *Manual*	
(For UPSR selectors) Switched state is *APS clear*	

Table 7-23 Object Icon Descriptions for the Detailed Circuit Trace Window (continued)

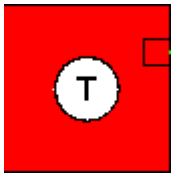
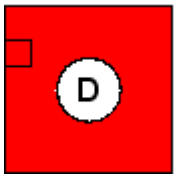
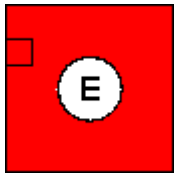
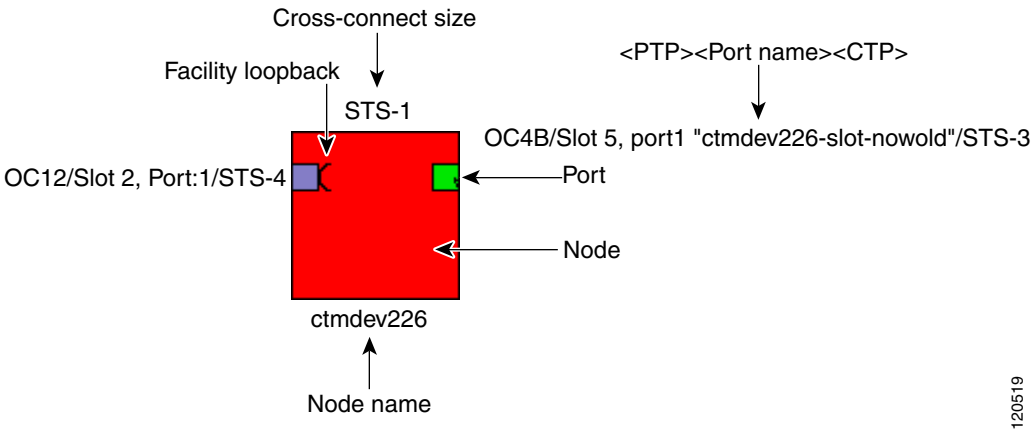
Object	Icon
(For UPSR selectors) Switched state is *Exercise*	
(For UPSR selectors) Provisioning type is *Protected* (PRT)	<*PTP*>*Port name*<*CTP*>**(PRT)**
(For UPSR selectors) Provisioning type is *Working* (WRK)	<*PTP*>*Port name*<*CTP*>**(WRK)**
Internal drop for VT tunnel	
Internal drop for VAP circuit	
Internal drop for Ethernet circuit	
Facility (line) loopback	
Terminal loopback	
Automatic J1 path trace mode	

Table 7-23 Object Icon Descriptions for the Detailed Circuit Trace Window (continued)

Object	Icon
Manual J1 path trace mode	
Dual Connection Node	

The following figure shows a sample circuit diagram that uses many of the objects and icons described in Table 7-23.

Figure 7-2 Sample Circuit Diagram



The Circuit Trace window provides tooltips. For each span, the tooltip displays link protection and bandwidth information. If a circuit passes through a VT tunnel, the intermediate nodes through which the VT tunnel passes are displayed and the level of cross-connection is STS-1.

For DRI circuits, DRI nodes are tagged with a *DRI* label.

The Circuit Trace also displays ONS 15600 circuits that are in Roll Pending state. The Roll From circuit path is marked in green and the Roll To circuit path is marked in orange. CTPs that are part of the roll are labeled *RollTo* and *RollFrom*.

7.2.20.3 Viewing Photonic Path Trace Details

Prime Optical displays Photonic Path Trace (PPT) for Layer 1 services of OCHNC and OCH Trail circuits. The PPT is a graphic representation of the Optical Power and the corresponding Threshold values for each port.

Note Prime Optical displays PPT details only for unidirectional circuits. For bidirectional circuits, the Photonic Path trace details are displayed individually for each direction: Source to Destination, and Destination to Source.

To view Photonic Path Trace, complete the following steps:

Step 1 Select the node that contains the circuit to be traced and open one of the following:

- Circuit table—For an explanation of Circuit table launch points, see Table 7-2 on page 7-4.
- Link Utilization table—To launch the Link Utilization table, see 3.6.9 Viewing Link Utilization, page 3-47.

Step 2 In the Circuit table, select the circuit to be traced, and choose **Configuration > Trace Circuit** (or click the **Trace** tool). The Circuit Trace window opens.

Step 3 In the Link Utilization table, select the circuit to be traced, and choose **View > Circuit Trace**. The Circuit Trace window opens.

Step 4 In the Circuit Trace window, choose the Photonic Path Trace tab.

Note For optimal network performance, PPT details are not automatically displayed when the Circuit Trace window is opened.

Step 5 In the Photonic Path Trace tab, click **Start**. All NEs in the circuit are displayed in the left pane.

Note For a bidirectional circuit, the NEs are displayed under two NE groups in the left pane: one group for each direction.

Step 6 Click the specific NE for which to view the PPT details. The corresponding PPT graph is displayed in the right pane.

The Photonic Path Trace tab also displays the date and time at which the PPT data was last retrieved. You will find it next to the **Start** button at the bottom-left corner of the tab.

Note You can also export PPT data as an HTML file by clicking **Export** at the bottom of the Photonic Path Trace tab.

The following limitations apply to Photonic Path Trace:

- When the service is provisioned on preprovisioned cards, the PPT tab is available in the Circuit Trace window, but PPT data cannot be retrieved. In such cases, the NEs that are listed are affixed with <N/A> to indicate that PPT data is not available.
- When the service is splitter-protected or is part of a regeneration group, an error message is displayed when you try to start PPT data collection.

7.2.20.4 Viewing a Port or Node from the Circuit Trace Window

To view a port or node from the Circuit Trace Window, complete the following steps:

Step 1 Launch the Circuit Trace window. See 7.2.20 Tracing Circuits, page 7-159.

Step 2 To view a port, right-click it and choose **Open Port** from the shortcut menu (or double-click the port). The NE Explorer opens and displays the port.

Step 3 To view a node, double-click it. The NE Explorer opens and displays the shelf view of the node.

Step 4 For OCHCC circuits, you can view the complete circuit span between the source and destination NE by choosing **View > WDM Topology** in the Circuit Trace window. This feature shows the complete circuit span between two endpoints.

7.2.20.5 Editing the Trail Trace Identifier from the Circuit Trace Window

You can edit the trail trace identifier (TTI) from the Circuit Trace window. The Edit TTI option is available on all trunk ports that support OTN. The Edit TTI option does not appear if:

- You disable OTN on the trunk port.
- The trunk port is the protected actor of the protection group.

To edit TTI from the Circuit Trace window, complete the following steps:

Step 1 Launch the Circuit Trace window. See 7.2.20 Tracing Circuits, page 7-159.

Step 2 Right-click the port and choose **Edit TTI** from the shortcut menu. The Edit TTI dialog box opens. Table 7-24 provides field descriptions. Specify the following information:

- Level—Select the trail trace identifier level. You can select either Section or Path.
- Received Trace Mode—Enable the expected string for the path trace. Choose one of these options:
  - Off/None—Disables received trace mode.
  - Manual—Uses the value of the Current Expected String field as the baseline. An alarm is raised when a string that differs from the Current Expected String is received.
- Disable FDI on TTIM—Check this check box to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms.

Note The received trace mode must be set to Manual before you can disable FDI on TTIM.

- In the Transmit area, do the following:
  - In the New Transmit String text box, enter the new string to be transmitted.
  - Click **Hex Mode** to display the string in hexadecimal mode. The string is displayed in the Current Transmit String area.
  - Click **ASCII Mode** to display the string in ASCII format. The string is displayed in the Current Transmit String area.
- In the Expected area, do the following:
  - Select the Expected String Type. You can select either ASCII or Hex (1 byte).
  - If you set the Received Trace Mode to Manual, enter the string that the target card should receive in the New Expected String text box.
  - Click **Hex Mode** to display the string in hexadecimal mode. The string is displayed in the Current Expected String area.

  - Click **ASCII Mode** to display the string in ASCII format. The string is displayed in the Current Expected String area.
- In the Received area, the current received string is displayed in the Current Received String area. Do one of the following:
  - Click **Hex Mode** to display the string in hexadecimal mode.
  - Click **ASCII Mode** to display the string in ASCII format.

Step 3 Complete one of the following options:

- Click **Reset** to reset the values.
- Click **Default** to restore the default values.
- Click **Apply** to apply the information you specified.
- Click **Close** to close the Edit TTI dialog box.

Table 7-24 Field Descriptions for the Edit Trail Trace Identifier Dialog Box

Field	Description
Port	Displays the port number.
Level	Allows you to set the trail trace identifier level (Section or Path).
Received Trace Mode	Allows you to modify the received trace mode (Off/None or Manual).
Disable FDI on TTIM	Allows you to disable FDI for TTIM alarms. **Note** The received trace mode must be set to Manual before you can disable FDI on TTIM.
Current Transmit String	Displays the current transmit string.
New Transmit String	Allows you to set a new transmit string.
Hex Mode	Click **Hex Mode** to display the string in hexadecimal mode.
Current Expected String	Displays the current expected string.
Expected String Type	Allows you to select the expected string type. You can choose one of the following: • ASCII—Displays the string in ASCII format. • Hex (1 byte)—Displays the string in hexadecimal mode. If you choose Hex (1 byte), only one character (1 byte) is allowed.
New Expected String	Allows you to set a new expected string.
Hex Mode	Click **Hex Mode** to display the string in hexadecimal mode.
Current Received String	*Display only.* Displays the current received string.
Hex Mode	Click **Hex Mode** to display the string in hexadecimal mode.

Table 7-24 Field Descriptions for the Edit Trail Trace Identifier Dialog Box (continued)

Field	Description
Refresh	Allows you to refresh the data shown in the Edit TTI dialog box.
Auto-Refresh	Allows you to set the time interval at which the Edit TTI dialog box refreshes automatically. The following values are allowed: • None—Disables auto-refresh, if enabled. • Every 5 seconds. • Every 30 seconds. • Every 1 minute. • Every 5 minutes. • Every 15 minutes. • Every 30 minutes. **Note** You cannot enable auto-refresh if the remote entity does not support it.

7.2.20.6 Using the Circuit Trace Window to Apply Protection to the Ports in a Splitter-Protection Group

You can use the Circuit Trace window to apply optical protection to the ports in a splitter-protection group.

7.2.20.6.1 Overview of Protected OCHNC

OCHNC identifies a wavelength optical path in an MSTP node. The optical path can be:

- Pass-through—The wavelength crosses the node in its path from source to destination. Pass-through OCHNC has two side line ports as transmit and receive endpoints.
- Add—The wavelength path starts from the node. Add OCHNC has an OCH filter port as the receiving endpoint and a side line port as the transmitting endpoint.
- Drop—The wavelength path ends at the node. Drop OCHNC has an OCH filter port as the transmitting endpoint and a side line port as the receiving endpoint.

PSM extends OCHNC on the source and destination node, adding protected OCHNC for add and drop. Splitter-protection OCHNC is bidirectional only.

According to the protection used, the ports involved in protected OCHNC are different even if each protected OCHNC is always characterized by the parameters shown in the following table.

Table 7-25 Endpoints Involved In Protected OCHNC

	Protection Type		
Endpoint	OCH	Multiplex Section	Path
TX/RX OCH NC endpoints	PSM COM-TX and COM-RX ports	Mux/Dmx CHAN-TX and CHAN-RX ports	Mux/Dmx CHAN-TX and CHAN-RX ports

Table 7-25 Endpoints Involved In Protected OCHNC (continued)

Endpoint	Protection Type		
	OCH	Multiplex Section	Path
Working TX/RX OTS ports	Unprotected-side line ports	Working-side line ports	PSM W-TX and W-RX (working-side line ports)
Protect TX/RX OTS ports	Unprotected-side line ports	Protect-side line ports	PSM P-TX and P-RX (protect-side line ports)

Protected OCHNC is supported on:

- ROADM (2-4-8 degree) and OADM for OCH protection
- Terminal site for multiplex section or path protection

Wavelength is determined by Mux/Dmx OCH ports, not by PSM units. Protected OCHNC involves all physical ports and patchcords that connect the OCH/OTS endpoint.

Multiplex section and path protection are supported by terminal sites only. The patchcord manager must consider the following limitations when identifying the line side ports for PSM:

- One PSM and a ROADM/OADM unit supporting line ports requires OCH protection.
- One PSM and one additional unit supporting line ports requires path protection.
- One PSM and two additional units supporting line ports requires multiplex section protection.

Note If the node equips more than one side, PSM can be connected only in an OCH protection configuration. Other patchcord creation requests are denied.

7.2.20.6.2 General Rules for Automatic Patchcord Creation

Note the following general rules for automatic patchcord creation:

- Using the Calculate Connections feature, the patchcord manager always tries to connect optical units that belong to the same side to match one of the known layouts.
- The Calculate Connections feature does not connect OCH trunk and OCH filter ports because it is difficult to add TxP and MxP to a standard managed layout in a multiside node. Every algorithm involving TxP or MxP requires a user-provisioned TxP wavelength.
- The patchcord manager connects PSM in a path or multiplex section configuration if there is only one PSM provisioned or equipped on the node, and if there are no incompatible patchcords provisioned on any of the PSM ports.
- To distinguish between path and section, the patchcord manager considers the number of preamplifiers and booster amplifiers, assuming that in the multiplex section the two fiber stages have the same layout.
- For protected layouts, if more than two line side ports are identified (for example, a node equips three boosters), only the first two ports are connected to PSM.
- The patchcord manager creates working and protection sides; that is, A(W) and A(P) for PSM in a path-protection configuration.

7.2.20.6.3 Applying Optical Protection

To apply optical protection to the ports in a splitter-protection group:

Step 1 Launch the Circuit Trace window. See 7.2.20 Tracing Circuits, page 7-159.

Step 2 Right-click a port in a splitter-protection group and choose **Protection Group** from the shortcut menu. This feature applies to OCHCC, OCHTRAIL, and OCHNC circuits that use optical protection.

Step 3 Choose from among the following options. Unavailable functions are dimmed, and the current function is indicated in parentheses. A menu separator divides the switch functions from the locking functions:

- Clear—Removes a previously set switch command.
- Manual to Working—Switches traffic to the working circuit path if the path has an error rate less than the signal degrade.
- Manual to Protect—Switches traffic to the protect circuit path if the path has an error rate less than the signal degrade.
- Force to Working—Forces traffic to switch to the working circuit path, even if the path has signal degrade or signal failure conditions. Force switch states have a higher priority than manual switch.
- Force to Protect—Forces traffic to switch to the protect circuit path, even if the path has signal degrade or signal failure conditions.
- Unlock—Unlocks the port from its current state.
- Lockout of Working—Prevents traffic from switching to the working circuit path under any circumstances. Of all switch states, lockout has the highest priority.
- Lockout of Protect—Prevents traffic from switching to the protect circuit path under any circumstances.

Caution Force and lockout commands override normal protection switching mechanisms. Applying these commands incorrectly can cause traffic outages.

Step 4 At the Confirm Selector Switch prompt, click **OK**.

A message indicates whether the operation succeeded or failed.

7.2.20.7 Viewing a J1 Path Trace from the NE Explorer

The SONET J1 path trace is a repeated, fixed-length string comprised of 64 consecutive J1 bytes. You can use the string to monitor interruptions or changes to circuit traffic. The *Cisco ONS 15454 Reference Manual* shows the ONS 15454 cards that support path trace. DS-1 and DS-3 cards can transmit and receive the J1 field, while the EC-1, OC-3, OC-48AS, and OC-192 can only receive J1 bytes. Cards that are not listed in the reference manual do not support J1 bytes.

To view a J1 path trace from the NE Explorer:

Step 1 Select a CTC-based NE in the Domain Explorer tree and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the NE Explorer, select a card in the NE Explorer tree; then, click the **J1 Path Trace** tab in the card properties pane.

Step 3 Click the **Retrieve** button to retrieve J1 path trace information. Information is displayed in the properties pane.

Step 4 Select the row that corresponds to the port for which you want to display circuit trace information.

Step 5 Click **Display**. The Trace dialog box opens. The following table provides descriptions.

Table 7-26 Field Descriptions for the J1 Path Trace Dialog Box

Field	Description
STS Choices (J1 STS path trace only)	Choose the STS circuit that has path trace provisioned on the source and destination ports. This field does not appear on the J1 VC Path Trace dialog box.
VC3/VC4 Choices (J1 VC path trace only)	Choose the VC3 or VC4 circuit that has path trace provisioned on the source and destination ports. This field does not appear on the J1 STS Path Trace dialog box.
Path Trace Mode	Enable the path trace expected string by choosing one of the following values from the Path Trace Mode drop-down list: • Off/None—Path trace mode is disabled. • Auto—Uses the first string received from the port at the other end as the baseline string. An alarm is raised when a string that differs from the baseline is received. For OC-N ports, Auto is recommended, since Manual mode requires you to trace the circuit on the Edit Circuit window to determine whether the port is the source or destination path. • Manual—Uses the Current Expected String field as the baseline string. An alarm is raised when a string that differs from the Current Expected String is received.
Disable AIS and RDI if TIM-P is Detected	Check the Disable AIS on TIM-P check box if you want to suppress the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the STS or VC3/VC4 path trace identifier mismatch (TIM-P) alarm is detected.
Path Trace String Size	Select the path trace string size. **Note** For information about the different path trace string sizes, see the *Cisco ONS 15454 Procedure Guide* or *Cisco ONS 15454 SDH Reference Manual*.
Current Expected String	Displays the current expected string. Click **Hex Mode** to display the string in hexadecimal mode. Click **ASCII Mode** to display the string in ASCII text.
New Expected String	If you set Path Trace Mode to Manual, enter the string that the OC-N port should receive in the New Expected String field.
Current Received String	Displays the current received string.

7.2.20.8 Editing a J1 Path Trace

Step 1 Select the CTC-based node that contains the circuit to be traced and open the Circuit table. For an explanation of Circuit table launch points, see Table 7-2 on page 7-4.

Step 2 In the Circuit table, select the circuit to be traced, and choose **Configuration > Trace Circuit**.

Step 3 Right-click a port and choose **Edit J1 Path Trace**. The J1 Path Trace dialog box opens. The Edit J1 Path Trace drop-down list is not displayed (when you right click) for ports that do not support the J1/J2 string. (See Table 7-26 for field descriptions.) Specify the following information:

- Path Trace Mode—Enable the path trace expected string. Select one of the following options:
  - Off/None—Path trace mode is disabled.
  - Auto—Uses the first string received from the port at the other end as the baseline string. An alarm is raised when a string that differs from the baseline is received.
  - Manual—Uses the Current Expected String field as the baseline string. An alarm is raised when a string that differs from the Current Expected String is received.
- Alarm Action—Select one of the following options:
  - Disable AIS and RDI on J1-TIM—Check this check box to suppress the alarm indication signal and the remote defect indication when the circuit TIM-P alarm is detected. This option is disabled if you select Off/None as path trace mode.
  - Disable AIS on C2 Mismatch—Check this check box to suppress the alarm indication signal when the C2 byte mismatch alarm is detected.
- Path Trace String Size—Select the path trace string size (16 byte or 64 byte).
- In the Transmit area, do the following:
  - In the New Transmit String text box, enter the new string to be transmitted.
  - Click **Hex Mode** to display the string in hexadecimal mode. The string is displayed in the Current Transmit String area.
  - Click **ASCII Mode** to display the string in ASCII format. The string is displayed in the Current Transmit String area.
- In the Expected area, do the following:
  - If you set the path trace mode to Manual, enter the string that the target card should receive in the New Expected String field.
  - Click **Hex Mode** to display the string in hexadecimal mode. The string is displayed in the Current Expected String area.
  - Click **ASCII Mode** to display the string in ASCII format. The string is displayed in the Current Expected String area.
- In the Received area, the current received string is displayed in the Current Received String area. Do one of the following:
  - Click **Hex Mode** to display the string in hexadecimal mode.
  - Click **ASCII Mode** to display the string in ASCII format.

Step 4 Complete one of the following options:

- Click **Default** to restore the default values for the J1 path trace fields.
- Click **Refresh** to refresh the J1 path trace information.
- Click **Apply** to apply the information you specified.

7.2.20.9 Editing a J2 Path Trace

Step 1 Select the CTC-based SDH NE that contains the VC12 circuit to be traced and open the Circuit table. For an explanation of Circuit table launch points, see Table 7-2 on page 7-4.

Step 2 In the Circuit table, select the VC12 circuit and choose **Configuration > Trace Circuit**.

Step 3 Right-click a port and choose **Edit J2 Path Trace**. The J2 Path Trace dialog box opens. Specify the following information:

- Path Trace Mode—Enable the path trace expected string. Select one of the following options:
  - Off/None—Path trace mode is disabled.
  - Auto—Uses the first string received from the port at the other end as the baseline string. An alarm is raised when a string that differs from the baseline is received.
  - Manual—Uses the Current Expected String field as the baseline string. An alarm is raised when a string that differs from the Current Expected String is received.
- Alarm Action—Select one of the following options:
  - Disable AIS and RDI on J2-TIM—Check this check box to suppress the alarm indication signal and the remote defect indication when the VC12 circuit TIM-P alarm is detected. This is disabled if you select Off/None as path trace mode.
  - Disable AIS on LO SLM—Check this check box to suppress the alarm indication signal when the VC12 circuit, low-order signal label mismatch (LO SLM) alarm is detected.
- Path Trace String Size—Select the path trace string size (16 byte or 64 byte).
- In the Transmit area, do the following:
  - In the New Transmit String text box, enter the new string to be transmitted.
  - Click **Hex Mode** to display the string in hexadecimal mode. The string is displayed in the Current Transmit String area.
  - Click **ASCII Mode** to display the string in ASCII format. The string is displayed in the Current Transmit String area.
- In the Expected area, do the following:
  - If you set the path trace mode to Manual, enter the string that the EC-42 card should receive in the New Expected String field.
  - Click **Hex Mode** to display the string in hexadecimal mode. The string is displayed in the Current Expected String area.
  - Click **ASCII Mode** to display the string in ASCII format. The string is displayed in the Current Expected String area.
- In the Received area, the current received string is displayed in the Current Received String area. Do one of the following:
  - Click **Hex Mode** to display the string in hexadecimal mode.
  - Click **ASCII Mode** to display the string in ASCII format.

Step 4 Complete one of the following options:

- Click **Default** to restore the default values for the J2 path trace fields.
- Click **Refresh** to refresh the J2 path trace information.

- Click **Apply** to apply the information you specified.

7.2.21 Modifying Traces

Trace information can be used to find faults. The Modify Trace dialog box allows you to change the section trace information for applicable cards. Select a port and click **Modify** to open the Modify Trace dialog box. Fields shown depend on the type of card selected. The following table provides descriptions.

Table 7-27 Field Descriptions for the Modify Trace Dialog Box

Field	Description
Port Number	Displays the port number.
Level	Allows you to set the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Auto, Manual, or Off).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms. **Note** The trace mode must be set to Manual before you can disable FDI on TTIM.
Disable AIS/RDI on TIM-S	Allows you to disable the AIS and the RDI when the path trace identifier mismatch section (TIM-S) alarm is detected. **Note** The trace mode must be set to Manual before you can disable AIS/RDI on TIM-S.
Transmit Length	Select a transmit length for the trace. Values are 1 byte, 16 bytes, or 64 bytes.
Current Transmit String	Displays the current transmit string.
New Transmit String	Allows you to set a new transmit string.
Hex Mode	Click **Hex Mode** to display the string in hexadecimal mode.
Current Expected String	Displays the current expected string.
New Expected String	Allows you to set a new expected string.
Hex Mode	Click **Hex Mode** to display the string in hexadecimal mode.
Current Received String	*Display only.* Displays the current received string.
Hex Mode	Click **Hex Mode** to display the string in hexadecimal mode.

7.2.22 Managing Circuit Notes

The Circuit Note dialog box allows you to view and add notes to circuits displayed in the Circuit table. If a circuit has a note, the Circuit Note tool appears under the Note column. Comments are visible to all users.

Step 1 In the Domain Explorer, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Circuit Table**.

Step 2 In the Circuit table, choose **Configuration > Show Circuit Note** (or click the **Show Circuit Note** tool). The Circuit Note dialog box opens. The following table provides descriptions.

Step 3 After reading, adding, or deleting notes, click **OK**.

Table 7-28 Field Descriptions for the Circuit Note Dialog Box

Field	Description
Note	Provides space to type comments about the selected circuit. To add your comments to the previous comments, click the **Append** radio button. To overwrite the previous comments, click **Replace**. To delete the comments, click **Delete**. **Note** You can enable and disable the Replace and Delete functions in the Control Panel > UI Properties pane > Overwrite Circuit Notes field.
History	Displays comments that were entered by previous users.

7.2.23 Managing Circuit Rolls

Use the following procedures to manage circuit rolls:

- 7.2.23.1 Viewing the Rolls Table, page 7-178
- 7.2.23.2 Rolling a Circuit, page 7-179
- 7.2.23.3 Completing a Roll, page 7-186
- 7.2.23.4 Forcing a Valid Signal, page 7-186
- 7.2.23.5 Finishing a Roll, page 7-187
- 7.2.23.6 Canceling a Roll, page 7-187
- 7.2.23.7 Filtering the Rolls Table, page 7-187
- 7.2.23.8 Deleting a Roll, page 7-188

7.2.23.1 Viewing the Rolls Table

The Rolls table displays circuit roll information for the selected NE or NEs. The rolling maintenance function is available in CTC-based NEs to move live traffic from one entity to another. The connections can be single- or dual-ended. Only path-level (not line-level) bridging and rolling is supported.

To view the Rolls table, select a CTC-based NE in the Domain Explorer tree and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Rolls Table**. The following table provides descriptions.

Table 7-29 Field Descriptions for the Rolls Table

Field	Description
Roll from Circuit	Displays the name of the circuit where the circuit roll originates.
Roll to Circuit	Displays the name of the circuit where the circuit roll terminates. This value could be the same as Roll From Circuit when only a single circuit is involved in a roll.
Roll State	Displays the current state of the circuit roll. Values are: • ROLL_PENDING—The roll is awaiting completion or cancellation. • ROLL_COMPLETED—The roll has already been completed. • ROLL_CANCELLED—The roll has been cancelled.
Roll Valid Signal	Displays the roll valid signal status (True or False).
Roll Mode	Displays the roll mode. Values are: • Automatic—When a valid signal is received on the new path, Prime Optical completes the roll on the node automatically. You can cancel an automatic roll only when the Roll Valid Signal value is False. One-way source rolls are always automatic. • Manual—You must complete a manual roll after a valid signal is received. You can cancel a manual roll at any time. One-way destination rolls are always manual.
Roll Path	Displays the roll path for the entire circuit roll.
Roll from Path	Indicates the path that is being rolled away. The original cross-connection goes from Roll Path to Roll from Path.
Roll to Path	Indicates the new path being rolled to. After a successful completion of a roll, the new cross-connection goes from Roll Path to Roll to Path.

7.2.23.2 Rolling a Circuit

Use the Roll Circuit wizard to transfer CTC-based NE traffic from one facility to another without service interruption. The wizard is generally used to move a circuit off a card (for card or facility replacements) or to increase bandwidth utilization (for example, by moving lower-rate circuits across a shared high-rate circuit or rerouting circuits or parts of a circuit). You can roll SONET and SDH circuits only.

Step 1 In the Domain Explorer, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Circuit Table**.

Step 2 In the Circuit table, select the circuit to roll and choose **Configuration > Roll Circuit** (or click the **Roll Circuit** tool). The Roll Circuit wizard opens. The following table provides descriptions.

Table 7-30 Field Descriptions for the Roll Circuit Wizard

Field	Description
Roll Attributes	
Circuit Roll Mode	Select the circuit roll mode (Auto or Manual).
Circuit Roll Type	Select the circuit roll type (Single or Dual).
Roll From Circuit	If you selected multiple circuits, select a circuit to roll from in the Roll From Circuit list.

Table 7-30 Field Descriptions for the Roll Circuit Wizard (continued)

Field	Description
Roll Summary	Displays the results of your choices on this screen.
Pivot/Fixed Point 1	
Circuit Trace	The Roll From Circuit is traced so that you can select the circuit termination point. Select a circuit termination point from the graphic.
Selected CTP	Displays the user-selected circuit termination point.
Roll Summary	Displays the results of your choices on this screen.
Pivot/Fixed Point 2 (available when Circuit Roll Type is Dual)	
Circuit Trace	The Roll From Circuit is traced so that you can select the circuit termination point. Select a circuit termination point from the graphic.
Selected CTP	Displays the user-selected circuit termination point.
Roll Summary	Displays the results of your choices on this screen.
Select New Endpoint (available when Circuit Roll Type is Single; fields depend on the NE selected and the circuit type)	
NE ID	Select a new NE as the endpoint from the list of available NE IDs.
Subnetwork ID	*Display only.* Displays the ID of the subnetwork.
Slot	(For SONET/SDH circuits) Select the slot from the list.
Port	(For SONET/SDH circuits) Select the port from the list.
STS	(For SONET circuits) Select an STS from the list.
VT	(For SONET circuits) Select the VT for the new endpoint from the list.
VC4	(For SDH circuits) Select the VC4 from the list.
VC11	(For SDH circuits) Select the VC11 from the list.
VC12	(For SDH circuits) Select the VC12 from the list.
TUG3	(For SDH circuits) Select the TUG3 from the list.
TUG2	(For SDH circuits) Select the TUG2 from the list.
Routing Preferences View (available when Circuit Roll Mode is Dual)	
Route Automatically	Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. Alternatively, you can choose manual routing and specify all the intermediate hops on a hop-by-hop basis (up to 64 hops per circuit). **Note** If the source and destination of the circuit are on the same node, automatic routing is enabled.
Using Required Nodes/Links	(Available only if Route Automatically is checked) If checked, Prime Optical automatically routes the circuit through the required nodes and/or links.
Review Route Before Creation	(Available only if Route Automatically is checked) Check this check box to review the route before it is created.
VT-DS3 Mapped Conversion	*Display only.* If checked, the roll-away path includes the node on which the VT/DS-3 conversion is done. If unchecked, the roll-away path does not include the node on which the VT/DS-3 conversion is done.

Table 7-30 Field Descriptions for the Roll Circuit Wizard (continued)

Field	Description
Time Slot Restriction	If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks. **Note** Time Slot Restriction is not available for OCHCC and OCHNC circuit types. **Note** For VCAT circuits, you must enter multiple STS/VC4 values in the Time Slot Restriction field, in the Member Preferences table. The STS/VC4 values you enter in the Time Slot Restriction field cannot be identical or circuit creation will fail with an error message.
Fully Protected Path	If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit in a UPSR DRI topology by checking the Dual Ring Interconnect check box. Alternatively, if the circuit must pass across unprotected links, Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications: • Required—Ensures that the primary and alternate paths of the UPSR portions of the complete circuit path are node-diverse. • Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. • Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.
Protection Channel Access	To route the circuit on a BLSR protection channel, if available, uncheck the Fully Protected Path check box, and check the Protection Channel Access check box.
Dual Ring Interconnect	If you selected Fully Protected Path and the circuit will be routed on a DRI, check the Dual Ring Interconnect check box. **Note** For DRI and iDRI manually created circuits, you must double-click the DRI span for it to become DRI. A single-click does not enable the DRI span.
Diverse Shared Risk Link Group (SRLG)	If checked, fully protected circuits are routed through working and protected links that do not share risk groups.
Manual Provisioning	
Map view	Displays the NEs that are available in the subnetwork for circuit creation. This pane also indicates the source and destination NEs (and secondary source and destination NEs, if applicable) selected for circuit creation. The map view is used to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view: • Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area. • Zoom In—Allows you to zoom in on an object in the map view. • Zoom Out—Allows you to zoom out on the map view. • Reset Zoom—Resets the current zoom level to the default.

Table 7-30 Field Descriptions for the Roll Circuit Wizard (continued)

Field	Description
Available Spans	Select a link on the map view (related to the selected node) and its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field. The newly added link appears in blue on the map view.
Selected Spans	Select one or more spans and click **Remove** to remove them from the Selected Spans field. The removed link appears in green to indicate its unselected state. **Note** To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.
Links/Nodes tab	Select the links/nodes in the graphic to populate the selected node field.
BLSR DRI Nodes or MS-SPRing DRI Nodes tab	(For BLSR DRI or MS-SPRing DRI circuits) Click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.
Route Constraints (available only if the Using Required Node/Links check box is checked)	
Map view	Displays the NEs that are available in the subnetwork for circuit creation. This pane also indicates the source and destination NEs (and secondary source and destination NEs, if applicable) selected for circuit creation. The map view is used for the inclusion and exclusion of links or nodes during the specification of route constraints. The included nodes are shown in blue and the excluded links are shown in magenta. Use the right-click menu options to navigate within the map view: • Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area. • Zoom In—Allows you to zoom in on an object in the map view. • Zoom Out—Allows you to zoom out on the map view. • Reset Zoom—Resets the current zoom level to the default.
Selected Node/Link	Displays the currently selected NE or link.
Included Links/Nodes	Displays the list of links or nodes that are included in the route.
Excluded Links/Nodes	Displays the list of links or nodes that are excluded from the route.
VT/VC LO Circuit Options (available only for VT and VC LO path circuits)	
VT/VC LO Tunnel on Transit Nodes	This option is available if the VT or VC circuit passes through a node that does not have a low-order tunnel, or if an existing low-order tunnel is full. Low-order tunnels allow VT/VC circuits to pass through NEs without consuming low-order cross-connect card resources. In general, creating tunnels is a good idea if you are creating many low-order circuits from the same source and destination.
VT Aggregation Point (VAP)/VC LO Aggregation Point (LAP)	(For SONET) This option is available if you are creating a VT1.5 circuit on a DS-1, EC-1, DS3XM-6; or an OC-N port on a BLSR, 1+1, or unprotected node. A VAP allows VT1.5 circuits to be routed through a node using one STS connection on the cross-connect card matrix rather than multiple connections on the VT1.5 matrix. (For SDH) This option is available if you are creating a VC12 circuit on an STM-N port for handoff to non-SDH networks or equipment, such as an IOF, switch, or DACS. A LAP allows low-order circuits to be routed through a node using one VC4 connection on the cross-connect card high-order matrix rather than multiple connections on the low-order matrix.

Table 7-30 Field Descriptions for the Roll Circuit Wizard (continued)

Field	Description
First fixed point is STS/VC4 Grooming Node	Creates the VAP or LAP on the VT or VC circuit source node. This option is available only if the VT circuit originates on a DS-1, EC-1, DS3XM-6, or OC-N card, or if the VC circuit originates on an STM-N card.
Second fixed point is STS/VC4 Grooming Node	Creates the VAP or LAP on the VT or VC circuit destination node. This option is available only if the VT circuit terminates on a DS-1, EC-1, DS3XM-6, or OC-N card, or if the VC circuit terminates on an STM-N card.
None	Choose this option if you do not want to create a low-order tunnel or a VAP/LAP. This is the only available option if Prime Optical cannot create a low-order tunnel or VAP/LAP.
Conversion Route Constraints (available only if VT-DS3 Mapped Conversion is checked)	
NE ID	Select from the list of available NE IDs to specify the source NE ID.
Subnetwork ID	*Display only.* Displays the ID of the subnetwork associated with the circuit source.
Slot	Specify the source slot that contains the DS3XM12 card.
DS3 Mapped STS	Choose **Circuit Source** or **Circuit Dest**.
Review Route (available only if the Review Route Before Creation check box is checked)	
Map view	Displays the NEs that are available in the subnetwork for circuit creation. This pane also indicates the source and destination NEs (and secondary source and destination NEs, if applicable) selected for circuit creation. The map view is used for the inclusion and exclusion of links or nodes during the specification of route constraints. The included nodes are shown in blue and the excluded links are shown in magenta. Use the right-click menu options to navigate within the map view: • Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area. • Zoom In—Allows you to zoom in on an object in the map view. • Zoom Out—Allows you to zoom out on the map view. • Reset Zoom—Resets the current zoom level to the default.
Review Route	Displays the NEs that are available in the subnetwork for circuit creation. This pane also indicates the source and destination NEs (and secondary source and destination NEs, if applicable) selected for circuit creation. The map view displays information about the spans selected during autorouting in the subnetwork. The selected spans are shown in blue. When you select a span, its corresponding details are displayed in the Selected Span pane. The circuit summary displays the total hops and the cost for working and protect paths for the routed circuit.
Source NE ID	Displays the ID of the NE selected as the source node.
Destination NE ID	Displays the ID of the NE selected as the destination node.
Included Spans	If you enabled automatic route selection in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.
Selected Span	Displays detailed information about the span selected in the Included Spans list.

Step 3 In the Roll section of the Roll Attributes pane, specify the following information:

- Circuit Roll Mode—Select either:

  - Auto—Create an automatic roll (required for a one-way source roll).
  - Manual—Create a manual roll (required for a one-way destination roll).
- Circuit Roll Type—Select either Single or Dual. If you select Dual, click **OK** in the message box.

Step 4 In the Roll From Circuit section of the Roll Attributes pane, select the circuit from which to roll the circuit.

Step 5 Click **Next**.

Step 6 The Pivot/Fixed 1 pane displays the circuit trace. Click the square in the graphic image that represents the facility that you want to keep. This facility is the fixed location in the cross-connection involved in the roll process. The identifier appears in the text box below the graphic image. The facility not selected is the Roll From path, which is deleted after the roll is completed.

Step 7 Depending on which circuit roll type you selected, do one of the following:

a. If you selected Single as the circuit roll type, the Select New Endpoint pane opens. The selections in this pane indicate the Roll To facility. Specify the following (when available) for the new endpoint; then, click **Next**:

- NE ID
- Slot
- Port
- STS
- VT

b. If you selected Dual as the circuit roll type, specify the roll points and click **Next**.

Step 8 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled.

b. Using Required Nodes/Links—Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links.

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created.

d. Fully Protected Path—If not selected, choose **Protection Channel Access** to route the circuit on a BLSR protection channel.

e. Fully Protected Path—If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit in a UPSR DRI topology by checking **Dual Ring Interconnect**. Alternatively, if the circuit must pass across unprotected links, Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications:

- Required—Prime Optical ensures that the primary and alternate paths within the UPSR portions of the complete circuit path are node-diverse.
- Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path.
- Don’t Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.

- Dual Ring Interconnect—If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

Step 9 In the Manual Provisioning pane (available when Route Automatically is unchecked), a graphical representation of the circuit is displayed, including source and destination nodes. Select the member from the Member list box at the top of the pane. You must select each member and route the member from source to destination manually, by selecting spans and adding them to the route until the destination is reached. When the member selection is changed, the display is refreshed for the new member. Complete the following substeps; then, click **Finish**:

a. In the circuit display, select the span to use for the next hop.

b. In the Available Spans area, complete the following information:

- From—Displays the source of the span
- To—Displays the destination of the span

c. Click **Add**. The span is added to the Selected Spans list.

d. Repeat substeps a to c for each intermediate NE until the destination NE is reached.

e. Repeat substeps a to d for each member until all members are routed.

f. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Step 10 In the Route Constraints pane (available only if Route Automatically and Using Required Nodes/Links are checked), do the following; then, click **Next** to view the Review Route pane:

a. Selected Nodes/Links area:

- Nodes—Select whether to use nodes in the circuit route
- Links—Select whether to specify the links in the circuit route

b. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

c. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

d. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

e. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

f. If the Review Route Before Creation check box is checked, click **Next** to review the route summary.

Step 11 If you did not select Using Required Nodes/Links, specify VC-LO circuit options. In the VC LO Options pane, choose one of the following radio buttons; then, click **Finish** (if you did not check Review Route Before Creation) or **Next** (to view the spans included in the route in the Review Route pane):

a. VC LO Tunnel on transit nodes

b. VC LAP

- First fixed point is VC4 grooming node
- Second fixed point is VC4 grooming node

c. None

Step 12 In the Review Route pane (available only if Review Route Before Creation is checked), review the following information; then, click **Finish**:

a. In the circuit display, review the ID of the source and destination NEs.

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Displays the following information about the span selected in the Included Spans list:

- From—Span source
- To—Span destination
- Source STS—STS value
- VT—VT time slot

Step 13 In the message box, click **OK**.

7.2.23.3 Completing a Roll

Use the Complete Roll button to terminate a manual roll. You can do this when a manual roll is in a ROLL_PENDING state and you have not yet completed the roll or have not canceled its sibling roll.

Step 1 In the Domain Explorer tree, select the CTC-based NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Rolls Table**.

Step 2 In the Rolls table, choose a roll to complete; then, choose **Configuration > Complete Roll** (or click the **Complete Roll** tool). The traffic is routed to the new port.

7.2.23.4 Forcing a Valid Signal

Use the Force Valid Signal button to force a valid signal on a pending roll so the roll will be completed.

Note You cannot force a valid signal on a one-way cross-connection that is involved in a manual roll.

Step 1 In the Domain Explorer tree, select the CTC-based NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Rolls Table**.

Step 2 In the Rolls table, choose a roll to complete. The Roll Valid Signal field of the roll you selected is set to false.

Step 3 Choose **Configuration > Force Valid Signal**.

7.2.23.5 Finishing a Roll

Use the Finish Roll tool to complete the circuit processing of both manual and automatic rolls. It changes the circuit state from ROLL_PENDING to ACTIVE.

Step 1 In the Domain Explorer tree, select the CTC-based NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Rolls Table**.

Step 2 In the Rolls table, choose a roll to finish; then, choose **Configuration > Finish Roll** (or click the **Finish Roll** tool). The roll is cleared from the Rolls table and the new rolled circuit on the Circuit table returns to Active state.

7.2.23.6 Canceling a Roll

Use the Cancel Roll tool to cancel the selected roll. You can cancel a manual roll at any time; you can cancel an automatic roll only if the Roll Valid Signal is False.

Step 1 In the Domain Explorer tree, select the CTC-based NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Rolls Table**.

Step 2 In the Rolls table, choose a roll to cancel; then, choose **Configuration > Cancel Roll** (or click the **Cancel Roll** tool).

Note To cancel a dual roll, both rolls must have the same roll state.

7.2.23.7 Filtering the Rolls Table

Use the Rolls table filter to filter circuit roll data according to criteria that you select and to display the results in the Rolls table.

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Rolls Table**.

Step 2 Choose **File > Filter** (or click the **Filter Data** tool). The Rolls table filter opens.

Step 3 The Roll Path tab displays the list of available roll paths. Click **Add** and **Remove** to move roll paths to and from the Selected Roll Path list.

Step 4 After making your selections, click **OK**.

7.2.23.8 Deleting a Roll

Step 1 In the Domain Explorer tree, select the CTC-based NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Rolls Table**.

Step 2 In the Rolls table, choose a roll to delete; then, choose **Configuration > Delete Roll**.

Note To delete a dual roll, both rolls must have the same roll state.

Step 3 In the message box, click **OK**.

7.2.24 Circuit Promotion of GMPLS Circuits

Circuit promotion upgrades a non-GMPLS circuit to a GMPLS circuit.

Step 1 From the circuit table, select the circuit to be upgraded.

Step 2 Click WSON and choose **Promote**. The Update Circuit to WSON dialog box opens.

Step 3 From the Validation drop-down list, choose the validation mode. For more information about the validation modes, see Table 7-7Validation Modes, page 7-68.

Step 4 From the Required drop-down list, choose the optical validation value. For more information about the validation threshold values, see Table 7-8Validation Thresholds, page 7-69.

When you position your mouse cursor over the circuit information field, the tooltip gives information about the device name, circuit alias, size, type, and wavelength.

Step 5 Click **Apply**.

The progress bar is displayed. After the operation is successfully completed, the circuit is upgraded.

7.2.25 Validation of GMPLS Circuits

To validate a GMPLS circuit:

Step 1 Select the GMPLS circuit to be validated.

Step 2 Click **WSON** and choose **Validate**.

The Validation dialog box opens.

Step 3 Click **Apply**.

The progress bar is displayed. After the operation is successfully completed, the circuit is validated.

7.2.26 Reroute Wavelength of GMPLS Circuits

This task reroutes an existing GMPLS circuit through an alternate path based on the specified path constraints.

Note GMPLS OCHCC circuits cannot be rerouted. Only the OCH Trail associated with the OCHCC circuit can be rerouted.

Step 1 From the circuit table, select the circuit to be upgraded.

Step 2 Click **WSON** and choose **Re-route Wavelength**. The Re-route Wavelength pane is displayed.

Step 3 Select the GMPLS circuit to be rerouted.

Step 4 From the Constraint Config drop-down list, select the required constraint type. Values are:

- exclude Node—The rerouted path does not pass through the selected node.
- include Node—The rerouted path passes through the selected node.
- exclude Link—The rerouted path does not use the selected span.
- include Link—The rerouted path uses the selected span.

Step 5 Right-click the map or click the **Add/Remove** button to select the node or link to which the constraint is to be applied.

Step 6 Repeat Step 3 and Step 4 to apply more constraints, as needed.

Note When you apply a constraint to include a node or link on the alternate path, you must select nodes or links sequentially, from the source to the destination of the circuit.

Step 7 Click **Apply**.

The circuit is rerouted if a feasible path is found that complies with the specified constraints. After a successful reroute, a confirmation message is displayed. Otherwise, a failure notification is displayed.

Step 8 If the reroute failed in Step 7, repeat the reroute process.

Step 9 Do the following in the Re-route Wavelength pane:

- Click **Clear** to clear the previous selections.
- Click the **Side** toggle button to view the link side information.
- Click the **Working/Protected** toggle button to select the path.

Step 10 Repeat Step 4 through Step 7 as needed.

Step 11 Click **Apply** to apply your changes, or click **Cancel** to cancel the operation.

7.2.27 Restoration of GMPLS Circuits

The restoration functionality works on the GMPLS OCHXX circuits.

The Restoration functionality supports the following:

- You can discover a new optical path when a failure is detected.
- Works on protected and unprotected OCHXX circuits.
- Does not exclude or substitute the protections available for the OCHXX services.
- You can enable or disable the restore feasibility

The Restoration functionality works when the following failures are detected:

- Link failure—Alarms indicating a Loss Of Signal (LOS) on the span.
- Node failure—Result of the failure of all the links terminated on the node.
- Signal failure—Transponders indicating signal problems (for example, OTN signal alarms at RX Transceiver + excessive BER and Pre-FEC errors).

Note You can automatically or manually revert the service to the original path when the failures are resolved.

7.2.27.1 Restoration Balloon Icon

The Restoration balloon icon shows the current restoration values.

Note You cannot modify the values from the balloon icon.

The following describe actions you can take in the Restoration balloon icon:

- Click the **Open GMPLS Restore/Revert Operation Dialog** box to modify the restoration values.
- You cannot click the **OK** button because it is always disabled.
- Click **Cancel** to close the balloon icon.
- Click the **Back** or **Next** buttons to automatically close the Restoration Balloon icon.

7.2.27.2 Restoration Configuration Pane

Use the Restoration Configuration pane to define the restoration and revertive parameters required for creating a GMPLS circuit (OCHNC and OCH Trail). You can also modify the restoration values from this pane.

Step 1 From the circuit table, select the circuit to be restored.

Step 2 Choose one of the following:

- **Configuration > Restore Operations**
- **WSON > Restore Operations**

The Restore/Revert Operations pane is displayed.

Step 3 Choose **Ignore Path Alarms** check box to disable all the other restoration parameters.

Note If you check the **Ignore Path Alarms** check box, the circuit is created even if an alarm (failure) is active on the optical patch.

Step 4 In the GMPLS/WSON Restoration Configuration pane, do one of the following:

- Click **Restoration** to switch the circuit from the original path to an alternate path because of failure in the original path.
- Click **Revert** to revert the circuit from the restored path to the original path after the failure is fixed.

Step 5 In the Revertive Parameters section, do one of the following:

- Click **Automatic** to automatically revert the circuit from the restored path to the original path after the failure is fixed, WSON alarms are acknowledged, and the soak time expires**.**
- Click **Manual** to revert the circuit from the restored path to the original path after the failure is fixed, the WSON alarms are acknowledged, and the soak time expires.

Step 6 Click **Soak Time** (**in hours, minutes, and seconds**), which is the period that the circuit on the restored path waits before switching to the original path after the failure is fixed. The circuit is revertible to the original path after the soak time expires. The minimum value of the soak time must be 00:00:01.

Step 7 Do one of the following:

- Click **Apply** to apply the restoration values to the circuit.
- Click **Restore** to restore all the restoration values.
- Click **Reset** to reset all the restoration values to the defaults.

Step 8 (Optional) To modify the restoration values, do the following in Restore/Revert Operations pane:

Choose **WSON > Restore Operations** to open the Restore/Revert Operations dialog box. The following are displayed on the menu bar:

- Auto Refresh—Enables or disables the automatic update. If the automatic updated is not enabled and the data displayed in the dialog must be refreshed, an information bar will be automatically displayed,
- A tool tip that reports all GMPLS information related to the circuit is displayed on the menu bar.

Do the following in the Restore/Revert Operation section:

- Manual Revert—Reverts the circuit to the original path from the restored path after the soak time expires. You can manually revert the circuit only when the restoration status of the circuit is REST-REVERTIBLE.
- Upgrade Restored—Discards the original path and makes the restored path the working path.
- Revert Test—Forcefully reverts the circuit from the restored path to the original path. When the circuit is forcefully reverted, the circuit cannot be restored and reverted.

Step 9 Click **Apply**.

7.2.28 Circuit Reports

The Circuit Report displays circuit information for Layer 1 services of ONS 15305 CTC, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 MSTP, ONS 15454 SONET, ONS 15454 SDH, ONS 15454-M6, ONS 15454-M2, ONS 15600 SONET, and ONS 15600 SDH. The Circuit Report displays both ANSI and ETSI circuits. Also, both VCAT and member circuits are displayed together.

Note Circuit Reports are not available for ONS155XX NEs. However, you can view the Circuit table for ONS155XX NEs. For more information, see 7.2.2 Viewing the Circuit Table.

You can view three types of circuit reports within the main circuit report: Spans, CTP, and WSON. These reports are dockable.

7.2.28.1 Circuit Report Launch Points

You can access the Circuit Report via the following launch points:

- **Domain Explorer > Configuration > Circuit Report**
- **Subnetwork Explorer > Configuration > Circuit Report**
- **NE Explorer > Configuration > Circuit Report**
- **Network Map > Configuration > Circuit Report**
- **Link Table > Configuration > Circuit Report**

Note You can also launch the Circuit Report by right-clicking an NE or NE node in the Domain Explorer, Subnetwork Explorer, or Network Map.

7.2.28.2 Working with Circuit Reports

To perform actions on Circuit Reports, complete the following steps:

Step 1 In the Domain Explorer, Subnetwork Explorer, or Network Map window, select the NE and choose **Configuration > Circuit Report**.

The Circuit Report opens, displaying the following information for the selected NE:

- Circuit Name
- Note
- Circuit Type
- Circuit Size
- Customer ID
- Service ID
- Alias Name
- Description
- Discovery State

- Service State
- Direction
- Protection
- Wavelength

Note Only those circuits for which the selected NE is either the source or the destination are listed.

Note For 155XX NEs, the Circuit Report appears blank.

Step 2 To filter the Circuit Report, click the Filter tool in the Circuit Report window. A filter drop-down text box appears at the top of each column, from which you can select the values by which to filter the report.

Step 3 To trace a circuit listed in the Circuit Report, do one of the following:

- Right-click the circuit and choose **Circuit Trace**.
- Select the circuit and choose **Circuit > Circuit Trace**.
- Click the **Open Circuit Trace** tool in the toolbar of the Circuit Report window.

  The Circuit Trace window is displayed.

Step 4 To view a high-level trace or detailed trace for a circuit listed in the Circuit Report, do one of the following:

- Right-click the circuit and choose **High-Level Circuit Trace**.
- Select the circuit and choose **Circuit > High-Level Circuit Trace**.
- Click the **Open High-Level Circuit Trace** tool in the toolbar of the Circuit Report window.

  The Circuit High Level Trace window is displayed.

Note High-level circuit trace is available only for circuits that are in the following states: Active, Incomplete, TL1 Active, or Roll Pending.

Step 5 To edit a circuit listed in the Circuit Report, do one of the following:

- Right-click the circuit and choose **Circuit Edit**.
- Select the circuit and choose **Circuit > Edit Circuit**.
- Click the **Open Circuit Edit** tool in the toolbar of the Circuit Report window.

  The Edit Circuit window is displayed.

Step 6 To delete a circuit, select the circuit and do one of the following:

- Right-click the circuit and choose **Delete Circuit**.
- Choose **Circuit > Delete Circuit**.
- Click the **Delete Circuit** tool in the toolbar of the Circuit Report window.

The Delete Circuit(s) dialog box is displayed. For more information, see 7.2.11 Deleting Circuits.

Step 7 To create a new circuit from the NEs associated with the circuits listed in the Circuit Report, select the circuit and choose **Circuit > Create** (or click the **Create Circuit** tool). The Circuit Wizard is displayed. For more information on using the Circuit Wizard, see 7.2.3 Creating Circuits Using the Circuit Wizard.

Step 8 To open the Circuit table from the Circuit report, select the circuit and choose **Circuit > Circuit Table** (or click the **Circuit Table** tool). The Circuit table is displayed. For more information, see 7.2.2 Viewing the Circuit Table.

Note You can select multiple circuits for which to view the Circuit table, provided they are of the same type: either ANSI or ETSI.

Step 9 To add or edit a note for a circuit, choose **Circuit > Add/Modify Note** (or click the **Add/Modify Note** tool.)

Step 10 To roll a circuit, choose **Circuit > Roll Circuit**. The Roll Circuit Wizard is displayed. For more information, see 7.2.23.2 Rolling a Circuit.

Step 11 To promote a circuit to WSON, choose **Circuit > Promote WSON**. For more information on promoting a circuit, see 7.2.24 Circuit Promotion of GMPLS Circuits.

Once the circuit is promoted, you can view its WSON details in the WSON Report.

Step 12 To merge circuits from the Circuit Report, choose **Circuit > Circuit Merge Table**. The Circuit Merge table is displayed. For more information on merging circuits, see 7.2.8 Merging Circuits.

In the Circuit Report window and the subreports—Spans Report, CTPs Report, and WSON Report—if the Auto-Refresh check box is selected in the Circuit Report window, the respective rows are automatically highlighted when a circuit undergoes a change. When the Auto-Refresh check box is not selected, a notification bar appears at the top of the Circuit Report window stating that the reported data has changed. You can click the Refresh tool to refresh the report.

If the report has more than one page, the **Previous Page** and **Next Page** arrows at the top-right corner of the Circuit report window are enabled. The **Pagination Settings** tool allows you to specify whether notes should be displayed and to select the number of records to be displayed per page.

The status bar at the bottom of the Circuit Report window displays:

- Current page number
- Total number of pages in the report
- Number of records displayed
- Number of records selected

If you want to move to a specific page, you can enter the page number in the **Page** text box and press **Enter**.

7.2.28.3 Searching for Circuits Within a Report

You can search for circuits within the Circuit Report using the **Enter Search Query** text box at the top of the Circuit Report window. The **Enter Search Query** text box allows you to search for circuits by the following attributes:

- Alias
- Customer
- Description
- Name
- NE

- Port
- Service
- Slot
- Type

In the **Enter Search Query** text box, press **Ctrl-Space** to display attributes and select from the list; then type a keyword to search by.

You can use multiple keywords for the same attribute, and you can select more than one attribute. All circuits with one or more of the preceding attributes are displayed in the search results.

Tip For hints and examples to help you with your search, click the **Help** icon within the Enter Search Query field.

7.2.28.4 Viewing Circuit Properties

To view the properties of a circuit from the Circuit Report window, do the following:

Step 1 From the **Toggle Frames Visibility** drop-down list, select **Properties**. A dockable Properties window displays the following details:

- Circuit Name
- Note
- Circuit Type
- Circuit Size
- Customer ID
- Service ID
- Alias Name
- Description
- Discovery State
- Service State
- Direction
- Protection
- Wavelength
- Is WSON
- Is Monitor
- Is VCAT Member

7.2.28.5 Exporting Circuit Reports

To export a Circuit Report, complete the following steps:

Step 1 In the Circuit Report window, select **File > Export to CSV** (or click the **Export to CSV** tool). The Export to CSV dialog box appears.

Step 2 Specify the filter parameters in the Export to CSV dialog box. See Table 3-18, "Field Descriptions for the Export to CSV Dialog Box," on page 52.

Step 3 Click **OK** to export.

Note You can export the Spans Report, CTPs Report and WSON Report individually by clicking the **Export to CSV** tool in the respective windows.

7.2.28.6 Viewing the Spans Report

The Spans Report allows you to view information about all spans associated with the selected circuit.

To view the Spans Report, do the following:

Step 1 From the **Toggle frames visibility** drop-down list, select **Spans Report**. A dockable Spans Report window displays the following details:

- Circuit Name
- Source NE ID
- Source Location
- Source Interface
- Source State
- Destination NE ID
- Destination Location
- Destination Interface
- Destination State
- Is Active
- UPSR Protection Operation
- UPSR Protection

Note If the Spans Report is already open, click the **Refresh** tool within the Spans Report after selecting the circuit in the main Circuit report. The Spans Report will then display information for the selected circuit. If you select the **Auto-Refresh** check box within the Spans Report window, the Spans report is automatically updated each time a circuit is selected in the main Circuit Report.

7.2.28.7 Viewing the CTPs Report

The CTP report allows you to view the source and destination termination points of circuits.

To view the CTPs Report, do the following:

Step 1 From the **Toggle frames visibility** drop-down list, select **CTPs Report**. A dockable CTPs Report window displays the following details:

- Circuit Name
- Layer
- NE ID
- Location
- Equipment Type
- Payload Type
- Interface
- Role

Note If the CTPs Report is already open, click the **Refresh** tool within the CTPs report after selecting the circuit in the main Circuit Report. The CTPs report will then display information for the selected circuit. If you select the **Auto-Refresh** check box within the CTPs Report window, the CTPs report is automatically updated each time a circuit is selected in the main Circuit Report.

You can launch the Alarm Browser for a circuit from the CTPs Report by clicking the **Alarm Browser** tool. You can also locate an NE on the Domain Explorer by clicking the **Locate on Domain Explorer** tool.

7.2.28.8 Viewing the WSON Report

The WSON Report allows you to view details of WSON circuits.

To view the WSON Report, do the following:

Step 1 From the **Toggle frames visibility** drop-down list, select **WSON Report**. A dockable WSON Report window displays the following details for the selected circuit:

- Circuit Name
- Expected
- Actual
- Restoration Status
- Revertive Mode
- Soak Time

Note If the WSON Report is already open, click the **Refresh** tool within the WSON Report after selecting the circuit in the main Circuit Report. The WSON Report will then display information for the selected circuit. If you select the **Auto-Refresh** check box within the WSON window, the WSON Report is automatically updated each time a circuit is selected in the main Circuit Report.

The WSON Actions tool allows you to perform the following actions for a selected circuit:

- Validation
- Rerouting
- Restore and Revert

For more information on each of the above actions, see 7.2.25 Validation of GMPLS Circuits, 7.2.26 Reroute Wavelength of GMPLS Circuits, and 7.2.27 Restoration of GMPLS Circuits.

7.3 Managing BLSRs

Use the following procedures to manage BLSRs. You can launch the BLSR table from either the Domain Explorer or the NE Explorer.

- 7.3.1.1 Viewing the BLSR Table from the Domain Explorer, page 7-199
- 7.3.2.1 Creating a BLSR from the Domain Explorer, page 7-200
- 7.3.2.2 Creating a BLSR from the NE Explorer, page 7-200
- 7.3.12.1 Deleting a BLSR from the Domain Explorer, page 7-208
- 7.3.12.2 Deleting a BLSR from the NE Explorer, page 7-208

7.3.1 Viewing the BLSR Table

You can launch the BLSR table from either the Domain Explorer (see 7.3.1.1 Viewing the BLSR Table from the Domain Explorer, page 7-199) or the NE Explorer (see 7.3.1.2 Viewing the BLSR Table from the NE Explorer, page 7-199). Use the BLSR table to view BLSRs that are available in a subnetwork. The BLSR table displays the BLSR attributes and the nodes that participate in the ring. You can select a BLSR in the table and edit, delete, switch, or upgrade the ring from 2-fiber to 4-fiber. The following table provides descriptions.

Table 7-31 Field Descriptions for the BLSR Table

Field	Description
Ring ID	Displays the ring ID as an alphanumeric value of up to six characters.
Ring Type	Displays the ring type.
Line Rate	Displays the line rate. For SONET, the rates are OC12, OC48, and OC192. For SDH, the rates are STM4, STM16, and STM64.
Status	Displays the ring status.

Table 7-31 Field Descriptions for the BLSR Table (continued)

Field	Description
Nodes	Displays the nodes associated with the ring.
Ring Reversion	Displays the ring reversion time, in minutes.
Span Reversion	Displays the span reversion time, in minutes.

7.3.1.1 Viewing the BLSR Table from the Domain Explorer

In the Domain Explorer, select the NE; then, choose **Configuration > CTC-Based SONET NEs > BLSR Table**. The BLSR table opens.

7.3.1.2 Viewing the BLSR Table from the NE Explorer

Step 1 Select an ONS 15327, ONS 15454 SONET, or ONS 15600 SONET NE in the Domain Explorer and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **BLSR** tab. The BLSR tab contains the following fields:

- Fiber Type—Indicates whether the fiber type is 2-fiber or 4-fiber.
- Rate—BLSR rate.
- Ring Name—Not available for the ONS 15600. Name of the BLSR ring.
- Ring ID—Assign a ring ID number from 0 to 9999. Nodes in the same BLSR must have the same ring ID.
- Node ID—Assign a node ID that identifies the node to the BLSR. Nodes in the same BLSR must have unique node IDs.
- Ring Reversion—Set the amount of time before the traffic reverts to the original working path. The Cisco default is 5 minutes. All nodes in a BLSR ring should have the same ring reversion setting, particularly if Never (that is, nonrevertive) is selected.
- Span Reversion—Not available for the ONS 15327. Set the amount of time to pass before the span reverts to the working path.
- East Line—Assign the east BLSR port.
- East Switch—Displays a list of switch commands for the east port.
- West Line—Assign the west BLSR port.
- West Switch—Displays a list of switch commands for the west port.
- East Protect—Not available for the ONS 15327. For 4-fiber BLSR, assign the east BLSR protect port.
- West Protect—Not available for the ONS 15327. For 4-fiber BLSR, assign the west BLSR protect port.

7.3.2 Creating a BLSR for an Individual Node

Use the BLSR Creation wizard to create BLSRs for the selected CTC-based SONET NE. The creation wizard can be launched by selecting an NE from the Domain Explorer, Subnetwork Explorer, or Network Map.

Note Use the Create BLSR wizard to create the BLSR for all desired nodes simultaneously. See 7.3.3 Creating BLSRs for Multiple Nodes Simultaneously, page 7-202.

7.3.2.1 Creating a BLSR from the Domain Explorer

Step 1 In the Domain Explorer, select the NE; then, choose **Configuration > CTC-Based SONET NEs > Create BLSR**. The **BLSR Creation** wizard opens. The following table provides descriptions.

Step 2 After making your selections, click **Next**.

Step 3 A graphical view of the BLSR is displayed. You can complete any of the following:

- Selected Link—Displays the link information for a selected link in the BLSR graphical view.
- Add Span—Add a span. A span is represented by a green line.
- Remove Span—Remove an existing span. A deleted span is represented by a black line.
- Reverse Span—Allows you to reverse the direction of the span.
- Excluded Nodes—Provides a list of nodes that were not included in the BLSR.

Step 4 Click **Finish**.

Table 7-32 Field Descriptions for the Create BLSR Wizard

Field	Description
Type	Specify the fiber type (2-fiber or 4-fiber).
Line Rate	Choose the BLSR ring speed: OC-12 (2-fiber BLSR only), OC-48, or OC-192. The speed must match the OC-N speed of the BLSR trunk (span) cards.
Ring ID	Assign a ring ID, which can be any combination of up to six alphanumeric characters. Nodes in the same BLSR must have the same ring ID.
Ring Reversion	Set the amount of time that elapses before the traffic reverts to the original working path. The Cisco default is 5 minutes. All nodes in a BLSR ring should have the same ring reversion setting, particularly if Never (that is, nonrevertive) is selected.
Span Reversion	(For 4-fiber BLSRs only) Set the amount of time that elapses before the traffic reverts to the original working path following a span switch. The Cisco default is 5 minutes. Span reversions can be set to Never.

7.3.2.2 Creating a BLSR from the NE Explorer

Step 1 Select a CTC-based SONET NE in the Domain Explorer and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 Click the **BLSR** tab.

Step 3 Click **Create**.

Step 4 In the Create BLSR dialog box, set the BLSR properties:

- Fiber Type—Select the BLSR fiber ring type (2-fiber or 4-fiber).
- Ring Name—Assign the BLSR ring name.
- Ring ID—Assign a ring ID (a number from 0 to 9999). Nodes in the same BLSR must have the same ring ID.
- Node ID—Assign a node ID. The node ID identifies the node to the BLSR. Nodes in the same BLSR must have unique node IDs.
- Ring Reversion—Set the amount of time that elapses before the traffic reverts to the original working path. The Cisco default is 5.0. All nodes in a BLSR ring should have the same ring reversion setting, particularly if Never (that is, nonrevertive) is selected.
- West Line—Assign the west BLSR port for the node from the drop-down list.
- East Line—Assign the east BLSR port for the node from the drop-down list.

For 4-fiber BLSRs, complete the following information:

- Span Reversion—Set the amount of time that elapses before the traffic reverts to the original working path following a span reversion. The Cisco default is 5 minutes. Span reversions can be set to Never. If a ring reversion time was set, the times must be the same for both ends of the span. That is, if the west fiber of Node A is connected to the east port of Node B, the Node A west span reversion time must be the same as the Node B east span reversion time. To avoid reversion time mismatches, it is recommended that you use the same span reversion time throughout the ring.
- West Protect—Assign the west BLSR port that will connect to the west protect fiber.
- East Protect—Assign the east BLSR port that will connect to the east protect fiber.

Step 5 Click **OK**.

Note Some or all of the following alarms appear during BLSR setup: E-W MISMATCH, RING MISMATCH, APSCIMP, APSDFLTK, BLSROSYNC. The alarms clear after all of the nodes in the BLSR are configured.

Step 6 Complete Step 1 through Step 5 at each node where the BLSR will be added.

Step 7 After configuring the last BLSR node, wait for the BLSR Ring Map Change dialog box to appear. This can take from 10 to 30 seconds.

Note The dialog box does not appear if SDCC Termination alarms (such as EOC) or BLSR alarms (such as E-W MISMATCH and RING MISMATCH) are present. If an SDCC alarm is present, review the DCC provisioning at each node. If BLSR alarms have not cleared, repeat Step 1 through Step 5 at each node, making sure that each node is provisioned correctly. The dialog box does not apply to the ONS 15327 R3.4 or ONS 15454 R3.4.

Step 8 In the BLSR Ring Map Change dialog box, click **Yes**.

Step 9 In the BLSR Ring Map Change dialog box, verify that the ring map contains all of the provisioned nodes in the expected order. If so, click **Accept**. If the nodes do not appear, or are not in the expected order, repeat Step 1 through Step 8, making sure that no errors are made.

Step 10 Test the BLSR using the following standard site testing procedure:

a. Run test traffic through the ring.

b. Click the **BLSR** tab and then click **BLSR Span**. Choose **MANUAL RING** from the East Switch list. Click **Apply**.

c. In the Alarm Browser, verify that a Ring Switch West event is displayed, and that the far-end node that responded to this request reports a Ring Switch East event.

d. Verify that traffic switches normally.

e. Choose **Clear** from the East Switch list and click **Apply**.

f. Repeat substeps a through d for the west switch.

g. Disconnect the fibers at one node and verify that traffic switches normally.

7.3.3 Creating BLSRs for Multiple Nodes Simultaneously

Use the Create BLSR wizard from the Domain Explorer to create a BLSR for all desired SONET nodes simultaneously.

Table 7-33 Field Descriptions for the Create BLSR Wizard

Field	Description
BLSR Attributes	
Type	The BLSR type (2-fiber or 4-fiber).
Line Rate	The line rate (OC12, OC48, or OC192).
Ring ID	Used-defined ring ID. The value can be any combination of up to six alphanumeric characters.
Ring Reversion	Ring reversion time, in minutes.
Span Reversion	Span reversion time, in minutes.
Working Spans Selection	
After the attributes are defined, a possible BLSR map is shown. You can select the spans from the map and perform Add, Remove, or Reverse operations. The Add operation adds all the spans to the ring. The Remove operation removes the selected span. The Reverse operation switches the east and west ports in the span. If all the spans are added to make a loop, the Finish button is enabled. **Note** For 4-fiber BLSRs, instead of Finish, the Next button is provided. Click **Excluded Nodes** to view the nodes that are being excluded from the BLSR and the reason for the exclusion.	
Protect Ports Selection	
(4-fiber BLSRs only) The table lists all the spans along with the potential protect ports. You can select the desired protect ports (east and west) for each span in the ring. The Finish button is enabled if all the required protect ports are selected.	

7.3.4 Viewing the BLSR Ring Map Table

The Ring Map table contains BLSR information for the selected object in the table.

Step 1 Select an ONS 15327, ONS 15454 SONET, or ONS 15600 SONET NE in the Domain Explorer and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 Click the **BLSR** tab; then, click **Ring Map**. The Ring Map table opens. The following table provides descriptions.

Table 7-34 Field Descriptions for the Ring Map Table

Field	Description
Node ID	Displays the node ID, which identifies the node to the BLSR. Nodes in the same BLSR must have unique node IDs.
IP Address	Displays the NE IP address.

7.3.5 Viewing the BLSR Squelch Table

When multiple fiber cuts isolate a BLSR node, the Squelch table displays the circuits that are isolated on the node by STS number, east source/destination, and west source/destination. The table is display only.

Step 1 Select an ONS 15327, ONS 15454 SONET, or ONS 15600 SONET NE in the Domain Explorer and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 Click the **BLSR** tab; then, select a ring in the table.

Step 3 Click **Squelch Table**. The Squelch table opens. The following table provides descriptions.

Table 7-35 Field Descriptions for the Squelch Table

Field	Description
STS No.	Displays the STS number of the circuit.
East Source	Displays the east source NE.
East Destination	Displays the east destination NE.
West Source	Displays the west source NE.
West Destination	Displays the west destination NE.

7.3.6 Editing BLSRs

Step 1 In the Domain Explorer, select the NE; then, choose **Configuration > CTC-Based SONET NEs > BLSR Table**.

Step 2 In the BLSR table, select the ring to edit; then, choose **Edit > Edit BLSR** (or click the **Edit Selected BLSR** tool).

Step 3 Edit the BLSR attributes:

- Ring ID—Specify an ID of up to six alphanumeric characters.
- Ring Reversion (min)—Set the ring reversion time to Never or from 0.5 to 12 minutes.
- Span Reversion (min)—Set the span reversion time to Never or from 0.5 to 12 minutes.

Step 4 Click **Apply**.

7.3.7 Switching BLSRs

The Switch BLSR dialog box displays a graphical representation of a BLSR, including the following details:

- The NEs that are part of the ring are shown along with the node name.
- The colors of the NEs reflect the state.
- The working ports that are selected during creation of the ring are shown in green. The working port names are also shown in green.
- The protect ports that are selected during creation of the ring are shown in purple. The protect port names are also shown in purple.
- The working spans are shown in green. This identifies spans that are selected during creation as the working spans.
- The protect spans are shown in purple. For a 2-fiber BLSR, these spans are automatically assigned during creation. For a 4-fiber BLSR, these spans are based on the protect ports selected.

Complete the following steps to switch BLSRs:

Step 1 In the Domain Explorer, select the NE; then, choose **Configuration > CTC-Based SONET NEs > BLSR Table**.

Step 2 In the BLSR table, select the ring to edit; then, choose **Edit > Switch BLSR** (or click the **Switch Selected BLSR** tool). The Switch BLSR dialog box opens. The following table provides descriptions.

Step 3 After making your selections, click **OK**.

Step 4 The job is queued in the Job Monitor table. For more information, see 4.6.1 Monitoring Scheduled Tasks, page 4-87.

Table 7-36 Field Descriptions for the Switch BLSR Dialog Box

Field	Description
Initial Node	Select the initial node from the graphic. The name of the selected node appears in the field.
Switch Command	Select one from the following switch commands: • Clear—Clears an existing switch command • Lockout Span—Prevents automatic switching • Force Ring—Performs a forced BLSR switch • Manual Ring—Performs a manual BLSR switch • Switch Ring—Switches BLSRs
Time	Schedule the switch to occur immediately or at an exact time, including date, hour, and minute. Choose **Now** to schedule the BLSR switch to begin immediately. Choose **At Time** to set the specific date and time of the switch. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue. To repeat the switch, select a repeat interval from the **Frequency** drop-down list. A switch can occur once, daily, or weekly.

7.3.8 Changing the BLSR Switch Interval

The interval between BLSR switches can be configured in the Control Panel. This interval represents the interval between east and west tasks of a ring switch task.

Step 1 In the Domain Explorer, choose **Administration > Control Panel**.

Step 2 In the Control Panel, expand **NE Service** and choose **CTC-Based SONET NEs**.

Step 3 In the BLSR-Ring Switch Interval field, enter the interval time. The Cisco default is 60 seconds.

Step 4 Click **Save**.

7.3.9 Using the BLSR Upgrade Table

Use the BLSR Upgrade table to upgrade a 2-fiber BLSR to a 4-fiber ring. The BLSR Upgrade wizard allows you to select the span reversion along with upgrade options. After selecting the spans, the protect ports selection wizard is displayed.

The following table describes the fields in the BLSR Upgrade table.

Table 7-37 Field Descriptions for the BLSR Upgrade Table

Field	Description
Ring ID	Allows you to modify the ring ID. It can be any combination of up to six alphanumeric characters.
Ring Reversion	Allows you to modify the ring reversion time.
Span Reversion	Allows you to modify the span reversion time.

7.3.10 Upgrading BLSRs

Use the Upgrade BLSR wizard to upgrade 2-fiber BLSRs to 4-fiber BLSRs. Only OC-48 (or higher) rings can be upgraded.

Step 1 In the Domain Explorer, select the NE; then, choose **Configuration > CTC-Based SONET NEs > BLSR Table**.

Step 2 In the BLSR table, select the ring to edit; then, choose **Edit > Upgrade BLSR** (or click the **Upgrade Selected BLSR** tool). The Upgrade BLSR wizard opens. The following table provides descriptions.

Step 3 In the Upgrade BLSR wizard, specify the following information:

- Span reversion
- Upgrade options

Step 4 Click **Next**.

Step 5 The Protect Ports table opens and displays the following port information:

- Name
- West Working
- West Protect
- East Working
- East Protect

Step 6 Click **Finish**.

Table 7-38 Field Descriptions for the Upgrade BLSR Wizard

Field	Description
BLSR Attributes	
Span Reversion	Select the span reversion time, in minutes.

Table 7-38 Field Descriptions for the Upgrade BLSR Wizard (continued)

Field	Description
Upgrade Options	Select an upgrade option for the BLSR: • Override Protection Operations—The upgrade procedure automatically clears all the protection operations and proceeds with the BLSR upgrade. • Override Protection Switch—The upgrade continues despite the protection switch. If a protection switch occurs as a result of a fiber cut, there is a loss of traffic. • Ignore PCA—If there is extra PCA traffic on the ring, the traffic is dropped during the upgrade.
BLSR Summary	Summarizes the selections you made on this screen.
Protect Ports Selection	
Protect Ports table	Displays the protect ports for the upgraded BLSR.
BLSR Summary	Summarizes the selections you made on this screen.

7.3.11 Filtering the BLSR Table

Step 1 In the Domain Explorer, select the NE; then, choose **Configuration > CTC-Based SONET NEs > BLSR Table**.

Step 2 In the BLSR table, choose **File > Filter** (or click the **Filter Data** tool). The filter dialog box opens.

Step 3 Use the filter to filter data according to criteria that you select and to display the results in the table. The following table provides descriptions.

Table 7-39 Field Descriptions for the BLSR Filter Dialog Box

Field	Description
Network Elements	Displays the list of available NE IDs. Click **Add** and **Remove** to move NEs to and from the Selected list. The filter runs against the NEs in the Selected list.
BLSR Names	Allows you to filter the table using a range of BLSR names. The filter runs against the names in the Selected Names list. Check the **Ignore All BLSR Names** check box if you want to filter BLSR data and the name is not important.
Ring Type	Allows you to filter the table using a specific ring type (All, 2-fiber, or 4-fiber).
Line Rate	Allows you to filter the table using a specific line rate (All, OC12, OC48, or OC192). You can also select **Inconsistent** as a filter option, meaning that the BLSR goes into an inconsistent state if it has been provisioned correctly but is nonfunctional due to changes in the network.

7.3.12 Deleting BLSRs

You can delete a BLSR from the Domain Explorer or the NE Explorer.

7.3.12.1 Deleting a BLSR from the Domain Explorer

Step 1 In the Domain Explorer, select the NE; then, choose **Configuration > CTC-Based SONET NEs > BLSR Table**.

Step 2 In the BLSR table, select the ring to delete; then, choose **Edit > Delete BLSR** (or click the **Delete Selected BLSR** tool).

Step 3 In the confirmation dialog box, click **Yes**.

7.3.12.2 Deleting a BLSR from the NE Explorer

Step 1 Select an ONS 15327, ONS 15454 SONET, or ONS 15600 NE in the Domain Explorer and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 Click the **BLSR** tab.

Step 3 Select the ring to delete and click **Delete**.

Step 4 In the confirmation dialog box, click **OK**.

7.4 Managing MS-SPRings

Use the following procedures to manage MS-SPRings.

- 7.4.1.1 Viewing an MS-SPRing from the Domain Explorer, page 7-209
- 7.4.1.2 Viewing an MS-SPRing from the NE Explorer, page 7-209
- 7.4.2.1 Creating an MS-SPRing from the Domain Explorer, page 7-210
- 7.4.2.2 Creating an MS-SPRing from the NE Explorer, page 7-211
- 7.4.12.1 Deleting an MS-SPRing from the Domain Explorer, page 7-217
- 7.4.12.2 Deleting an MS-SPRing from the NE Explorer, page 7-217
- 7.4.12.2 Deleting an MS-SPRing from the NE Explorer, page 7-217

7.4.1 Viewing the MS-SPRing Table

Use the MS-SPRing table to view MS-SPRings that are available in a subnetwork. The MS-SPRing table displays the MS-SPRing attributes and the nodes that participate in the ring. You can select an MS-SPRing in the table and edit, delete, switch, or upgrade the ring from 2-fiber to 4-fiber.

The following table provides descriptions.

Table 7-40 Field Descriptions for the MS-SPRing Table

Field	Description
Ring ID	Displays the ring ID as an alphanumeric value of up to six characters.
Ring Type	Displays the ring type.
Line Rate	Displays the line rate. For SONET, the rates are OC12, OC48, and OC192. For SDH, the rates are STM4, STM16, and STM64.
Status	Displays the ring status.
Nodes	Displays the nodes associated with the ring.
Ring Reversion	Displays the ring reversion time, in minutes.
Span Reversion	Displays the span reversion time, in minutes.

You can launch the MS-SPRing table from either the Domain Explorer or the NE Explorer.

7.4.1.1 Viewing an MS-SPRing from the Domain Explorer

In the Domain Explorer, click an ONS 15454 SDH or ONS 15600 SDH NE; then, choose **Configuration > CTC-Based SDH NEs > MS-SPRing Table**. The MS-SPRing table displays the information shown in Table 7-40.

7.4.1.2 Viewing an MS-SPRing from the NE Explorer

Step 1 Select an ONS 15454 SDH or ONS 15600 SDH NE in the Domain Explorer and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **MS-SPRing** tab. The tab displays the following information:

- Type—Indicates whether the fiber type is 2-fiber or 4-fiber.
- Rate—Select the MS-SPRing rate.
- Ring ID—Assign a ring ID, using alphanumeric values. Nodes in the same MS-SPRing must have the same ring ID.
- Node ID—Assign a node ID. This identifies the node to the MS-SPRing. Nodes in the same MS-SPRing must have a unique node ID.
- Ring Reversion—Set the amount of time that elapses before the traffic reverts to the original working path. The Cisco default is 5 minutes. All nodes in an MS-SPRing should have the same ring reversion setting, particularly if Never is selected.
- Span Reversion—Set the amount of time to pass before the span reverts to the working path.
- East Line—Assign the east MS-SPRing port.
- East Switch—Displays a list of switch commands for the east port.
- West Line—Assign the west MS-SPRing port.
- West Switch—Displays a list of switch commands for the west port.
- East Protect—For a 4-fiber MS-SPRing, assign the east MS-SPRing protect port.

- West Protect—For a 4-fiber MS-SPRing, assign the west MS-SPRing protect port.

7.4.2 Creating an MS-SPRing for an Individual Node

Use the MS-SPRing Creation wizard to create MS-SPRings for the selected ONS 15454 SDH or ONS 15600 SDH NE. MS-SPRings share the ring bandwidth equally between working and protection traffic. Half of the payload bandwidth is reserved for protection in each direction, making the communication pipe half-full under normal operation.

Note Use the Create MS-SPRing wizard to create the MS-SPRing for all desired nodes simultaneously. See 7.4.3 Creating MS-SPRings for Multiple Nodes Simultaneously, page 7-211.

You can create an MS-SPRing from the Domain Explorer or the NE Explorer.

7.4.2.1 Creating an MS-SPRing from the Domain Explorer

Step 1 Select an ONS 15454 SDH or ONS 15600 SDH NE in the Domain Explorer and choose **Configuration > CTC-Based SDH NEs > Create MS-SPRing**. The MS-SPRing Creation wizard opens. The following table provides descriptions.

Step 2 After making your selections, click **Next**.

Step 3 A graphical view of the MS-SPRing is displayed. You can complete any of the following:

- Selected Link—Displays the link information for a selected link in the MS-SPRing graphical view.
- Add Span—Add a span. A span is represented by a green line.
- Remove Span—Remove an existing span. A deleted span is represented by a black line.
- Reverse Span—Allows you to reverse the direction of the span.
- Excluded Nodes—Provides a list of nodes that were not included in the MS-SPRing.

Step 4 Click **Finish**.

Table 7-41 Field Descriptions for the MS-SPRing Creation Wizard

Field	Description
Type	MS-SPRing type (2-fiber or 4-fiber).
Line Rate	Line rate (STM4, STM16, or STM64).
Ring ID	Used-defined ring ID. The value can be any combination of up to six alphanumeric characters.
Ring Reversion	Ring reversion time, in minutes.

Table 7-41 Field Descriptions for the MS-SPRing Creation Wizard (continued)

Field	Description
Span Reversion	Span reversion time, in minutes.
Working Spans Selection	After the attributes are defined, a possible MS-SPRing map is shown. You can select the spans from the map and perform Add, Remove, or Reverse operations. The Add operation adds all the spans to the ring. The Remove operation removes the selected span. The Reverse operation switches the east and west ports in the span. If all the spans are added to make a loop, the Finish button is enabled.

7.4.2.2 Creating an MS-SPRing from the NE Explorer

Step 1 Select an ONS 15454 SDH or ONS 15600 SDH NE in the Domain Explorer and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 Click the **MS-SPRing** tab; then, click **Create**.

Step 3 In the Create MS-SPRing dialog box, set the MS-SPRing properties:

- Type—Select the MS-SPRing ring type, either **two fiber** or **four fiber**.
- Ring ID—Assign a ring ID (a number from 0 to 9999). Nodes in the same MS-SPRing must have the same ring ID.
- Node ID—Select the node ID (0-31).
- Ring Reversion—Set the amount of time that elapses before the traffic reverts to the original working path. The Cisco default is 5 minutes. All nodes in an MS-SPRing ring should have the same ring reversion setting, particularly if Never (that is, nonrevertive) is selected.
- West Line—Select the west port.
- East Line—Select the east port.
- Span Reversion—Choose the amount of time that elapses before the traffic reverts to the original working path following a traffic failure. The Cisco default is 5 minutes. Span reversions can be set to Never. If you set a ring reversion time, the times must be the same for both ends of the span. That is, if Node A's west fiber is connected to Node B's east port, the Node A west span reversion time must be the same as the Node B east span reversion time.
- West Protect—Select the west MS-SPRing port that will connect to the west protect fiber.
- East Protect—Select the east MS-SPRing port that will connect to the east protect fiber.

Step 4 Click **OK**.

7.4.3 Creating MS-SPRings for Multiple Nodes Simultaneously

Use the Create MS-SPRing wizard to create an MS-SPRing for all desired SDH nodes simultaneously.

Table 7-42 Field Descriptions for the Create MS-SPRing Wizard

Field	Description
MS-SPring Attributes	
Type	MS-SPRing type (2-fiber or 4-fiber).
Line Rate	Line rate (STM4, STM16, or STM64).
Ring ID	Used-defined ring ID. The value can be any combination of up to six alphanumeric characters.
Ring Reversion	Ring reversion time, in minutes.
Span Reversion	Span reversion time, in minutes.
Working Spans Selection	
After the attributes are defined, a possible MS-SPRing map is shown. You can select the spans from the map and perform Add, Remove, or Reverse operations. The Add operation adds all the spans to the ring. The Remove operation removes the selected span. The Reverse operation switches the east and west ports in the span. If all the spans are added to make a loop, the Finish button is enabled. **Note** For 4-fiber MS-SPRings, instead of Finish, the Next button is provided. Click **Excluded Nodes** to view the nodes that are being excluded from the MS-SPRing and the reason for the exclusion.	
Protect Ports Selection	
(4-fiber MS-SPRings only) The table lists all the spans along with the potential protect ports. You can select the desired protect ports (east and west) for each span in the ring. The Finish button is enabled if all the required protect ports are selected.	

7.4.4 Editing MS-SPRings

Use the MS-SPRing Edit window to modify the ring ID, ring reversion, and span reversion on a ring.

Step 1 Select an ONS 15454 SDH or ONS 15600 SDH NE in the Domain Explorer and choose **Configuration > CTC-Based SDH NEs > MS-SPRing Table**.

Step 2 In the MS-SPRing table, select the ring to edit; then, choose **Edit > Edit MS-SPRing** (or click the **Edit Selected MS-SPRing** tool).

Step 3 Edit the MS-SPRing attributes:

- Ring ID—Specify an ID from 0 to 9999.
- Ring Reversion (min)—Set the ring reversion time to Never or from 0.5 to 12 minutes.
- Span Reversion (min)—Set the span reversion time to Never or from 0.5 to 12 minutes.

Step 4 Click **Apply**.

7.4.5 Using the MS-SPRing Upgrade Table

Use the MS-SPRing Upgrade table to upgrade a 2-fiber MS-SPRing to a 4-fiber ring. The MS-SPRing Upgrade wizard allows you to select the span reversion along with upgrade options. After selecting the spans, the protect ports selection wizard is displayed.

The following table provides descriptions.

Table 7-43 Field Descriptions for the MS-SPRing Upgrade Table

Field	Description
Ring ID	Allows you to modify the ring ID. It can be any combination of up to six alphanumeric characters.
Ring Reversion	Allows you to modify the ring reversion time.
Span Reversion	Allows you to modify the span reversion time.

7.4.6 Upgrading MS-SPRings

Only STM16 (or higher) rings can be upgraded.

Step 1 Select an ONS 15454 SDH or ONS 15600 SDH NE in the Domain Explorer and choose **Configuration > CTC-Based SDH NEs > MS-SPRing Table.**

Step 2 In the MS-SPRing table, select the ring to edit; then, choose **Edit > Upgrade MS-SPRing**.

Step 3 In the Upgrade MS-SPRing dialog box, specify the following information:

- Span reversion
- Upgrade options—Choose one of the following options:
  - Override Protection Operations—The upgrade procedure automatically clears all the protection operations and proceeds with the upgrade.
  - Override Protection Switch—The upgrade continues despite the protection switch. If a protection switch occurs as a result of a fiber cut, there is a loss of traffic.
  - Ignore PCA—If there is extra PCA traffic on the ring, the traffic is dropped during the upgrade.

Step 4 Click **Next**. The Protect Ports table opens, displaying the following protect ports information for the upgraded MS-SPRing:

- Name
- West Working
- West Protect
- East Working
- East Protect

Step 5 Click **Finish**.

7.4.7 Viewing the MS-SPRing Ring Map Table

The Ring Map table contains MS-SPRing information for the selected object in the table.

Step 1 Select an ONS 15454 SDH or ONS 15600 SDH NE in the Domain Explorer and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 Click the **MS-SPRing** tab; then, select a ring in the table.

Step 3 Click **Ring Map**. The Ring Map table opens. The following table provides descriptions.

Table 7-44 Field Descriptions for the Ring Map Table

Field	Description
Node ID	Displays the Node ID, which identifies the node to the MS-SPRing. Nodes in the same MS-SPRing must have unique node IDs.
IP Address	Displays the NE IP address.

7.4.8 Viewing the MS-SPRing Squelch Table

When multiple fiber cuts isolate an MS-SPRing node, the Squelch table displays the circuits that are isolated on the node by STS number, east source/destination, and west source/destination. The table is display only.

Step 1 Select an ONS 15454 SDH or ONS 15600 SDH NE in the Domain Explorer and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 Click the **MS-SPRing** tab; then, select a ring in the table.

Step 3 Click **Squelch Table**. The Squelch table opens. The following table provides descriptions.

Table 7-45 Field Descriptions for the Squelch Table

Field	Description
STS No.	Displays the STS number of the circuit.
East Source	Displays the east source NE.
East Destination	Displays the east destination NE.
West Source	Displays the west source NE.
West Destination	Displays the west destination NE.

7.4.9 Switching MS-SPRings

The Switch MS-SPRing dialog box displays a graphical representation of an MS-SPRing, including the following details:

- The NEs that are part of the ring are shown along with the node name.
- The colors of the NEs reflect the state.
- The working ports that are selected during creation of the ring are shown in green. The working port names are also shown in green.
- The protect ports that are selected during creation of the ring are shown in purple. The protect port names are also shown in purple.
- The working spans are shown in green. This identifies spans that are selected during creation as the working spans.
- The protect spans are shown in purple. For a 2-fiber MS-SPRing, these spans are automatically assigned during creation. For a 4-fiber MS-SPRing, these spans are based on the protect ports selected.

Complete the following steps to switch MS-SPRings:

Step 1 Select an ONS 15454 SDH or ONS 15600 SDH NE in the Domain Explorer and choose **Configuration > CTC-Based SDH NEs > MS-SPRing Table**.

Step 2 In the MS-SPRing table, choose **Edit > Switch MS-SPRing** (or click the **Switch Selected MS-SPRing** tool). The Switch MS-SPRing dialog box opens. The following table provides descriptions.

Step 3 After making your selections, click **OK**.

The job is queued in the Job Monitor table. For more information, see 4.6.1 Monitoring Scheduled Tasks, page 4-87.

Table 7-46 Field Descriptions for the Switch MS-SPRing Dialog Box

Field	Description
Initial Node	Select the initial node from the graphic. The name of the selected node is displayed in the field.

Table 7-46 Field Descriptions for the Switch MS-SPRing Dialog Box (continued)

Field	Description
Switch Command	Select one from the following switch commands: • Clear—Clears an existing switch command • Lockout Span—Prevents automatic switching • Force Ring—Performs a forced MS-SPRing switch • Manual Ring—Performs a manual MS-SPRing switch • Switch Ring—Switches MS-SPRings
Time	Set up the MS-SPRing switch to occur immediately or at an exact time, including date, hour, and minute. Choose **Now** to schedule the MS-SPRing switch to begin immediately. Choose **At Time** to set the specific date and time of the switch. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue. To repeat the switch, select a repeat interval from the Frequency drop-down list. A switch can occur once, daily, or weekly.

7.4.10 Changing the MS-SPRing Switch Interval

The interval between the MS-SPRing switches can be configured in the Control Panel. This interval represents the interval between east and west tasks of a ring switch task.

Step 1 In the Domain Explorer, choose **Administration > Control Panel**.

Step 2 In the Control Panel, expand **NE Service** and choose **CTC-Based SDH NEs**.

Step 3 In the MS-SPRing Switch Interval field, enter the interval time. The Cisco default is 60 seconds.

Step 4 Click **Save**.

7.4.11 Filtering the MS-SPRing Table

Step 1 Select an ONS 15454 SDH or ONS 15600 SDH NE in the Domain Explorer and choose **Configuration > CTC-Based SDH NEs > MS-SPRing Table**.

Step 2 In the MS-SPRing table, choose **File > Filter** (or click the **Filter Data** tool). The filter dialog box opens.

Step 3 Use the filter to filter data according to criteria that you select and to display the results in the table. The following table provides descriptions.

Table 7-47 Field Descriptions for the MS-SPRing Filter Dialog Box

Field	Description
Network Elements	Displays the list of available NE IDs. Click **Add** and **Remove** to move NEs to and from the Selected list. The filter runs against the NEs in the Selected list.
MS-SPRing Names	Allows you to filter the table using a range of MS-SPRing names. The filter runs against the names in the Selected Names list. Check the **Ignore All MS-SPRing Names** check box if you want to filter data and the name is not important.
Ring Type	Allows you to filter the table using a specific ring type (All, 2-fiber, or 4-fiber).
Line Rate	Allows you to filter the table using a specific line rate (All, STM4, STM16, STM64). You can also select **Inconsistent** as a filter option, meaning that the MS-SPRing goes into an inconsistent state if it has been provisioned correctly but is nonfunctional due to changes in the network.

7.4.12 Deleting MS-SPRings

You can delete an MS-SPRing from the Domain Explorer or the NE Explorer.

7.4.12.1 Deleting an MS-SPRing from the Domain Explorer

Step 1 Select an ONS 15454 SDH or ONS 15600 SDH NE in the Domain Explorer and choose **Configuration > CTC-Based SDH NEs > MS-SPRing Table.**

Step 2 In the MS-SPRing table, select the ring to delete; then, choose **Edit > Delete MS-SPRing** (or click the **Delete Selected MS-SPRing** tool).

Step 3 In the confirmation dialog box, click **Yes**.

7.4.12.2 Deleting an MS-SPRing from the NE Explorer

Step 1 Select an ONS 15454 SDH or ONS 15600 SDH in the Domain Explorer and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 Click the **MS-SPRing** tab.

Step 3 Select the ring to delete and click **Delete**.

Step 4 In the confirmation dialog box, click **OK**.

7.5 Managing VLANs for E-Series Cards

VLANs are managed at the network partition level. All VLANs that are discovered on one NE are propagated to all available NEs under the same network partition. Creating, editing, or deleting VLANs affects all the NEs under the network partition.

Caution Be sure that the VLANs are unique across the entire network partition.

If you use CTC to manage VLANs, Prime Optical will discover two VLANs with the same name but different IDs if the following conditions exist:

- You created a VLAN with an ID and name in one ring
- You created another VLAN with the same name but a different ID in another ring managed by another instance of CTC
- Both rings are managed by the same network partition in Prime Optical

A similar situation arises when two or more VLANs are created with the same ID but different names.

Note The procedures in this section apply only to E-series cards. VLAN association for E-series cards is done during circuit creation.

Use the following procedures to manage VLANs:

- 7.5.1 Creating VLANs, page 7-218
- 7.5.2 Tracing VLANs, page 7-219
- 7.5.3 Deleting VLANs, page 7-220

7.5.1 Creating VLANs

Use the Manage VLANs dialog box to create new VLANs or delete existing VLANs from the Prime Optical domain. All Prime Optical user types can access the Manage VLANs dialog box, but Operators cannot create or delete VLANs.

The Manage VLANs dialog box displays a list of all available VLANs in the Prime Optical domain. The list is ordered alphanumerically by VLAN name, where numbers precede letters and uppercase letters precede lowercase ones.

Step 1 In the Domain Explorer, select a CTC-based NE and choose **Configuration > Manage VLANs**. The following table describes the fields in the Manage VLANs dialog box.

Alternatively, perform one of the following tasks to open the Manage VLANs dialog box:

- Select a CTC-based NE in the Subnetwork Explorer and choose **Configuration > Manage VLANs**.
- Select a CTC-based NE in the Network Map and choose **Configuration > Manage VLANs**.

Table 7-48 Field Descriptions for the Manage VLANs Dialog Box

Button	Description
All VLANs	
Trace	Allows you to trace a VLAN.
Create	Allows you to add a new VLAN.
Delete	Allows you to delete a VLAN.
Close	Allows you to cancel the VLAN creation or deletion and close the dialog box.

Step 2 In the Manage VLANs dialog box, click **Create**.

Step 3 In the Define New VLAN dialog box, enter a unique VLAN name and ID. The VLAN ID must be an integer greater than 1.

Step 4 Click **OK**.

Step 5 In the confirmation dialog box, click **OK**.

Note If the VLAN creation fails with an error message, it means that the Prime Optical server is in a Config Resync operation state. In this state, all provisioning operations are blocked because the server is retrieving updated configuration information from the card. Close the Manage VLANs dialog box and wait 2 to 3 minutes; then, retry the VLAN creation.

7.5.2 Tracing VLANs

The VLAN Trace table displays a tabular representation of the endpoints associated with the VLAN in the selected network partition.

Step 1 In the Domain Explorer, Subnetwork Explorer, or Network Map window, select a CTC-based NE and choose **Configuration > Manage VLANs**.

Step 2 In the Manage VLANs dialog box, select the VLAN to be traced and click **Trace**. The VLAN Trace table opens. The following table provides descriptions.

Table 7-49 Field Descriptions for the VLAN Trace Table

Field	Description
Bridge ID	Displays the bridge ID.
Designated Root	Displays the root bridge.
NE ID	Displays the name of the node.
Physical Location	Displays the slot and port that identify the PTP.

Table 7-49 Field Descriptions for the VLAN Trace Table (continued)

Field	Description
STP State	Displays the current spanning tree protocol (STP) state.
STP Enabled	Indicates whether or not STP is enabled for the card.
Network Partition ID	Displays the network partition ID.

7.5.3 Deleting VLANs

Step 1 In the Domain Explorer, Subnetwork Explorer, or Network Map window, choose **Configuration > Manage VLANs**.

Step 2 In the Manage VLANs dialog box, select the VLAN to be deleted and click **Delete**.

Note You cannot delete a VLAN that is in use. VLAN deletion will fail if any of the NEs in the network partition are not reachable.

Step 3 You are prompted to confirm the deletion request. Click **OK**.

Step 4 In the confirmation dialog box, click **OK**.

7.6 Managing VLANs (ML-Series Cards)

A VLAN is an end-to-end service within a Layer 2 topology. When provisioning a VLAN, Prime Optical internally configures bridge groups, one on each card, wherever an Ethernet service drop is specified. A bridge group associates a service drop with the service VLAN ID, the optical virtual port subinterface. A VLAN service is a collection of bridge groups on a particular Layer 2 topology.

Bridge groups are invisible on the Layer 2 service provisioning application. You can review the associated service drops on each VLAN service.

Step 1 Select an existing Layer 2 topology from the Layer 2 Topology table.

Step 2 Select a service provider VLAN ID.

Step 3 Specify a customer ID and service ID. These are strings that you can assign to a VLAN service during provisioning. This information is local to Prime Optical and is not configurable on the NE.

Step 4 Specify the QoS parameters (CIR/PIR).

Step 5 Specify the service drops. There must be at least one drop per ML card for point-to-point and Layer 2 topologies, and at least two drops, on a different card, for Resilient Packet Ring (RPR).

Step 6 For each drop port, specify the port type and connection type.

7.7 Managing SVLAN Profiles

You can add, modify, and delete service provider virtual LAN (SVLAN) profiles on ONS 15454 SONET and ONS 15454 SDH NEs.

Step 1 In the Domain Explorer, Subnetwork Explorer, or Network Map window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > SVLAN Profile Management**. The SVLAN Profile Management wizard opens. Table 7-50 provides descriptions.

Step 2 In the Select a Resource pane, select the resource from which to load the SVLAN profile. You can load the SVLAN profile from the network, from a local file, or from a remote file. Alternatively, you can choose None, and an empty table will be shown in the next step. After specifying a resource, click **Next**.

Step 3 In the Edit SVLAN Profiles pane, edit the parameters described in Table 7-50. Click **Add Row** if you want to add a new SVLAN profile. Click **Delete Row** if you want to delete an existing SVLAN profile. Click **Delete All** if you want to delete the entire set of SVLAN profiles. Then, click **Next**.

Step 4 In the Select a Resource pane, select a resource on which to store the new SVLAN profile(s). You can specify one or more resources in the network, on a local file, or on a remote file.

Step 5 Click **Finish**.

Table 7-50 Field Descriptions for the SVLAN Profile Management Wizard

Field	Description
Select a Resource	
Network	From the list of nodes displayed, choose the resource on which you want to load the new SVLAN profile.
Local File	Specify the file from the local drive by clicking the **Local File** radio button and specifying the directory path. You can click the **Browse** button and navigate to a specific file on your local drive. You can select a file with a .svp extension.
Remote File	Specify the file from the server by clicking the **Remote File** radio button. You can select a file with a .svp extension.
None	Click the **None** radio button if you want to edit a blank SVLAN profile instead of loading a profile from the network or from a file.
Edit SVLAN Profiles	
Name	User-defined name that identifies the SVLAN profile.
Committed Info	Sets the guaranteed information rate as provided by the service provider's service-level agreement. The default value is 100 and the range is 0 to 100 percent. **Note** When you set the Committed Info Rate above 40% on 10GE_XP and 10GE_XPE cards, the Committed Burst Size and Excess Burst Size must be set to at least 32K. The Committed Burst Size and Excess Burst Size can be increased based on the packet size and Committed Info Rate value.
Committed Burst	In Frame Relay links, sets the maximum number of bits that are transferred per second. The value is in megabits per second (mb/s) or kilobits per second (kb/s).
Peak Info Rate	Sets the maximum information rate as provided by the service provider's service-level agreement. The default value is 100 and the range is 0 to 100 percent. However, the value must be greater than or equal to the Committed Info Rate.

Table 7-50 Field Descriptions for the SVLAN Profile Management Wizard (continued)

Field	Description
Excess Burst	Sets the maximum number of bits that are credited for later transfer in the event the committed burst rate cannot be transmitted. The value is mb/s or kb/s.
Link Integrity	Enables or disables link integrity.
Insert a profile name	Enter a name for the new SVLAN profile, up to a maximum of 32 characters.
Add Row	Click the **Add Row** button to add the new SVLAN profile to the pane.
Delete Row	Click the **Delete Row** button to delete an existing SVLAN profile from the pane.
Delete All	Click the **Delete All** button to delete the entire set of SVLAN profiles.

7.8 Managing the SVLAN Database

You can provision the SVLAN database for the network of ONS 15454 SONET and ONS 15454 SDH NEs. On NE releases earlier than 9.0, the SVLAN database is stored on the NE itself. On NE releases 9.0 and later, the SVLAN database is stored on the 10GE_XP and GE_XP cards.

Step 1 In the Domain Explorer, Subnetwork Explorer, or Network Map window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > SVLAN DB Management**. The SVLAN Database Management wizard opens. Table 7-51 provides descriptions.

Step 2 In the Select a Resource pane, select the resource from which to load the SVLAN database. You can load the SVLAN database from the network, from a local file, or from a remote file. Alternatively, you can choose Empty DB, and an empty table will be shown in the next step. After specifying a resource, click **Next**.

Step 3 In the Edit VLAN Database pane, edit the parameters described in Table 7-51. Click **Add Row** if you want to add a new SVLAN database. Click **Delete Row** if you want to delete an existing SVLAN database. Click **Delete All** if you want to delete the entire SVLAN database. Then, click **Next**.

Step 4 In the Select a Resource pane, specify where you want to store the new SVLAN database. You can select a network resource (NE or cards, depending on the NE software version), a local file, or a remote file.

Step 5 Click **Finish**.

Step 6 At the confirmation prompt, click **Yes**.

Step 7 The wizard schedules the operation. Click **OK**.

You can view the results of the operation in the Job Monitor table. For more information, see 4.6.1 Monitoring Scheduled Tasks, page 4-87.

Table 7-51 Field Descriptions for the SVLAN Database Management Wizard

Field	Description
Select a Resource	
Network	Choose the resource where the new SVLAN database will be applied. The tree represents the NE-card relationship, where cards are organized by shelf. Use the check box to select each branch of the tree. For NE releases earlier than 9.0 (where the SVLAN database is stored on the NE, not on the cards), no cards are shown. • Node—Lists all of the working NEs. If you select an NE release 9.0 or later, the slot list contains all GE_XP or 10GE_XP cards that are provisioned with L2 over DWDM card mode. You can select only one card. If you select an NE release earlier than 9.0, you can select only the NE; no cards are listed in the slot list. • Shelf—Specify the shelf in which the GE_XP or 10GE_XP card(s) are located. • Slot—Specify the slot in which the GE_XP or 10GE_XP card(s) are located.
Local File	Specify the file from the local drive by clicking the **Local File** radio button and specifying the directory path. You can click the **Browse** button and navigate to a specific file on your local drive. You can select a file with a .vlf extension.
Remote File	Specify the file from the server by clicking the **Remote File** radio button. You can select a file with a .vlf extension.
Empty DB	Click the **Empty DB** radio button if you want to edit a blank SVLAN database instead of loading a database from the network or from a file. Use the drop-down list to specify the database version to create.
Edit VLAN Database, for NE releases earlier than 9.0	
VLAN ID	Unique number that identifies the VLAN in an SVLAN database profile. The range is from 1 to 4093.
VLAN Name	SVLAN name, up to a maximum of 32 characters.
Protection	If checked, the SVLAN is protected.
Edit VLAN Database, for NE release 9.0 and later	
SVLAN ID	Unique number that identifies the SVLAN in a VLAN database profile.
SVLAN Name	SVLAN name, up to a maximum of 32 characters.
Protection	If checked, the SVLAN is protected.
MAC Learning	Enables or disables MAC learning for the port. MAC learning is used by Layer 2 switches to learn the MAC addresses of network nodes so they know where to send traffic. Layer 2 switches—including GE_XP and 10GE_XP cards in L2 over DWDM mode—maintain a MAC learning table that associates the MAC addresses and VLANs with a given port.
IGMP	Enables or disables Internet Group Management Protocol (IGMP), which is a protocol used by IPv4 systems to report IP multicast memberships to neighboring multicast routers. IGMP is used to dynamically register individual hosts in a multicast group on a particular LAN. IGMP provides a means to automatically control and limit the flow of multicast traffic throughout your network with the use of special multicast queriers and hosts.

Table 7-51 Field Descriptions for the SVLAN Database Management Wizard (continued)

Field	Description
IGMP Fast Leave	Enables or disables IGMP fast leave. IGMP-snooping fast-leave processing allows the switch to remove an interface from the forwarding-table entry without first sending out MAC-based general queries to the interface. The VLAN interface is pruned from the multicast tree for the multicast group specified in the original leave message. Fast-leave processing ensures optimal bandwidth management for all hosts on a switched network, even when multiple multicast groups are being used simultaneously.
IGMP Suppression	Enables or disables IGMP report suppression. Switches use IGMP report suppression to forward only one IGMP report per multicast router query to multicast devices. When IGMP router suppression is enabled (the default), the switch sends the first IGMP report from all hosts for a group to all the multicast routers. The switch does not send the remaining IGMP reports for the group to the multicast routers. This feature prevents duplicate reports from being sent to the multicast devices.
Insert a new SVLAN ID	Enter a numeric ID from 1 to 4094 for the new SVLAN database. This field does not accept letters or special characters.
Add Row	Click the **Add Row** button to add the new SVLAN database to the pane.
Delete Row	Click the **Delete Row** button to delete an existing SVLAN database from the pane.
Delete All	Click the **Delete All** button to delete the entire set of SVLAN databases.
Select a Resource	
Network	Choose the NE(s) on which to save the SVLAN database for NE releases earlier than 9.0; or choose the cards on which to save the SVLAN database for NE release 9.0 or later.
Select Mode	Use the Select Mode drop-down list to overwrite or append the SVLAN database: • Overwrite—Prime Optical overwrites the existing SVLAN database stored on the network equipment with the newly provisioned database. • Append—Prime Optical appends the new SVLAN database to the existing SVLAN database. If an SVLAN ID is already provisioned on the network equipment, the operation fails. **Note** When you choose Append mode, Prime Optical takes longer to execute the task.
Local File	Specify the file from the local drive by clicking the **Local File** radio button and specifying the directory path. You can click the **Browse** button and navigate to a specific file on your local drive. You can select a file with a .vlf extension.
Remote File	Specify the file from the server by clicking the **Remote File** radio button. You can select a file with a .vlf extension.

7.9 Managing SVLANs

You can view, create, modify, trace, and delete SVLANs on GE_XP or 10GE_XP cards on ONS 15454 SONET and ONS 15454 SDH R9.1 and later NEs. You can also add and delete SVLAN drops.

7.9.1 Viewing the SVLAN Table

Use the SVLAN table to view, modify, and delete existing SVLANs that are provisioned on GE_XP or 10GE_XP cards on ONS 15454 SONET and ONS 15454 SDH R9.1 and later NEs.

In the Domain Explorer, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > SVLAN Table**. The SVLAN table opens. Table 7-52 provides descriptions.

The SVLAN table is empty when you first open it. The table is populated only after you use the Filter Data tool (or choose **File > Filter**) to define a specific SVLAN ID range.

Use the menu options or toolbar icons to filter the SVLAN table; create, modify, trace, or delete an SVLAN; add or delete an SVLAN drop; or cancel the SVLAN query.

Table 7-52 Field Descriptions for the SVLAN Table

Field	Description
SVLAN Name	Displays the user-assigned name of the SVLAN.
SVLAN ID	Displays the numerical ID of the SVLAN.
SVLAN Endpoints	Displays a string (in NE/card/slot/port format) that represents the SVLAN endpoints that are currently provisioned. **Tip** The SVLAN Endpoints row in the lower half of the table has a drop-down arrow that you can click to view the different endpoints associated with this SVLAN.
Protection	Indicates whether protection is enabled (True) or disabled (False) for the selected SVLAN.
Spans	Displays the number of spans associated with the selected SVLAN.
Status	Indicates the status of the SVLAN. Values are: • Discovered—The SVLAN is completely configured in the network; all components are in place and a complete path exists from the source to the destination endpoint. • Partial—The SVLAN is not complete; one or more endpoints are not in place or one of the spans is missing.
Type	Displays the type of circuit selected.
Direction	Indicates whether the circuit carries unidirectional (one-way) or bidirectional (two-way) traffic.

7.9.2 Filtering the SVLAN Table

Use the SVLAN ID Query dialog box to filter on a range of SVLAN IDs and display the results in the SVLAN table.

Step 1 In the Domain Explorer, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > SVLAN Table**. The SVLAN table opens.

Step 2 In the SVLAN table, choose **File > Filter** (or click the **Filter Data** tool). The SVLAN ID Query dialog box opens.

Step 3 Do one of the following to narrow the filter scope:

- In the Select Single Range tab, specify a starting and ending range in the From and To text fields. Alternatively, check the **Get All** check box to filter on all SVLAN IDs without specifying an exact range. When you choose Get All, the From and To text fields are dimmed.
- In the Select Multiple Ranges tab, specify a starting and ending range in the From and To text fields; then, click **Add**. The ID range appears in the list on the right. You can specify a second range and click **Add** again. Repeat this process for all ID ranges that you want to filter. To remove all ranges from the list, click **Clear**.

Note The SVLAN ID range is from 1 to 4093.

- In the Select Query Scope tab, narrow the query to the list of NEs in the current selection context (group or subnetwork). Choose one of the following options from the drop-down list:
  - NE Service—Selecting this option could slow down the query, depending on network conditions and the number of managed NEs.
  - Selected NEs—Queries only those NEs in the current selection context. Although this query is faster than the NE Service option, you should choose **Selected NEs** only when the SVLAN NEs belong to the same group or subnetwork.

  Click the **Display NEs** button to view the list of NEs in the current selection context.

Note The Select Query Scope tab is disabled if only one NE is selected, because an SVLAN query on a single NE returns partial circuits.

Step 4 After making your selections, click **OK** to run the filter. The results are displayed in the SVLAN table.

Step 5 (Optional) To cancel the SVLAN query, choose **Configuration > Cancel Query** (or click the **Cancel Query** tool) in the SVLAN table. At the following confirmation message, click **OK**:

```
This operation will cancel the current SVLAN query. Do you want to continue?
```

Note Because communication between the Prime Optical server and NEs is remote, the Cancel Query operation might take a while to complete.

Note If you click the **Refresh Data** tool, a new SVLAN query does not start unless the query parameters changed. Use the Refresh Data tool when network conditions prevent the complete discovery of the provisioned SVLAN circuits. Refreshing the SVLAN table synchronizes the displayed data with the latest results of the server-side processing. In most cases, a new discovery does not start, which makes the Refresh Data operation faster than the SVLAN query.

7.9.3 Creating an SVLAN

Use the Create SVLAN wizard to configure SVLANs on GE_XP or 10GE_XP cards on ONS 15454 SONET and ONS 15454 SDH R9.1 and later NEs.

Step 1 In the Domain Explorer, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Create SVLAN**. The Create SVLAN wizard opens. Table 7-53 provides descriptions.

Note The Create SVLAN menu option is dimmed if there are no ONS 15454 SONET or ONS 15454 SDH R9.1, R9.2 or R9.3 NEs in the selected domain, group, subnetwork, or network partition.

Tip You can also launch the Create SVLAN wizard by choosing **Configuration > Create SVLAN** in the SVLAN table.

Step 2 In the Info View pane, enter the following information; then, click **Next**:

- Name—Enter a unique name for the new SVLAN. The SVLAN name is a free-format string of up to 48 ASCII characters.
- ID—Enter the ID of the new SVLAN. The valid range is from 1 to 4093.
- Protection—Check this check box to enable protection for the SVLAN.

Step 3 In the Source pane, configure the SVLAN source endpoint parameters (source, shelf, slot, and port); then, click **Next**.

Note Ports that are network-node interfaces (NNIs) have "NNI" appended to the port name, indicating that the port connects to other network nodes.

Step 4 In the Destination pane (not available if the SVLAN is protected), configure the destination endpoint parameters (source, shelf, slot, and port) and routing preferences; then, click **Next**:

- Using Required Nodes—If checked, you manually include or exclude nodes. Once a node is selected, the intermediate hops are determined automatically (if a route path exists).
- Review Route Before Creation—Check this check box to review the route before it is created.

Step 5 In the Endpoint QinQ Settings pane, configure the source and destination QinQ settings:

Note QinQ settings enable the encapsulation of different SVLAN IDs within a parent Ethernet frame, thereby shielding the IDs during data transmission.

a. Configure the source QinQ settings:

- Source Client Port—Source port on which to provision IEEE 802.1 QinQ VLAN tags on the GE_XP or 10GE_XP cards.
- Source Client Mode—Set the source QinQ mode (Selective or Transparent). If you select Transparent, the SVLAN table disappears and the Add/Remove buttons are dimmed.
- BPDU—Set the source bridge protocol data unit (BPDU) mode (Drop or Tunnel).
- Transparent SVLAN ID—Displays the SVLAN ID.

- DSCP-CoS—Displays the DSCP-CoS mapping table for provisioning the CoS based on DSCP for the port.

b. Click **Add** (available only if you chose the Selective source client mode).

c. To specify a source customer VLAN (CVLAN) range, enter the CVLAN range in the boxes next to the Add CVLAN Range button; then, click **Add CVLAN Range**.

A source QinQ table entry will be added for each CVLAN in the range.

d. Configure the destination QinQ settings:

- Destination Client Port—Destination port on which to provision IEEE 802.1 QinQ VLAN tags on the GE_XP or 10GE_XP cards.
- Destination Client Mode—Set the destination QinQ mode (Selective or Transparent).
- BPDU—Set the destination BPDU mode (Drop or Tunnel).
- Transparent SVLAN ID—Displays the SVLAN ID.
- DSCP-CoS—Displays the DSCP-CoS mapping table for provisioning the CoS based on DSCP for the port.

Note QinQ destination settings are not displayed if the SVLAN is protected.

e. Click **Add** (available only if you chose the Selective source client mode).

f. To specify a destination customer VLAN (CVLAN) range, enter the CVLAN range in the boxes next to the Add CVLAN Range button; then, click **Add CVLAN Range**.

A source QinQ table entry will be added for each CVLAN in the range.

Step 6 In the Routing Constraints pane (available only if Using Required Nodes is selected), a graphical representation of the SVLAN is displayed, including source and destination nodes. Specify the nodes to include in the SVLAN. Complete the following substeps:

a. In the map view, select the node. The NE ID is displayed in the Selected Node field.

b. Click **Include** to include the selected node in the route. The node appears in the Included Nodes list.

c. Click **Exclude** to exclude the selected node from the route. The node appears in the Excluded Nodes list.

d. Click **Remove** to remove the selected node from the Included Nodes or Excluded Nodes lists.

e. Click **Up** or **Down** to set the sequence of the nodes and spans included in the SVLAN.

f. Repeat substeps a to e for each node that you want to include in the SVLAN route.

g. Click **Finish** or **Next**.

Step 7 In the Routing Summary pane, do the following:

a. In the map view, review the ID of the source and destination NEs.

b. Included Spans—Lists all of the spans that the Prime Optical server selected automatically.

c. Selected Span—Displays the following information about the span selected in the Included Spans list:

- From—Span source.
- To—Span destination.

d. Click **Finish**.

Step 8 In the message box, click **OK**.

Caution It takes several seconds to create an SVLAN. During that interval, if a new SVLAN is added with the same name, both SVLANs are identified as duplicates. If another user tries to provision one of the duplicate SVLANs, the operation fails. Therefore, be careful not to add a duplicate SVLAN during the creation of the first SVLAN.

Table 7-53 Field Descriptions for the Create SVLAN Wizard

Field	Description
Navigation Pane	
The navigation pane on the left side of the Create SVLAN wizard tells you where you are in the process of creating the SVLAN. The list of tasks shown initially is the default list of all possible tasks. As you move through the SVLAN creation, you are taken to the appropriate task. You can use the navigation pane to jump quickly from one task to the next, or to an already visited task. Using the navigation pane is faster than using the Back and Next buttons, because you can jump over multiple panes in one step versus clicking Back or Next and moving through the panes sequentially. **Tip** As you proceed through the wizard, the panes you have visited are highlighted in white and identified by a number. **Tip** Click the Maximize button to expand the Create SVLAN wizard. After you expand the Create SVLAN wizard, the Maximize button changes to the Reset Size button. Click the Reset Size button to reduce the Create SVLAN wizard to its original size.	
Info View	
Name	Enter a unique name for the new SVLAN. The SVLAN name is a free-format string, up to 48 ASCII characters.
ID	Enter the ID of the new SVLAN. The valid range is from 1 to 4093.
Protection	If checked, protection is enabled for the new SVLAN. If protection is enabled, provisioning succeeds only if the GE_XP or 10GE_XP cards are connected by contiguous OCH trail circuits configured in a Fast Access Protection Switch (FAPS) ring topology. Source and client ports coincide for protected SVLAN, and a master node must be provisioned. 1+1 card protection is also supported for protected SVLAN, but an intertrunk patchcord must be provisioned among trunk ports within the protection group. You can provision protection only on SVLAN IDs that are defined as protected in the database.
Source	
Source	Select from the list of available NEs to specify the source NE.
Shelf	Select from the list of available shelves to specify the source shelf.
Slot	Specify the source slot.
Port	Specify the source port. NNI source ports have “NNI” appended to the port name.
Destination (not available if the SVLAN is protected)	
Destination	Select from the list of available NEs to specify the destination NE.
Shelf	Select from the list of available shelves to specify the destination shelf.
Slot	Specify the destination slot.
Port	Specify the destination port. NNI destination ports have “NNI” appended to the port name.

Table 7-53 Field Descriptions for the Create SVLAN Wizard (continued)

Field	Description
Review Route Before Creation	Check this check box to review the route before it is created.
Using Required Nodes	If checked, you manually include or exclude nodes. Once a node is selected, the intermediate hops are determined automatically (if a route path exists).
Endpoint QinQ Settings	
Source Client Port	Shows the source port on which to provision IEEE 802.1 QinQ VLAN tags on the GE_XP or 10GE_XP cards. QinQ tags expand the VLAN capability by tagging the tagged packets to produce a "double-tagged" Ethernet frame. For service providers, the expanded VLAN allows specific services to be provided on specific VLANs for specific customers, while other types of services can be provided to other customers on other VLANs.
Source Client Mode	Set the source QinQ mode. The options are: • Selective—Allows you to specify the mapping between CVLANs and SVLANs. The Selective setting acts on port and VLAN tags. You can provision different operations on the ID tags carried by the received frames. • Transparent—Allows you to specify a single SVLAN. With the Transparent port setting, when a port receives a frame, that frame is tagged with the current SVLAN ID.
BPDU	Set the source BPDU mode. BPDUs are transmitted to identify network topology tunnel settings and enable transparent data transmission among devices. The BPDU options are: • Drop—Discards incoming packets with the MAC address on the BPDU list. • Tunnel—Transports packets with MAC addresses on the BPDU list.
Transparent SVLAN ID	Displays the SVLAN ID used when the QinQ mode is set to Transparent. When the QinQ mode is set to Selective, you can specify the mapping between the customer VLAN and the service VLAN.
DSCP-CoS	Click the **DSCP-CoS** button. The DSCP-CoS mapping table for provisioning the CoS based on DSCP for each port is displayed with the following information: • DSCP—Displays the DSCP value. • CoS Value—Displays the CoS value. Choose a CoS value from 0 to 7 and click **OK**. The **DSCP-CoS** button is enabled only when the following conditions are met: • QinQ mode is set to Selective. • Ingress CoS is set to DSCP on the Ether and Channel Group ports. The **DSCP-CoS** button is enabled only if XPE cards are provisioned in the slot.
Destination Client Port	Shows the destination port on which to provision IEEE 802.1 QinQ VLAN tags on the GE_XP or 10GE_XP cards. **Note** QinQ destination settings are not displayed if the SVLAN is protected.
Destination Client Mode	Set the destination QinQ mode. The options are: • Selective—Allows you to specify the mapping between CVLANs and SVLANs. The Selective setting acts on port and VLAN tags. You can provision different operations on the ID tags carried by the received frames. • Transparent—Allows you to specify a single SVLAN. With the Transparent port setting, when a port receives a frame, that frame is tagged with the current SVLAN ID.

Table 7-53 Field Descriptions for the Create SVLAN Wizard (continued)

Field	Description
BPDU	Set the destination BPDU mode. The options are: • Drop—Discards incoming packets with the MAC address on the BPDU list. • Tunnel—Transports packets with MAC addresses on the BPDU list.
Transparent SVLAN ID	Displays the SVLAN ID used when the QinQ mode is set to Transparent. When the QinQ mode is set to Selective, you can specify the mapping between the customer VLAN and the service VLAN.
DSCP-CoS	Click the **DSCP-CoS** button. The DSCP-CoS mapping table for provisioning the CoS based on DSCP for each port is displayed with the following information: • DSCP—Displays the DSCP value. • CoS Value—Displays the CoS value. Choose a CoS value from 0 to 7 and click **OK**. The **DSCP-CoS** button is enabled only when the following conditions are met: • QinQ mode is set to Selective. • Ingress CoS is set to DSCP on the Ether and Channel Group ports. The **DSCP-CoS** button is enabled only if XPE cards are provisioned in the slot.
Add and Remove buttons	Click the **Add** button to add the source or destination QinQ setting to the table on the right side of the pane. Click the **Remove** button to remove the selected row(s) from the table. If the client source port mode is set to Transparent, the settings table disappears and the Add/Remove buttons are dimmed.
Add CVLAN Range button	To specify a source CVLAN range, enter the CVLAN range in the boxes next to the Add CVLAN Range button; then, click **Add CVLAN Range**. A source QinQ table entry is added for each CVLAN in the range.

Table 7-53 Field Descriptions for the Create SVLAN Wizard (continued)

Field	Description
SVLAN table	• CVLAN—Sets the CVLAN range. • SVLAN—Represents the SVLAN ID. • Operation—Specifies the operation mode. The options are: – Add—Appends a new .1Q tag with a specific SVLAN ID to all the incoming Ethernet frames tagged with a CVLAN ID. – Double Add—Adds a double tag for the incoming untagged packets. – Translate—Translates the incoming VLAN ID of the incoming Ethernet frames tagged with a CVLAN ID. The CVLAN ID is translated into an SVLAN ID. After this translation, the .1Q tag of the frame is SVLAN. – Translate Add—Adds the outer SVLAN and translates the inner VLAN for incoming single-tagged packets. • Inner SVLAN—Represents the VLAN of the incoming packet. This value can be set only when the operation mode is Double Add or Translate Add. • CoS—Displays the CoS egress queue (0 through 7). • IGMP CVLAN—Displays the IGMP CVLAN values. An IGMP CVLAN check box is provided to set the IGMP CVLAN for each row. Note the following IGMP CVLAN setting restrictions: – You can only set one IGMP CVLAN. – You cannot set IGMP CVLAN on the CVLAN range. – You cannot set IGMP CVLAN when the operation mode is set to either Double Add or Translate Add. To set this option, the card mode must be L2 over DWDM. **Note** If the IGMP CVLAN check box is not enabled in the MVR tab, the field shows N/A.
Routing Constraints (available only if Using Required Nodes is selected)	
Map view	(For graphical manual provisioning) Displays the NEs that are available in the subnetwork for SVLAN creation. This pane also indicates the source and destination NEs selected for SVLAN creation. The map view is used for the inclusion and exclusion of nodes during the specification of route constraints. Use the right-click menu options to navigate within the map view: • Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click OK. The selection context in the map view changes to show the selected node highlighted in the visible map area. • Zoom In—Allows you to zoom in on an object in the map view. • Zoom Out—Allows you to zoom out on the map view. • Reset Zoom—Resets the current zoom level to the default.
Selected Node	Displays the currently selected NE.
Included Nodes	Displays the list of nodes that are included in the route.
Excluded Nodes	Displays the list of nodes that are excluded from the route.

Table 7-53 Field Descriptions for the Create SVLAN Wizard (continued)

Field	Description
Routing Summary	
Map view	The map view indicates the source and destination NEs selected for SVLAN creation. Use the right-click menu options to navigate within the map view: • Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area. • Zoom In—Allows you to zoom in on an object in the map view. • Zoom Out—Allows you to zoom out on the map view. • Reset Zoom—Resets the current zoom level to the default.
Included Spans	Lists all of the spans that the Prime Optical server selected automatically.
Selected Span	Displays detailed information about the span selected in the Included Spans list.
Summary	
Summarizes the selections you made in the wizard panes. To change the SVLAN summary, click **Back** and change your selection(s).	

7.9.4 Modifying an SVLAN

Use the Modify SVLAN dialog box to change the name of an existing SVLAN on a GE_XP or 10GE_XP card on an ONS 15454 SONET or ONS 15454 SDH R9.1 or later NEs.

Step 1 In the Domain Explorer, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > SVLAN Table**. The SVLAN table opens.

Step 2 Select the SVLAN whose name you want to change and choose **Edit > Modify SVLAN** (or click the **Modify** tool). The Modify SVLAN dialog box opens.

Step 3 In the Name field, enter a unique name for the SVLAN. The SVLAN name is a free-format string, up to 48 ASCII characters.

Step 4 Click **OK**.

Step 5 Click the **Refresh Data** tool to view the modified SVLAN name in the SVLAN table.

7.9.5 Deleting an SVLAN

Use the Delete SVLAN dialog box to delete an existing SVLAN from a GE_XP or 10GE_XP card on an ONS 15454 SONET or ONS 15454 SDH R9.1 or later NEs.

Step 1 In the Domain Explorer, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > SVLAN Table**. The SVLAN table opens.

Step 2 Select the SVLAN that you want to delete and choose **Edit > Delete SVLAN** (or click the **Delete** tool).

Step 3 In the confirmation dialog box, click **OK**.

Step 4 Click the **Refresh Data** tool. After the window refreshes, the deleted SVLAN is no longer visible in the SVLAN table.

7.9.6 Adding an SVLAN Drop

You can add a new SVLAN drop that belongs to:

- NEs that are part of the current SVLAN
- NEs that are connected via an existing route (such as an OCH trail tunnel link or a Layer 2 trunk-to-trunk patchcord)

Step 1 In the Domain Explorer, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > SVLAN Table**. The SVLAN table opens.

Step 2 Choose **Configuration > Add Drop** (or click the **Add SVLAN Drop** tool). The Create SVLAN wizard opens.

Step 3 In the Add New Drop pane, configure the SVLAN drop details (destination, shelf, slot, and port); then, click **Next**.

Step 4 In the Endpoint QinQ Settings pane, configure QinQ settings for the drop. QinQ settings enable the encapsulation of different SVLAN IDs within a parent Ethernet frame, thereby shielding the IDs during data transmission.

- SVLAN Drop—*Display only.* View the drop port on which to provision IEEE 802.1 QinQ VLAN tags on the GE_XP or 10GE_XP cards.
- SVLAN Drop Mode—Set the drop QinQ mode (Selective or Transparent). If you select Transparent, the SVLAN table disappears and the Add/Remove buttons are dimmed.
- BPDU—Set the drop BPDU mode (Drop or Tunnel).
- Add and Remove buttons—Click the **Add** button to add the drop QinQ setting to the table on the right side of the pane. Click the **Remove** button to remove the selected row(s) from the table. If the drop mode is set to Transparent, the settings table disappears and the Add/Remove buttons are dimmed.

Step 5 Click **Finish**.

Step 6 Click the **Refresh Data** tool. After the window refreshes, the new SVLAN drop appears in the SVLAN table.

7.9.7 Deleting an SVLAN Drop

Step 1 In the Domain Explorer, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > SVLAN Table**. The SVLAN table opens.

Step 2 In the SVLAN table, choose **Edit > Delete SVLAN Drop** (or click the **Delete** tool). The Delete SVLAN Drop dialog box opens.

Step 3 From the SVLAN Drops list, select the drop that you want to delete. You can delete one drop at a time; you cannot select multiple drops in the list.

Step 4 Click **OK**.

Step 5 Click the **Refresh Data** tool. After the window refreshes, the deleted SVLAN drop is no longer visible in the SVLAN table.

7.9.8 Tracing an SVLAN

Use the SVLAN Trace window to display spans and endpoints for a specific SVLAN.

Step 1 In the Domain Explorer, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > SVLAN Table**. The SVLAN table opens.

Step 2 Select the SVLAN that you want to trace and choose **Configuration > Trace SVLAN** (or click the **Trace SVLAN** tool). The SVLAN Trace window opens.

Note The SVLAN Trace window does not have a Refresh Data tool. The port labels shown are those that belong to circuit spans.

Step 3 Right-click an endpoint (EP) marker to view the list of endpoints that belong to the node to which the marker refers.

7.10 Provisioning Data Services

Note Layer 2 (L2) services apply to ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH NEs only.

Note You need to complete all prerequisites for adding NEs before provisioning data services. See section 3.5.1 Prerequisites for Adding NEs, page 3-7 for information.

Note See *Cisco Prime Optical 9.6.3 ML Provisioning Methodology* for more information on the methodology that Prime Optical uses for data functionalities.

Metro Ethernet service capability is available through the ML-series cards on the ONS 15454 NE and the ML-100T-8 card on the ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH.

These cards provide the Ethernet interface (access point) to the service provider customer equipment and enable the transport of the customer traffic over the optical network domain.

Prime Optical supports Layer 2, Ethernet, service provisioning, and discovery. Before an Ethernet service can be provisioned, you must define an access domain, referred to in Prime Optical as a Layer 2 topology. A Layer 2 topology consists of optical circuits with specific Layer 2 configurations. Prime Optical supports Layer 2 topology provisioning and discovery. The following table summarizes the types of Layer 2 topology supported.

Table 7-54 Types of Layer 2 Topology Supported in Prime Optical

Type	Description	See
Point-to-point	A single point-to-point optical circuit with specific Layer 2 configuration.	7.10.6 Creating Layer 2 Topologies, page 7-247
Hub and spoke	In Prime Optical, this refers to a maximum of two point-to-point Layer 2 topologies connected by a single ML-series card on which both point-to-point Layer 2 topologies are created. **Note** You can create other hub-and-spoke configurations, including one in which the ML-series card is placed at the spoke locations, with the G-series card providing an extension of the traffic to a Cisco 7600, which forms the hub of the architecture.	
RPR	A chain of optical circuits connected through packet over SONET (POS) ports with a specific Layer 2 configuration.	

The following table summarizes the Ethernet service types supported by Prime Optical.

Table 7-55 Types of Ethernet Services Supported in Prime Optical

Type	Description	See
UNI QinQ	Transparent LAN service. Service can be multiplexed with other UNI Dot1Q services.	7.10.13 Layer 2 Service Management Tasks, page 7-286
UNI Dot1Q	Services are multiplexed at the UNI.	
NNI Dot1Q	Network-to-network interface. Services are multiplexed at the NNI.	
UNI untagged	Service occupies the entire interface. This type is designed for interface with a device that does not provide user VLAN ID capability.	

Caution Prime Optical provides optical circuit provisioning on the device through the CORBA interface and data service through the Cisco IOS command-line interface (CLI). On the Cisco IOS side, Prime Optical only recognizes the CLI configuration that is supported by Prime Optical and ignores unsupported CLI configurations. Prime Optical does not explicitly overwrite the existing configuration on the card. However, it can erase some of the configuration on the card without its knowledge. If you intend to use Prime Optical to provision the supported services and plan to directly configure the nonsupported services on the card by passing Prime Optical, consult Cisco first to prevent any configuration overwrite.

7.10.1 Initializing Layer 2 Cards

Before provisioning, you must first enable Prime Optical communication with the Layer 2 cards. The cards to be managed must be initialized with a minimum configuration.

To allow Prime Optical to communicate with Layer 2 cards, you must configure each card with a username, password, and hostname. You can customize this information in the Cisco IOS configuration file before loading it on the ML-series card.

When a Layer 2 topology is configured on NEs, Prime Optical configures each ML-series card with a barebone configuration file. This file contains the minimum configuration required for Prime Optical to support the Layer 2 topology and Layer 2 services on it.

Prime Optical provides the following barebone configuration files:

- barebone15454CLI_Security.txt—Use this base barebone configuration file for ML100, ML1000, or ML100X cards on ONS 15454 SONET and ONS 15454 SDH NEs. This file loads the ML card in microcode base mode. This barebone configuration file is the recommended default.
- barebone15454CLI_Enhanced_Security.txt—This configuration file provides microcode enhanced commands. Use this file to load a microcode enhanced image on ML100, ML1000, or ML100X cards on ONS 15454 SONET and ONS 15454 SDH NEs. The enhanced microcode image is required for CoS PM collection on ML cards.
- bareboneCLI_Generic.txt—Use this barebone configuration file for ML-100T-8 cards on ONS 15310 NEs. This file loads the ML-100T-8 card in microcode enhanced mode. Microcode base mode is not supported on the ML-100T-8 card. Also use this barebone configuration file for ONS 15454 SONET and ONS 15454 SDH R4.1.7 and earlier NEs, because these software versions do not support the microcode security feature.

Note The barebone configuration files are located on the server installation CD (Disk1/misc/). After you install the Prime Optical server, the appropriate barebone configuration file is automatically copied by default to the opt/CiscoTransportManagerServer/IosConfig directory.

A sample Cisco IOS configuration file is shown below.

Note If you use a username/password combination other than CISCO15/CTM123+, it is recommended that you download this barebone configuration file to one of your ML-series cards, change the username and password to the ones you use, and manually copy the running configuration to all your ML-series cards.

```
!
version 12.1
no service pad
service timestamps debug datetime msec localtime
```

```
service timestamps log datetime msec localtime
service password-encryption
service internal
!
hostname default46
!
logging buffered 4096 debugging
!
username CISCO15 privilege 15 password 7 112A2D2846405847
ip subnet-zero
!
!
ip classless
no ip http server
!
!
logging history size 100
snmp-server enable traps snmp authentication warmstart linkdown linkup coldstart
snmp-server enable traps bridge
snmp-server enable traps flash insertion removal
snmp-server enable traps hsrp
snmp-server enable traps config
snmp-server enable traps entity
snmp-server enable traps bgp
snmp-server enable traps syslog
!
!
line con 0
exec-timeout 0 0
line vty 0 4
exec-timeout 0 0
login local
!
end
```

You must perform the following steps before Prime Optical can manage Layer 2 cards correctly:

Step 1 Initialize each card with the barebone configuration file through the Prime Optical NE Explorer.

Step 2 Set the username and password, so that Prime Optical will use the same username and password to communicate with the cards. This is done through the **Control Panel > Security Properties** tab for ONS 15454 SONET and ONS 15454 SDH NEs.

7.10.2 Backing Up and Restoring ML Configuration Files on Layer 2 Cards

You can back up and restore ML configuration files using CTC or the Cisco IOS commands on the ML-series cards.

- To store a backup version of the TCC2 (software) database on the workstation running CTC or on a network server, see the *Cisco ONS 15454 Procedure Guide*.
- To load a Cisco IOS startup configuration file through CTC, see the *Cisco ONS 15454 SONET/SDH ML-Series Multilayer Ethernet Card Software Feature and Configuration Guide*.

7.10.3 Naming Convention for Discovered Layer 2 Topologies

Prime Optical follows a set naming convention when creating Layer 2 topologies.

If an RPR topology is created through Prime Optical with the name *toponame*, the Layer 1 member circuits are named as follows: toponame.1CTML2, toponame.2CTML2, and so on. During discovery, if Layer 1 circuits matching this naming convention are discovered, a Layer 2 topology with the name *toponame* is added to Prime Optical.

If the CTM naming convention is not followed for discovered circuits, the RPR topology takes the name of one of the circuits in the RPR topology.

In the case of point-to-point topologies, the Layer 1 circuit has the same name as the topology. On the other hand, when a Layer 1 circuit between an ML and a non-ML series card is discovered, a point-to-point topology with the same name as the Layer 1 circuit is added to the Prime Optical database.

Note There are no VLAN naming conventions.

For RPR or point-to-point topologies created as a result of creating Layer 1 circuits for a TL1 interface, the name appears as a numeric string. This numeric string is based on the unique number used to identify the circuits.

7.10.4 Provisioning Layer 2 Topologies

Prime Optical allows you to create VCAT circuits and their constituent member circuits during Layer 2 topology creation. To support a Layer 2 topology, for RPR, Prime Optical allows you to create all VCAT circuits (and contained member circuits), all CCAT circuits, or a combination of VCAT and CCAT circuits. For a point-to-point L2 topology you can create either a VCAT or a CCAT circuit.

The Layer 2 topology can be a point-to-point optical circuit, or RPR consisting of a chain of optical circuits, or hub and spoke consisting of multiple optical circuits connected in a hub-and-spoke fashion:

- Point-to-point topology—Select the source and destination of the point-to-point topology and provide the routing information for the SONET/SDH circuit. Both manual and automatic routing are supported. The following table lists the NE models and cards supported for L2 point-to-point topologies.

Table 7-56 NE Models and Cards Supported by Prime Optical for L2 Topology

ONS 15305	ONS 15310 CL	ONS 15310 MA SONET	ONS 15310 MA SDH	ONS 15327	ONS 15454 SONET	ONS 15454 SDH	ONS 15600 SONET	ONS 15600 SDH
L2-supported source NE?								
No	Yes	Yes	Yes	No	Yes	Yes	No	No
L2-supported destination NE?								
No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
ML-series cards and L2-enabled ONS 15310 ML-100T-8 cards as source point of L2 topology?								
—	Yes	Yes	Yes	No	Yes	Yes	—	—
ML-series cards and L2-enabled ONS 15310 ML-100T-8 cards as destination point of L2 topology?								
—	Yes	Yes	Yes	No	Yes	Yes	—	—
OC-n and STM-n cards as destination point of L2 topology?								

Table 7-56 NE Models and Cards Supported by Prime Optical for L2 Topology (continued)

ONS 15305	ONS 15310 CL	ONS 15310 MA SONET	ONS 15310 MA SDH	ONS 15327	ONS 15454 SONET	ONS 15454 SDH	ONS 15600 SONET	ONS 15600 SDH
—	Yes	Yes	Yes	No	Yes	Yes	—	—
G-series cards as destination point of L2 topology?								
—	Yes	Yes	Yes	No	Yes	Yes	—	—
CE-100, CE-1000, and CE-MR-6 cards as destination point of L2 topology?								
—	Yes	Yes	Yes	No	Yes	Yes	—	—
E-series cards as destination point of L2 topology?								
—	—	—	—	Yes[1]	No	No	—	—

1. Available only in LAN extension (LEX) encapsulation mode.

Note The E-series card requires a a field-programmable gate array (FPGA) upgrade to be compatible with ML-series and G-series cards. 16-bit cyclic redundancy check (CRC) is required.

Note The G-series to E-series card combination does not involve the L2 Topology wizard.

- RPR topology—Select the set of nodes that contains ML-series cards and then the set of ML-series cards. The ML-series order is important because it defines the order of the cards inside the rings. Once the ML-series cards have been selected, you are prompted with the set of SONET/SDH circuits that will be created underneath the Layer 2 topology. You can automatically route all the circuits or manually route the circuits that will be created underneath the Layer 2 topology. A minimum of two ML-series cards is required to configure an RPR.
- Hub-and-spoke topologies—In Prime Optical, this refers to a maximum of two point-to-point Layer 2 topologies connected by a single ML-series card on which both point-to-point Layer 2 topologies are created. For point-to-point topologies, the following combinations of cards are supported:
  - ML-series to ML-series
  - ML-series to G-series
  - ML-series to OC-n/STM-n

  When deployed as hub and spoke, the ML-series cards can be placed at the spoke locations, with the G-series cards providing an extension of the traffic to a Cisco 7600, which forms the hub of the architecture. This arrangement provides a cost-effective way to interface to the Cisco 7600. Alternatively, the ML-series cards can be deployed at both the hub and the spoke sites. See the *ML-Series Metro Ethernet Design and Implementation Guide* for network configurations.

  Note When creating a hub-and-spoke topology, during creation of a PTP topology on an ML-series card that already has a PTP created on it, you cannot modify the base card configuration. This limitation ensures that the pre-existing base card configuration is retained.

  When deployed as RPR, all sites contain ML-series cards.

The Create Circuit wizard is used to repair a Layer 2 topology when the bottom circuit has been deleted or removed erroneously.

The Layer 2 Topology table reports the operational state and the state for each Layer 2 topology. For point-to-point topologies, the operational state reflects the state of the underlying optical circuit. For RPR topologies, the operational state can have one of the following values:

- In Service (IS)—RPR is in IS state when all the circuits underneath it are in IS state.
- In Service Partial (IS–Partial)—RPR is in IS–Partial state when only one circuit underneath it is in OOS state and all remaining circuits underneath it are in IS state.
- Out of Service (OOS)—RPR is in OOS state when more than two circuits underneath the RPR are in OOS state.

The Layer 2 Service Resync state provides the configuration synchronization state after discovery of the Layer 2 topology. The state can be In Progress, Complete, Partially Complete, Layer 2 Service Not Ready, or Sync Failed. VLAN status is different and is available in the Layer 2 Services table.

Prime Optical can discover a Layer 2 topology through the Create Layer 2 Topology wizard or Create Circuit wizard, through CTC, or through the TL1 interface.

A Layer 2 topology provisioned by this application is Layer 2 service enabled, meaning the optical circuit and the Cisco IOS configuration are set for subsequent Layer 2 services. However, a Layer 2 topology created through other means (such as through the Create Circuit wizard, CTC, or TL1 interface) is not Layer 2 service enabled. This is because the Cisco IOS configuration is missing. This type of Layer 2 topology must be Layer 2 service enabled if you want to provision Layer 2 services.

Note Layer 2 topology discovery in Prime Optical depends on the underlying L1 circuit endpoints and not on the shared packet ring (SPR) interface ID configured on the ML card. If you change the SPR interface ID on a card used in an RPR topology so that the ID is a duplicate of an SPR interface ID configured on another card in the topology, Prime Optical does not recognize the anomaly and does not display alarms.

Note Network Control Protocol (NCP) circuit update events received by Prime Optical might be scattered in time, especially in complex GNE-ENE network configurations. As a result, the discovery of L2 topologies in Prime Optical might be interrupted by a fixed, 5-minute delay before displaying an L2 topology as *Incomplete*. The fixed, 5-minute delay is a result of the Prime Optical L2 topology discovery algorithm, which takes into account the scattering of NCP events. An incomplete topology appears in the L2 Topology Table (along with its L2 links in the Link table) after the fixed, 5-minute delay has elapsed.

Note Do not create an L2 topology or add a card to the L2 topology in mixed high-level data link control (HDLC) and generic framing procedure (GFP) modes. If you create an L2 topology using cards in different modes, traffic cannot flow through the topology. An L2 topology with cards in mixed modes generates an Encapsulation Mismatch alarm, which indicates that traffic cannot be passed through the ring.

Note Use a fresh barebone configuration file when creating an RPR L2 topology on a card that was initially created with a PTP topology, or when creating a PTP L2 topology on a card that was initially created with an RPR topology. It is always better to create an L2 topology with a fresh barebone configuration file loaded on the card, because Prime Optical does not clear all of the old configuration on the card.

7.10.5 Viewing the Layer 2 Topology Table

In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**. The Layer 2 Topology table opens.

Tip You can also open the Layer 2 Topology table from the CTC-based NE Explorer. In the NE Explorer window, choose **Configuration > L2 Topology Table**.

The Layer 2 Topology table displays all the configured Layer 2 topologies. It also reports the bandwidth settings for each Layer 2 topology. These are set for each Layer 2 topology and added through the Layer 2 topology wizard. The following bandwidth settings are reported:

- SP management bandwidth
- Committed information rate (CIR) bandwidth
- Best-effort (BE) bandwidth
- AVVID_CONTROL
- Multicast priority queuing
- Service classes and bandwidth values for 802.17 RPRs

The following table describes the fields in the Layer 2 Topology table.

Table 7-57 Field Descriptions for the Layer 2 Topology Table

Column	Description
Layer 2 Topology Name	Displays the name of the topology.
Layer 2 Topology Alias	Displays the alias name of the topology.
Description	Displays the user-defined description of the topology.
Layer 2 Topology Type	Displays the topology type (point-to-point, RPR, or RPR_DOT17).
Layer 2 Topology Size	Displays the topology size. When the size of the circuit underneath is not the same, the value is Mixed.

Table 7-57 Field Descriptions for the Layer 2 Topology Table (continued)

Column	Description
Layer 2 Topology State	Displays the topology state (Complete, Incomplete, Complete-Wrapped, Complete-Steering, Incomplete-Wrapped, or Incomplete-Steering). The state of a point-to-point topology is always Complete. A complete RPR is one in which all of the circuits linking the ML-series cards in the RPR are known by Prime Optical. An incomplete RPR is one in which one or more ML-series cards in the RPR are missing. A complete RPR can become incomplete when one or more circuits forming the RPR are deleted by the user in CTC or another external interface. An incomplete RPR can become complete when all of the circuits forming the RPR become known. The topology enters the Complete-Wrapped/Incomplete-Wrapped state if one or more PoS ports related to the topology are shut down or if an RPR Wrapped alarm is generated and captured for any of the ML cards related to the L2 topology. The topology enters the Complete-Steering/Incomplete-Steering state if either the rpr-east or rpr-west ports related to the topology are shut down, or if an RPR Protection Active alarm is generated and captured for any of the ML cards related to the L2 topology. The ML Card table allows you to view additional information on the state of an L2 topology. See 7.10.5.1 Viewing the ML Card Table and Checking VLAN Alignment, page 7-245.
Layer 1 Protection	Displays the L1 protection state, either Fully Protected or Unprotected.
Operational State	Displays the operational states of the circuits underneath. Values include: • In Service (IS)—All circuits are in service. • In Service–Partial (IS–Partial)—One circuit is out of service and the rest are in service. • Out of Service (OOS)—More than two circuits are out of service.

Table 7-57 Field Descriptions for the Layer 2 Topology Table (continued)

Column	Description
Layer 2 Service Resync Status	Displays the Prime Optical status after trying to synchronize the configuration of all the ML-series cards in the topology. Values include: • Sync Failed—A card in the topology cannot resynchronize. • In Progress—Prime Optical is trying to synchronize configuration information for all ML-series cards in the topology. • Complete—The Layer 2 service discovery is complete or the resynchronization is complete. In this state, the Layer 2 service information is synchronized with the NE. • L2Service NotReady—One of the cards in the topology does not have a base card configuration. • Partially Completed—If Prime Optical cannot parse the configuration (for example, the configuration does not exist or is corrupt), the Layer 2 service discovery proceeds without acquiring the information from the ML card that has the problem. At the end of the discovery, the Layer 2 Service Resync Status is partially completed. You must reload the backed-up config file or the barebone config file (myconfig.txt) in the Prime Optical server installation directory/IosConfig. You must reload the backed-up configuration file or the barebone configuration file from a synchronized ML card to the card that is not synchronized. **Note** If the barebone configuration file is loaded in an ML slot, all previous configuration on the card is erased. **Note** When the Prime Optical server reboots and NEs are resynchronized, the Prime Optical database resynchronizes the information related to the ML cards. After resynchronization, the L2 topology moves to the Complete state. This entire process takes some time, which causes the L2 topology to remain in L2Service NotReady or Sync Failed state until the resynchronization is complete.
Service Provider Management Bandwidth	Displays the bandwidth percentage used for the service provider (SP) management traffic class. The sum of the percentage allocation for all traffic classes cannot exceed 99%. The bandwidth range for each traffic type has a minimum of 1% and a maximum of 99%. **Note** In an ML configuration, if the bandwidth is not used, the bandwidth utilization is rebalanced to use the assigned percentage.
Service Provider Management Class of Service	Class of service value for SP management traffic.
Committed Information Rate Bandwidth	Displays the bandwidth percentage used for the committed information rate (CIR) traffic class. The sum of the percentage allocation for all traffic classes cannot exceed 99%. The bandwidth range for each traffic type has a minimum of 1% and a maximum of 99%.
Committed Information Rate Class of Service	Class of service for CIR/PIR traffic.
AVVID Control Bandwidth	Allows you to set the bandwidth percentage used for the AVVID control. The sum of the percentage allocation for all traffic classes cannot exceed 99%. The bandwidth range for each traffic type has a minimum of 1% and a maximum of 99%.
AVVID Control Class of Service	Class of service for AVVID control traffic.
AVVID Voice/Video Bandwidth	Displays the bandwidth percentage used for the AVVID voice/video traffic class.

Table 7-57 Field Descriptions for the Layer 2 Topology Table (continued)

Column	Description
AVVID Voice/Video Class of Service	Class of service for AVVID voice/video traffic.
Best Effort Bandwidth	Displays the bandwidth percentage used for the best-effort traffic class. The sum of the percentage allocation for all traffic classes cannot exceed 99%. The bandwidth range for each traffic type has a minimum of 1% and a maximum of 99%.
CoS Commit	Committed class of service (CoS). This value is set when applying the base card configuration and the value is the same on all the cards in the topology. CoS values below this value are discard eligible.
Topology Bandwidth Utilized	Displays the bandwidth of the topology that is used by the configured Layer 2 services on the topology, in kilobits per second (kb/s).
Topology Bandwidth Available	Displays the bandwidth available for creating the L2 service on the topology, in kb/s. **Note** The available bandwidth is shown as "Over Subscribed" when the available bandwidth is less than the utilized bandwidth.
Multicast Group 1 Bandwidth	Displays the Multicast Group 1 bandwidth percentage.
Multicast Group 1 Class of Service	Displays the class of service for Multicast Group 1.
Multicast Group 2 Bandwidth	Displays the Multicast Group 2 bandwidth percentage.
Multicast Group 2 Class of Service	Displays the class of service for Multicast Group 2.

7.10.5.1 Viewing the ML Card Table and Checking VLAN Alignment

The ML Card table allows you to view information on the state of the ML cards that are part of the L2 topology.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 Select an L2 topology in the Layer 2 Topology table.

Step 3 Choose **Configuration > ML Cards**. The ML Card table opens. Table 7-58 provides descriptions.

Step 4 You can associate a specific ML1000 card in an 802.17 RPR with another ML1000 card as the standby card. Prime Optical configures the redundant interconnect commands in both cards to establish their working role and protect role and their association (through the peer MAC address). Prime Optical automatically replicates the VLAN drop configuration from the active ML card to the standby card. You can check the VLAN alignment between the active and standby cards by selecting a working ML1000 card in the ML Card table and choosing **Configuration > Check VLAN Alignment**. This menu option is dimmed if:

- The working card is not in the "Base card detection complete" configuration state.
- The protect card is not in the "Base card detection complete" configuration state.
- The card is not associated with any protect card.

If the cards are aligned, the following message is displayed:

```
The VLAN information is aligned for working and protect cards.
```

Step 5 If the ML cards are not aligned, you can merge the running configuration on the active card with the standby card (provided the Cisco IOS configuration on the standby card does not conflict with the active ML card). Click **OK** at the following prompt:

```
The VLAN configuration on the standby card differs from the configuration on the active
card. Do you want to force the alignment?
```

A Clone ML Card task is scheduled. The result of the task execution is available in the Job Monitor table.

Note The Check VLAN alignment functionality might not be able to align working and protect cards, even when the Clone ML Card task is successful. This can happen when there are conflicts between the Cisco IOS configurations of the protect and working cards. If the Check VLAN Alignment functionality cannot align working and protect cards, manually align the protect card using the ML Card CLI console.

Note The check VLAN alignment functionality detects only the misalignments between working and protect ML cards that are strictly related to VLAN drops. The following values are not checked for VLAN alignment: Ethernet port attributes (for example, MTU, speed, and flow control), COS accounting, and port enabling/disabling.

Table 7-58 Field Descriptions for the ML Card Table

Field	Description
NE ID	Displays the name of the NE.
Slot Number	Displays the ML card slot number.
Equipment Type	Displays the equipment type that the slot is provisioned for.
Configuration State	Displays information about the configuration state of the port. Values are: • Waiting for synchronization to complete • Synchronization failed • Synchronization completed • Base card configuration is in progress • Base card configuration failed • Base card configuration is complete • Base card detection is in progress • Base card detection failed • Base card detection complete
POS 0	For point-to-point and RPR topologies, displays the POS 0 port state. Values are Enabled or Disabled. For 802.17 RPR topologies, the value is N/A.
POS 1	For point-to-point and RPR topologies, displays the POS 1 port state. Values are Enabled or Disabled. For 802.17 RPR topologies, the value is N/A.

Table 7-58 Field Descriptions for the ML Card Table (continued)

Field	Description
RPR 0	For 802.17 RPR topologies, displays the RPR-IEEE interface on an ML card. Values are Enabled or Disabled. For point-to-point and RPR topologies, the value is N/A.
Additional Information	Displays additional information when the card enters a configuration state from which it cannot recover. Any of the following messages could be displayed when the Configuration State field shows "Base card configuration failed": • CoS Commit value does not match the topology value • The CoS Commit value specified is invalid • Policy Map does not exist • Exception occurred while retrieving bandwidth values • Bandwidth values do not exist for *bandwidth-class-name* • Invalid bandwidth values were found for *bandwidth-class-name* • Bandwidth values do not match *bandwidth-class-name*
Protect Card	For 802.17 RPR topologies with protection, displays the protect ML card.

7.10.6 Creating Layer 2 Topologies

Use the Create Layer 2 Topology wizard to set up a point-to-point, RPR, or 802.17 RPR topology.

Note Prime Optical does not discover Layer 2 topologies when it discovers underlying circuits in the Partial state. If the Layer 2 Topology table does not display a particular topology, check the circuit state in the Circuit table. This is a known problem; Layer 2 topology discovery depends on circuits that are in the Discovered state only.

7.10.6.1 Creating a Point-to-Point Layer 2 Topology

Note You must have the appropriate user privileges to use the Create Layer 2 Topology wizard.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Create L2 Topology** (or click the **Create L2 Topology** icon). The Create Layer 2 Topology wizard opens.

Tip You can also access the Create Layer 2 Topology wizard by choosing **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Create L2 Topology** in the Domain Explorer.

The following table describes the fields in the wizard. Fields shown depend on the type of topology selected.

Table 7-59 Field Descriptions for the Create Layer 2 Topology Wizard

Field	Description
Navigation Pane	
The navigation pane on the left side of the wizard tells you where you are in the process of creating the L2 topology. The list of tasks shown initially is the default list of all possible tasks. As you move through the topology creation, you are taken to the appropriate task. You can use the navigation pane to jump quickly from one task to the next, or to an already visited task. Using the navigation pane is faster than using the Back and Next buttons, because you can jump over multiple panes in one step versus clicking Back or Next and moving through the panes sequentially. **Tip** As you proceed through the wizard, the panes you have visited are highlighted in white and identified by a number. Panes that are not applicable to the current creation sequence are shown in strikethrough italics.	
Topology Information, Topology Details	
Name	Enter a unique name for the new topology. The topology name is a free-format string, up to 30 ASCII characters.
Alias	Enter a unique alias name for the new topology. The alias name can contain alphanumeric characters. International character sets are also supported.
Description	Enter a description for the new topology, up to 60 ASCII characters.
L2 Topology Type	Select the type of topology you want to create: • Point-to-Point • Resilient Packet Ring • 802.17 Resilient Packet Ring **Note** The contents of subsequent wizard panes depend on the selected topology type.
Topology Information, Circuit Information (for point-to-point topologies)	
Circuit Type	Specify the type of circuit: STS and STS-v for SONET NEs; VC_HO_PATH_VCAT_CIRCUIT, VC_HO-v, VC_LO_PATH_VCAT_CIRCUIT, and VC_LO-v for SDH NEs.
Circuit Size	Specify the size of the circuit. STS circuit sizes are STS-1, STS-3c, STS-6c, STS-9c, STS-12c, and STC-24c. SDH circuit sizes are VC3, VC4, VC4-2c, VC4-3c, VC4-4c, and VC4-8c. **Note** The CE-MR-10 card supports STS-48c, VC4-16c, and VC4-64c circuit sizes.
L1 Protected Drops	This field is visible only if you select point-to-point as the topology type.
Topology Information, L1 Protection Information (for point-to-point topologies, for STS circuits only)	
Revertive	Specify whether traffic is reverted back to its original path when the conditions that diverted the circuit to the protect path are repaired. This field is visible only if you select point-to-point as the topology type.
Reversion Time	Specify the amount of time (in minutes) after which traffic reverts back to the original working path when conditions that caused the switch are cleared. The Cisco default is 5 minutes. This field is visible only if you select point-to-point as the topology type.
SF Threshold	Set the UPSR path-level SF threshold. This field is visible only for point-to-point topologies.
SD Threshold	Set the UPSR path-level SD threshold. This field is visible only for point-to-point topologies.

Table 7-59 Field Descriptions for the Create Layer 2 Topology Wizard (continued)

Field	Description
Switch on PDI-P	Specify whether traffic should switch based on a received STS payload defect indication. This field is visible only for point-to-point topologies.
Topology Information, VCAT (for point-to-point topologies, STS-v, VC_HO_PATH_VCAT_CIRCUIT, and VC_LO_PATH_VCAT_CIRCUIT)	
Symmetric	*Display only.* Provisions the same number of members in both directions. Symmetric is the default for STS VCAT circuits. Members use the same set of time slots but in opposite directions.
Member Size	Select a circuit size: • STS-1 • STS-3c • STS-12c • VC-3 • VC-4 • VC-4-4c **Note** See Step 5 and Step 6 of section 7.2.3.2 Creating a Regular or Open-Ended VCAT Circuit, page 7-37 for information on member sizes supported for CE-MR-10 cards.
Number of Members	Select the number of members, as follows: • ML-1000 and ML-1000T cards (supported on ONS 15454 SONET/SDH only), STS-1, STS-3c, STS-12c, VC4, VC4-4c, and VC3 can support two members. VT1.5 is not applicable. • FCMR card (supported on ONS 15454 SONET/SDH only) and STS-3c can support eight members. The FCMR with VC4-4c can support up to 16 members. The FCMR with STS-1 can support up to 48 members. STS-12c, VC3, and VT1.5 are not applicable. • ML-100T-8 card (supported on ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH only) and STS-1 can support one, two, or three members, and VT1.5 can support 1 to 64 members. STS-3c, STS-12c, VC4, VC4-4c, and VC3 are not applicable. • CE-100T-8 card (supported on ONS 15454 SONET only) and STS-1 can support one, two, or three members, and VT1.5 can support 1 to 64 members. STS-3c, STS-12c, VC4, VC4-4c, and VC3 are not applicable. • CE-MR-6 card (supported on ONS 15310 MA SONET and ONS 15310 MA SDH only) can support high-order circuits on STS-1-*n*v, where *n* is 1 to 21; and STS3c-*m*v, where *m* is 1 to 7. The equivalent high-order VC-4 VCAT bandwidth is VC-4-*m*v, where *m* is 1 to 7. For low-order circuits, CE-MR-6 supports VT1.5-*n*v, where *n* is 1 to 64; VC3-*m*v, where *m* is 1 to 21; and VC12-*m*v, where *m* is 1 to 63. **Note** See Step 5 and Step 6 of section 7.2.3.2 Creating a Regular or Open-Ended VCAT Circuit, page 7-37 for information on member sizes supported for CE-MR-10 cards.
Mode	Select the circuit mode using the mode radio buttons (None, SW-LCAS, or LCAS).
Source (for point-to-point topologies)	
NE ID	Select from the list of available nodes to specify the source node.
Subnetwork ID	Displays the subnetwork ID for the selected node.
Slot	Select a source slot from the list.

Table 7-59 Field Descriptions for the Create Layer 2 Topology Wizard (continued)

Field	Description
Port	Select a source port from the list.
STS	Select a source STS from the list.
VT	Select a Virtual Tributary (VT) from the list.
Destination (for point-to-point topologies)	
NE ID	Select from the list of available nodes to specify the destination node.
Subnetwork ID	Displays the subnetwork ID for the selected node.
Slot	Select a destination slot from the list.
Port	Select a destination port from the list.
STS	Select a destination STS from the list.
VT	Select a VT from the list.
NE Selection (for RPR Layer 2 and 802.17 RPR topologies)	
Subnetwork ID (Also displays NEs that are connected to NEs in this subnetwork)	Select the subnetwork from the drop-down list. After selecting a subnetwork, the Available NEs list includes all available NEs in that subnetwork as well as NEs that are topologically connected to NEs in that subnetwork.
Available NEs	Select one or more NEs from the list and click **Add** to add them to the Selected NEs field.
Selected NEs	Displays the NEs selected for the Layer 2 topology. Select one or more NEs and click **Remove** to remove them from the Selected NEs list.
Card Selection (for RPR Layer 2 and 802.17 RPR topologies)	
Available Cards	Select one or more cards from the list and click **Add** to add them to the Selected Cards list.
Selected Cards	Displays the cards selected for the Layer 2 topology. Select one or more cards and click **Remove** to remove them from the Selected Cards list.
Add Working	For 802.17 RPR topologies, click this button to add working cards to the Selected Cards list. **Note** Protection is supported only on ML1000-2 cards.
Add Protection	For 802.17 RPR topologies, click this button to add protection cards to the Selected Cards list. **Note** Protection is supported only on ML1000-2 cards.
Source (fields depend on the NE selected and the circuit type)	
Use Secondary Source	(For DRI, open UPSR, and open-ended SNCP circuits) Check to define a secondary source. Then, specify the slot, port, STS, DS-1, or VT for the secondary source.
NE ID	Select from the list of available NE IDs to specify the source NE ID.
Subnetwork ID	*Display only.* Displays the ID of the subnetwork associated with the circuit source.
Slot	Specify the source slot.
Port	Specify the source port.
STS	(For SONET circuits) Specify the source STS.
VC4	(For SDH circuits) Specify the source VC4.
VC3	(For SDH circuits) Specify the source VC3.
Destination (fields depend on the NE selected and the circuit type)	

Table 7-59 Field Descriptions for the Create Layer 2 Topology Wizard (continued)

Field	Description
Use Secondary Destination	(For DRI, open UPSR, and open-ended SNCP circuits) Check this check box to define a secondary destination. Then, specify the slot, port, STS, DS-1, or VT for the secondary destination.
NE ID	Select from the list of available TPs to specify the destination TP.
Subnetwork ID	*Display only.* Displays the ID of the subnetwork associated with the circuit destination.
Slot	Specify the destination slot.
Port	Specify the destination port.
STS	(For SONET circuits) Specify the destination STS.
VC4	(For SDH circuits) Specify the destination VC4.
VC3	(For SDH circuits) Specify the destination VC3.
Layer 2 Topology Bandwidth	
Prime Optical allows you to enter multiple CoS values that are the same. This is harmless and is consistent with the ML CLI, which allows the entry of multiple CoS values but sets only one value. The maximum bandwidth for 802.17 RPR topologies per circuit size is: • STS-1: 51840 kb/s • STS-3c: 155520 kb/s • STS-6c: 311040 kb/s • STS-9c: 466560 kb/s • STS-12c: 622080 kb/s • STS-24c: 1244160 kb/s • VC3: 48960 kb/s • VC4: 155520 kb/s • VC4-2c: 311040 kb/s • VC4-3c: 466560 kb/s • VC4-4c: 622080 kb/s • VC4-8c: 1244160 kb/s	
Enable Multicast Group 1 *(not available for 802.17 RPR topologies)*	Check the Enable Multicast Group 1 check box to enable the Multicast Group 1 bandwidth and Class of Service text boxes and display the default values for those text boxes. By default these check boxes are unchecked during topology creation. Only when you choose to enter these values (by selecting any of these check boxes) can you enter values related to bandwidth and CoS for that multicast group. **Note** Multicast Group 2 is enabled only after enabling Multicast Group 1.
Multicast Group 1 *(not available for 802.17 RPR topologies)*	Check the Enable Multicast Group 1 check box to enable the Multicast Group 1 bandwidth field. The default value (1%) is displayed. Edit this value as required. The valid range is from 1 to 95. **Note** The Multicast Group 1 check box is unchecked by default. You must check the Enable Multicast Group 1 check box before you can enter values in the Multicast Group 1 field.

Table 7-59 Field Descriptions for the Create Layer 2 Topology Wizard (continued)

Field	Description
Class of Service *(not available for 802.17 RPR topologies)*	Check the Enable Multicast Group 1 check box to enable the Class of Service field. The default value (4) is displayed. Edit this value as required. The valid range is from 0 to 7. **Note** The Enable Multicast Group 1 check box is unchecked by default. You must check the Enable Multicast Group 1 check box before you can enter values in the Class of Service field.
Enable Multicast Group 2 *(not available for 802.17 RPR topologies)*	Check the Enable Multicast Group 2 check box to enable the Multicast Group 2 bandwidth and Class of Service text boxes and display the default values for those text boxes. **Note** Multicast Group 2 is enabled only after enabling Multicast Group 1.
Multicast Group 2 *(not available for 802.17 RPR topologies)*	Check the Enable Multicast Group 2 check box to enable the Multicast Group 2 bandwidth box. The default value (1%) is displayed. Edit this value as required. The valid range is from 1 to 95. **Note** The Enable Multicast Group 2 check box is unchecked by default. You must check the Enable Multicast Group 2 check box before you can enter values in the Multicast Group 2 field.
Class of Service *(not available for 802.17 RPR topologies)*	Check the Enable Multicast Group 2 check box to enable the Class of Service field. The default value (6) is displayed. Edit this value as required. The valid range is from 0 to 7. **Note** The Enable Multicast Group 2 check box is unchecked by default. You must check the Enable Multicast Group 2 check box before you can enter values in the Class of Service field.
Low Latency Queue	Low Latency Queueing (LLQ) is used for latency/delay-sensitive traffic such as voice. On ML-series and CE-series cards, there is no limit on the bandwidth allocation of LLQ at the L2 topology level. It is limited only by input rate limiting of specific ports. Because some ports might be *trusted* (external CoS becomes internal CoS), Prime Optical does not know how much bandwidth might be used by LLQ, so it cannot reduce the calculated available bandwidth by the correct amount for the L2 topology. The actual available bandwidth allocation is the displayed available bandwidth value minus the amount (if any) that will be used for LLQ traffic. For 802.17 RPR topologies, the LLQ value is not a percentage but a selectable value. Choose **a**, **b**, or **c** from the drop-down list to map low latency queuing to the selected service class. Choose **None** if you do not want to create the class map.
SP Management	Allows you to modify the bandwidth percentage used for the SP management traffic class. Values are 0 to 99. If the value is 0, Prime Optical does not set this value in the CLI for the cards participating in the topology. For 802.17 RPR topologies, the SP Management value is not a percentage but a selectable value. Choose **a**, **b**, or **c** from the drop-down list to map SP management to the selected service class. Choose **None** if you do not want to create the class map.
Committed Rate	Allows you to modify the bandwidth percentage used for the CIR traffic class. Values are 0 to 99. If the value is 0, Prime Optical does not set this value in the CLI for the cards participating in the topology. For 802.17 RPR topologies, the Committed Rate value is not a percentage but a selectable value. Choose **a**, **b**, or **c** from the drop-down list to map the committed rate to the selected service class. Choose **None** if you do not want to create the class map.

Table 7-59 Field Descriptions for the Create Layer 2 Topology Wizard (continued)

Field	Description
AVVID Control	Allows you to set the bandwidth percentage used for the AVVID control. Values are 0 to 99. If the value is 0, Prime Optical does not set this value in the CLI for the cards participating in the topology. For 802.17 RPR topologies, the AVVID Control value is not a percentage but a selectable value. Choose **a**, **b**, or **c** from the drop-down list to map the AVVID control to the selected service class. Choose **None** if you do not want to create the class map.
Default Best Effort	Allows you to modify the default bandwidth percentage used for the best-effort traffic class. Values are 0 to 99. By default, Prime Optical does not allow you to proceed if you set this field to 0, and Prime Optical automatically assigns any remaining bandwidth as the best-effort bandwidth. For example, if you enter 0, Prime Optical automatically assigns 99 as the best-effort bandwidth. For 802.17 RPR topologies, the Default Best Effort value is not a percentage but a selectable value. Choose **a**, **b**, or **c** from the drop-down list to map the default best effort to the selected service class. Choose **None** if you do not want to create the class map.
Available (Excluding LLQ) *(not available for 802.17 RPR topologies)*	Available bandwidth percentage.
CoS Commit (CoS values below this value are discard eligible)	Committed CoS. This value is set when applying the base card configuration and the value is the same on all the cards in the topology.
Class of Service	Class of service for Low Latency Queueing, SP Management, Committed Rate, and AVVID Control types of traffic. The valid range is from 0 to 7. If the SP Management, Committed Rate, and AVVID Control values are 0, this field is disabled.
Class A (*for 802.17 RPR topologies*)	Enter the traffic limit, in Mb/s, for Class A traffic. The range depends on the topology circuit size. For details, see "IEEE 802.17 RPR Base Card Configuration" in *Cisco Prime Optical 9.6.3 ML Provisioning Methodology*.
Class A1 (*for 802.17 RPR topologies*)	Enter the traffic limit, in Mb/s, for Class A1 traffic. The range depends on the topology circuit size. For details, see "IEEE 802.17 RPR Base Card Configuration" in *Cisco Prime Optical 9.6.3 ML Provisioning Methodology*.
Class B-CIR (*for 802.17 RPR topologies*)	Enter the traffic limit, in Mb/s, for Class B-CIR traffic. The range depends on the topology circuit size. For details, see "IEEE 802.17 RPR Base Card Configuration" in *Cisco Prime Optical 9.6.3 ML Provisioning Methodology*.
Fairness Mode (*for 802.17 RPR topologies*)	*Display only.* Aggressive fairness mode is applied on all of the ML cards participating in the 802.17 RPR topology. Aggressive rate fairness is responsive to rate adjustments to requests. Conservative rate fairness is not supported.
Protection Frame (*for 802.17 RPR topologies*)	*Display only.* Jumbo frame support is applied on all of the ML cards participating in the 802.17 RPR topology. Jumbo frame support is set at the ring level and carried in the attribute discovery messages.
RPR Circuit Segment Details (for RPR and 802.17 RPR Layer 2 topologies)	

Table 7-59 Field Descriptions for the Create Layer 2 Topology Wizard (continued)

Field	Description
Auto Route Entire RPR	Enable or disable automatic RPR routing. If enabled, Prime Optical automatically determines the route for the RPR. Alternatively, you can choose manual routing and specify all the intermediate hops on a hop-by-hop basis. **Note** Selecting Auto Route Entire RPR disables all specific routing options on this window. Auto Route Entire RPR is enabled only if Apply to All Circuits is selected. When Apply to All Circuits is unchecked, the Auto Route Entire RPR check box is dimmed.
Routing Preferences	
Route Automatically	Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. Alternatively, you can disable automatic route selection and manually route the circuit where you specify all the intermediate hops on a hop-by-hop basis (up to 64 hops per circuit). You can manually route the circuit using either one of the following views: • Graphical—Provides a map view that displays the nodes and links you can use to create the circuits. You can select the nodes and links that you need for your circuit from the map view. • Textual—Provides a text view that lists the nodes and links you can use to create the circuits. **Note** If the source and destination of the circuit are on the same node, automatic routing is enabled.
Using Required Nodes/Links	(Available only if Route Automatically is checked) If checked, Prime Optical automatically routes the circuit through the required nodes and/or links. There are two ways you can specify the required nodes and links. Choose one of the following: • Graphical • Textual
Review Route Before Creation	(Available only if Route Automatically is checked) Check this check box to review the route before it is created.
VT-DS3 Mapped Conversion	(Available only if Route Automatically is checked) If checked, you can route the circuit using the DS3XM12 card. This field does not apply to data cards (ML-series and CE-100T-8 cards). VT-DS3 mapped conversion is for VAP circuits and is automatically selected while creating a VAP circuit using a DS3 port.
Time Slot Restriction	If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks. In case of an RPR, you can set this one at a time, for each circuit segment of the RPR. **Note** This field is disabled when you check the Auto Route Entire RPR and Apply to All Circuits check boxes in the RPR Circuit Segment Details area. It is enabled when you uncheck the Auto Route Entire RPR and Apply to All Circuits check boxes and proceed to automatically route the individual circuit segments. **Note** Time Slot Restriction is not available for OCHCC and OCHNC circuit creation types. **Note** For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

Table 7-59 Field Descriptions for the Create Layer 2 Topology Wizard (continued)

Field	Description
Fully Protected Layer 1	If selected, Prime Optical ensures that the Layer 1 circuit is fully protected. If the circuit must pass across unprotected links, Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications: • Required—Prime Optical ensures that the primary and alternate paths of the path-protected mesh networking (PPMN) portions of the complete circuit path are node-diverse. • Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the PPMN portions of the complete circuit path. • Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the PPMN portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.
Node-Diverse Path Required	Prime Optical ensures that the primary and alternate paths of the PPMN portions of the complete circuit path are node-diverse.
Node-Diverse Path Desired	Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the PPMN portions of the complete circuit path.
Node-Diverse Path Don't Care	Prime Optical creates primary and alternate paths that are link-diverse for the PPMN portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.
Protection Channel Access	To route the circuit on a BLSR protection channel, if available, uncheck **Fully Protected Path**, and check **Protection Channel Access**.
Dual Ring Interconnect	If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.
Diverse Shared Risk Link Group (SRLG)	If checked, fully protected circuits are routed through working and protected links that do not share risk groups.
Manual Provisioning (available if the Route Automatically check box is unchecked and the Enhanced Graphical radio button is selected)	
VCAT Member Number	(For VCAT circuits) Use the drop-down list to select route constraints for each member circuit.
Map view	Displays the NEs that are available in the subnetwork for circuit creation. This pane also indicates the source and destination NEs (and secondary source and destination NEs, if applicable) selected for circuit creation. The map view is used to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view: • Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area. • Zoom In—Allows you to zoom in on an object in the map view. • Zoom Out—Allows you to zoom out on the map view. • Reset Zoom—Resets the current zoom level to the default. • Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Include list with the default STS or VC4 value. The Add option applies to manual provisioning across all circuit types.

Table 7-59 Field Descriptions for the Create Layer 2 Topology Wizard (continued)

Field	Description
Available Spans	Select a link on the map view (related to the selected node) and its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field. The newly added link appears in blue on the map view.
Selected Spans	Select one or more spans and click **Remove** to remove them from the Selected Spans field. The removed link appears in green to indicate its unselected state. **Note** To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.
Manual Provisioning (available if the Route Automatically check box is unchecked and the Textual radio button is selected)	
Src NE ID	Displays the circuit source NE.
Dest NE ID	Displays the circuit destination NE.
Current NE ID	Displays the currently selected NE.
Adj NE ID	Displays all the NEs that are adjacent to the currently selected NE.
Available Links	Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
Available Spans	After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
Selected Spans	Select one or more spans and click **Remove** to remove them from the Selected Spans field.
Next Hop	Click **Next Hop** to specify the next intermediate hop.
Reset	Click **Reset** to reset all hop information to the default values.
Alternate Route	Click **Alternate Route** to specify hop information for the alternate circuit route.
Route Constraints (applicable only if the Using Required Nodes/Links check box is checked)	
VCAT Member Number	(For VCAT circuits) Use the drop-down list to select route constraints for each member circuit.
Map view	(For graphical manual provisioning) Displays the NEs that are available in the subnetwork for circuit creation. This pane also indicates the source and destination NEs (and secondary source and destination NEs, if applicable) selected for circuit creation. The map view is used for the inclusion and exclusion of links or nodes during the specification of route constraints. The included nodes are shown in blue and the excluded links are shown in magenta. Use the right-click menu options to navigate within the map view: • Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area. • Zoom In—Allows you to zoom in on an object in the map view. • Zoom Out—Allows you to zoom out on the map view. • Reset Zoom—Resets the current zoom level to the default.
Src NE ID	(For textual manual provisioning) Displays the circuit source NE.
Dest NE ID	(For textual manual provisioning) Displays the circuit destination NE.
Nodes	(For textual manual provisioning) Select **Nodes** if you want to add nodes to your circuit route.
Links	(For textual manual provisioning) Select **Links** if you want to add links to your circuit route.
Current NE ID	(For textual manual provisioning) Displays the currently selected NE.

Table 7-59 Field Descriptions for the Create Layer 2 Topology Wizard (continued)

Field	Description
Adj NE ID	(For textual manual provisioning) Displays all the NEs that are adjacent to the currently selected NE.
Available Links	(For textual manual provisioning) Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.
Select Nodes	(For textual manual provisioning) Lists all nodes related to the currently selected NE. Select a node from the list.
Selected Node/Link	Displays the currently selected NE or link.
Included Links/Nodes	Displays the list of links or nodes that are included in the route.
Excluded Links/Nodes	Displays the list of links or nodes that are excluded from the route.
Review Route (applicable only if the Review Route before creation check box is checked)	
VCAT Member Number	(For VCAT circuits) Use the drop-down list to view the route chosen for each member circuit.
Review Route	Displays the NEs that are available in the subnetwork for circuit creation. This pane also indicates the source and destination NEs (and secondary source and destination NEs, if applicable) selected for circuit creation. The map view displays information about the spans selected during autorouting in the subnetwork. The selected spans are shown in blue. When you select a span, its corresponding details are displayed in the Selected Span pane. The circuit summary displays the total hops and the cost for working and protect paths for the routed circuit.
Source NE ID	Displays the ID of the NE selected as the source node.
Destination NE ID	Displays the ID of the NE selected as the destination node.
Included Spans	If you enabled automatic route selection in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.
Selected Span	Displays detailed information about the span selected in the Included Spans list.
Circuit Summary	
Circuit Summary	Summarizes the selections you made in the wizard panes. To change the circuit summary, click **Back** and change your selection(s).

Step 3 In the Topology Information area, complete the following information:

- Name—Enter a unique name for the new topology. The topology name is a free-format string, up to 30 ASCII characters.
- Alias—Enter a unique alias name for the new topology. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a description for the new topology, up to 60 ASCII characters.
- L2 Topology Type—Choose **Point to Point**.
- Circuit Type—Specify the type of circuit: STS and STS-v for SONET NEs; VC_HO_PATH_CIRCUIT, VC_HO-v, VC_LO_PATH_CIRCUIT, and VC_LO-v for SDH NEs.

Note The Circuit Information area displays different fields depending upon the circuit type selected.

- Circuit Size—Specify the size of the circuit. STS circuit sizes are STS-1, STS-3c, STS-6c, STS-9c, STS-12c, and STS-24c. SDH circuit sizes are VC3, VC4, VC4-2c, VC4-3c, VC4-4c, and VC4-8c.
- L1 Protected Drops—Check this check box if you are adding Layer 1 protected drops.
- L1 Protection Information (for STS-type circuits only)—Complete the following information:
  - Revertive—Specify whether traffic is reverted back to its original path when the conditions that diverted the circuit to the protect path are repaired.
  - Reversion Time—Specify the amount of time (in minutes) after which traffic reverts back to the original working path when conditions that caused the switch are cleared. The Cisco default is 5 minutes.
  - SF Threshold—For STS circuits only. Set the UPSR path-level SF.
  - SD Threshold—For STS circuits only. Set the UPSR path-level SD threshold.
  - Switch on PDI-P—For STS circuits only. Specify whether traffic should switch based on a received STS payload defect indication.
- VCAT (for STS-v, VC_HO_PATH_VCAT_CIRCUIT, and VC_LO_PATH_VCAT_CIRCUIT circuits only)—Complete the following information:

Note For SDH nodes, only VC_HO_PATH_VCAT_CIRCUIT is supported on FCMR-4 cards.

  - Symmetric—*Display only.*
  - Member Size—Select a size for each VCAT member.
  - Mode—Select the protection mode for the VCAT circuit.

Step 4 Click **Next**.

Step 5 Specify the following information:

a. In the Source pane, specify the following; then, click **Next**:

- Use Secondary Source—Select to create a secondary source (if required)
- NE ID
- Subnetwork ID—*Display only.*
- Slot
- Port
- STS
- VT

b. In the Destination pane, specify the following; then, click **Next**:

- NE ID
- Subnetwork ID—*Display only.*
- Slot
- Port
- STS (applicable to OC-N cards only)
- VT

Step 6 In the Layer 2 Topology Bandwidth pane, configure the Enable Multicast Group 1 and Enable Multicast Group 2 panes as required. Specify the bandwidth percentage used for each traffic class; then, click **Next**.

Step 7 In the Routing Preferences pane, do the following; then, click **Next**:

a. Route Automatically—Enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. You can manually provision the circuit using one of the following views:

- Graphical
- Textual

b. Using Required Nodes/Links—(Available only if Route Automatically is checked) Check this check box to let Prime Optical automatically route the circuit through the required nodes and links. You can specify the required nodes and links using one of the following views:

- Graphical
- Textual

c. Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created.

d. Time Slot Restriction—If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks.

Note For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

e. Set the circuit path protection as follows:

- To route the circuit on a protected path, leave the **Fully Protected Path** check box checked (default) and proceed to the next substep. A fully protected circuit route is created based on the path diversity option you choose. Fully protected paths might or might not have SNCP path segments with primary and alternate paths. The path diversity options apply only to SNCP path segments, if any exist.
- To create an unprotected circuit, uncheck **Fully Protected Path** and go to Step 8.
- To route the circuit on an MS-SPRing protection channel, uncheck **Fully Protected Path**, check **Protection Channel Access**, and go to Step 8.

f. If you selected **Fully Protected Path**, choose one of the following options:

- Required—Ensures that the primary and alternate paths within the extended SNCP mesh network portions of the complete circuit path are nodally diverse.
- Desired—Specifies that node diversity is preferred; however, if node diversity is not possible, link-diverse paths are created for the extended SNCP mesh network portion of the complete circuit path.
- Don't Care: Link Diverse Only—Specifies that only link-diverse primary and alternate paths for extended SNCP mesh network portions of the complete circuit path are needed.
- Dual Ring Interconnect—Provisions the circuit in a DRI topology. If selected, the other node specifications (Required, Desired, and Don't Care: Link Diverse Only) are disabled.

Step 8 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Graphical radio button is selected), do the following; then, click **Next**:

a. Use the map view to manually route the circuit from the source to the destination specified by the addition of the links selected. Use the right-click menu options to navigate within the map view:
   - Find Node—Opens the Find Node dialog box, which lists all of the nodes displayed in the map view. Select a node from the drop-down list and click **OK**. The selection context in the map view changes to show the selected node highlighted in the visible map area.
   - Zoom In—Allows you to zoom in on an object in the map view.
   - Zoom Out—Allows you to zoom out on the map view.
   - Reset Zoom—Resets the current zoom level to the default.
   - Add—Allows you to add the selected span. Right-click a link and choose **Add** in the right-click menu. The selected link is added to the Available Spans list. The Add option applies to manual provisioning across all circuit types.

b. In the VCAT Member Number list box, select the member for which the route is to be selected.

c. In the circuit display, select the span to use for the next hop.

d. In the Available Spans area, complete the following information:
   - From—Displays the source of the span
   - To—Displays the destination of the span

e. Click **Add**. The span is added to the Selected Spans list.

f. Repeat substeps b to d for each intermediate NE until the destination NE is reached.

g. Repeat substeps a to e for each member until all members are routed.

h. To delete a span from the Selected Spans area, select a span from the Selected Spans list and click **Remove**.

Note To specify a DRI link, double-click the link on the map. The map view displays the link as bidirectional.

i. (For BLSR DRI or MS-SPRing DRI circuits) In the BLSR DRI Nodes or MS-SPRing DRI Nodes tab, click the **Add** button to open the BLSR/MS-SPRing DRI dialog box, which allows you to provide primary and secondary pairs for traditional and nontraditional DRI circuits. Also specify ring and path options for the first and second rings. Click **Remove** to remove a DRI node from the list.

Step 9 In the Manual Provisioning pane (available when Route Automatically is unchecked and the Textual radio button is selected), do the following; then, click **Next**:

a. Specify the following:
   - Src NE ID—*Display only.*
   - Dest NE ID—*Display only.*
   - Current NE ID—*Display only.*
   - Adj NE ID—*Display only.*
   - Available Links—Lists all links between the currently selected and adjacent NEs. Select a link from the drop-down list.

- Available Spans—After you select a link from the Available Links drop-down list, its corresponding details are displayed in the Available Spans pane. Click **Add** to move the spans to the Selected Spans field.
- Selected Spans—Select one or more spans and click **Remove** to remove them from the Selected Spans field.

b. Click **Next Hop** to specify the next intermediate hop; then, repeat substep a.

c. Click **Reset** to reset all hop information to the default values.

d. Click **Alternate Route** to specify hop information for the alternate circuit route.

Step 10 In the VT Options pane (available only if you are creating a VT circuit and Route Automatically is selected), choose one of the following radio buttons; then, click **Next**:

- VT Tunnel on Transit Nodes
- VAP
- None

Step 11 If you created a VT aggregation point, in the VT Grooming Node selection pane, select the following:

- STS Grooming Node
- VT Grooming Node

Step 12 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Graphical radio button is selected), a graphical representation of the circuit is displayed, including source and destination nodes. Specify the spans that will route to the circuit. Prime Optical starts at the source node. The next NE associated with each span is also displayed. Complete the following substeps:

a. In the circuit display, select the node or link. The NE ID or link ID is displayed in the Selected Node/Link field.

b. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

c. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

d. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

e. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

f. Repeat substeps a to e for each node or link that you want to include in the circuit route.

g. (Optional) Repeat substeps a to f for each intermediate NE until the destination NE is reached.

h. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 13 In the Route Constraints pane (available when Route Automatically and Using Required Nodes/Links are enabled and the Textual radio button is selected), specify the nodes or links to include in each hop of the circuit route. Complete the following substeps:

a. Select **Nodes** in the Select Nodes/Links area if you want to add nodes to your circuit route; then, specify the node information in the Select Nodes area.

b. Select **Links** in the Select Nodes/Links area if you want to add links to your circuit route; then, specify the link information in the Select Links area.

c. Click **Add** to add a BLSR-DRI or MS-SPring-DRI to the circuit route.

d. Click **Include** to include the selected node or link in the route. The node or link appears in the Included Links/Nodes list.

e. Click **Exclude** to exclude the selected node or link from the route. The node or link appears in the Excluded Links/Nodes list.

f. Click **Remove** to remove the selected node or link from the Included Links/Nodes or Excluded Links/Nodes lists.

g. Click **Up** or **Down** to set the sequence of the nodes and spans included in the circuit.

h. Repeat substeps a to e for each node or link that you want to include in the circuit route.

i. Click **Finish**, or, if Review Route Before Creation is checked in the Routing Preferences pane, click **Next**.

Step 14 In the Review Route pane (available only if Review Route Before Creation is checked), review the following information; then, click **Finish**:

a. In the circuit display, review the ID of the source and destination NEs.

b. Included Spans—Because automatic route selection is enabled in the Routing Preferences pane, Prime Optical automatically selects spans to route the circuit. This field lists all the spans that the Prime Optical server selected automatically.

c. Selected Span—Displays the following information about the span selected in the Included Spans list:

- From—Span source
- To—Span destination
- Source—Select the source (STS for SONET NEs or VC4 for SDH NEs) from the drop-down list
- VT—Select the VT time slot (SONET NEs only)

Note If you selected VT as the circuit type in the Attributes pane, chose Review Route Before Creation in the Routing Preferences pane, and selected VT Tunnel on Transit Nodes in the VT Options pane, the VT tunnel is created regardless of whether or not you are finished provisioning the circuit. Even if you click the Back button in the Review Route pane and change the VT circuit options, the newly created VT tunnel will not be deleted.

Step 15 In the confirmation dialog box, click **OK**.

Note It might take 10 minutes or more for Prime Optical to resynchronize with the NEs.

Caution It takes several seconds to create a circuit. During that interval, if a new circuit is added with the same name, both circuits might be identified as duplicates. Therefore, be careful not to add a duplicate circuit during the creation of the first circuit.

7.10.6.2 Creating an RPR or 802.17 RPR Layer 2 Topology

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Create L2 Topology**. The Create Layer 2 Topology wizard opens. Table 7-59 on page 7-248 provides descriptions. The fields displayed depend on the type of topology selected.

Tip You can also access the Create Layer 2 Topology wizard by choosing **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Create L2 Topology** in the Domain Explorer.

Note You must have the appropriate user privileges to use the Create Layer 2 Topology wizard.

Step 3 In the Topology Information area, complete the following information:

- Name—Enter a unique name for the new topology. The topology name is a free-format string, up to 30 ASCII characters.
- Alias—Enter a unique alias name for the new topology. The alias name can contain alphanumeric characters. International character sets are also supported.
- Description—Enter a description for the new topology, up to 60 ASCII characters.
- L2 Topology Type—Choose **Resilient Packet Ring** or **802.17 Resilient Packet Ring**.

Note The ML cards must be in 802.17 RPR mode before you can create an 802.17 RPR topology.

Step 4 Click **Next**.

Step 5 In the NE Selection area, complete the following information:

a. Select the subnetwork ID from the drop-down list. After selecting a subnetwork, the Available NEs list includes all available NEs in that subnetwork as well as NEs that are topologically connected to NEs in that subnetwork.

b. Add at least two NEs to the topology by selecting NEs from the Available NEs list and clicking **Add**. Delete an NE from the topology by selecting the NE from the Selected NEs list and clicking **Remove**.

c. Rearrange the sequence of the NEs in the Selected NEs list by clicking the **Up** or **Down** arrows.

Step 6 Click **Next**.

In the Card Selection area, add a card to the topology by selecting a card from the Available Cards list and clicking **Add**. Delete a card from the topology by selecting the card from the Selected Cards list and clicking **Remove**. For 802.17 RPR topologies, click **Add Working** or **Add Protection** to add working or protection cards to the Selected Cards list. Note that protection is supported only on ML1000-2 cards.

Step 7 Click **Next**.

Step 8 In the Layer 2 Topology Bandwidth pane, configure the Enable Multicast Group 1 and Enable Multicast Group 2 panes as required for RPR topologies. Specify the bandwidth percentage (for RPR topologies) or value (for 802.17 RPRs) used for each traffic class; then, click **Next**.

Step 9 In the RPR Circuit Segment Details area, do the following:

a. Route the entire RPR automatically by checking **Auto route entire RPR**.

b. If **Auto route entire RPR** is unchecked, select a circuit segment from the list; then, specify its route type. Select either Auto, for automatic route, or Manual, to manually set the route.

Note The Auto route entire RPR option is available only if the Apply to all Circuits check box is checked.

c. If **Apply to all Circuits** is checked, the circuit type and size are applied to all the circuits in the RPR. If it unchecked, you can select a different circuit type and size for each individual circuit in the RPR.

d. In the Circuit Type field, specify the type of circuit. For the ONS 15454 SONET, select **STS**. For the ONS 15454 SDH, select **VC_HO_PATH_CIRCUIT** or **VC_LO_PATH_CIRCUIT**.

e. In the Circuit Size field, specify the size of the circuit. STS circuit sizes are STS-1, STS-3c, STS-6c, STS-9c, STS-12c, and STS-24c. SDH circuit sizes are VC3, VC4, VC4-2c, VC4-3c, VC4-4c, and VC4-8c.

Step 10 Click **Next**.

Step 11 If you specified the route type for a specific segment as Auto, continue to Step 12. If you specified the route type for a specific segment as Manual, continue to Step 13. If you selected to route the entire RPR automatically, complete the following information:

- Fully Protected Layer 1—If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit if the circuit must pass across unprotected links. Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications:
  - Required—Prime Optical ensures that the primary and alternate paths within the UPSR portions of the complete circuit path are node-diverse.
  - Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path.
  - Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.
- Protection Channel Access—If Fully Protected Layer 1 is not selected, enable PCA to route the circuit on a BLSR protection channel. Once you enable PCA, a label reading PCA will appear on the link.

Step 12 If you specified the route type for a specific segment as Manual, continue to Step 13. If you selected to route the entire RPR automatically, continue to Step 14. If you specified the route type for a specific segment as Auto, complete the following information:

a. Using Required Nodes/Links—Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links.

b. Review Route Before Creation—Check this check box to review the route before it is created.

c. Fully Protected Layer 1—If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit if the circuit must pass across unprotected links. Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications:

- Required—Prime Optical ensures that the primary and alternate paths within the UPSR portions of the complete circuit path are node-diverse.
- Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path.
- Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.

d. Protection Channel Access—If Fully Protected Layer 1 is not selected, enable PCA to route the circuit on a BLSR protection channel. Once you enable PCA, a label reading PCA will appear on the link.

e. Click **Next** to specify the route constraints (available when Route Automatically and Using Required Nodes/Links are enabled):

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Nodes—Click this radio button if you want to add nodes to the route.
- Links—Click this radio button if you want to add links to the route; then, choose **Current NE ID**, **Adj NE ID**, or **Available Links**.

f. Click **Include** to add the selected node or link to the route constraint, or **Exclude** to remove the selected node or link from the route constraint.

g. If the Review Route Before Creation check box (available when Route Automatically and Review Route before Creation are enabled) is checked and there are more segments for which you need to specify the routing information, click **Next**. RPR circuit segment details are displayed.

Step 13 If you specified the route type for a specific segment as Manual, complete the following information:

a. Fully Protected Layer 1—If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit if the circuit must pass across unprotected links. Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications:

- Required—Prime Optical ensures that the primary and alternate paths within the UPSR portions of the complete circuit path are node-diverse.
- Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path.
- Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.

b. Protection Channel Access—If Fully Protected Layer 1 is not selected, enable PCA to route the circuit on a BLSR protection channel. Once you enable PCA, a label reading PCA will appear on the link.

c. Click **Next** to specify the following information:

- Source Node—Displays the source node
- Destination—Displays the destination node
- Current Node—Displays the current node
- Adj NEID—Select the adjacent NE ID from the drop-down list

- Available Links—Select a link from the drop-down list

d. Select the span from the Available Spans area. Span information includes:
   - From—Start point of the span
   - To—Endpoint of the span
   - Source STS

e. Click **Add** to add the span to the Selected Spans list. Click **Remove** to remove spans from the Selected Spans list.

f. Click **Next Hop** to specify links and nodes for the next hop. Complete substeps a through c for each hop.

g. Click **Reset** to reset the link and node information.

h. Click **Alternate Route** to provision an alternate route.

i. If there are more segments for which you need to specify routing information, click **Next**. RPR circuit segment details are displayed.

Step 14 Click **Finish**.

Note
- It might take 10 minutes or more for Prime Optical to resynchronize with the NEs.
- For 802.17 RPRs, the active or standby configuration support is based on the Ring Interconnect feature. A Ring Interconnect switchover can be done only by shutting down the Gigabit or RPR-IEEE interfaces. If one of the cards is unplugged, the Ring Interconnect feature does not work because the peer is unavailable.

7.10.7 Deleting Layer 2 Topologies

You cannot delete a Layer 2 topology if there are VLANs associated with it. Be sure to delete all VLANs associated with the Layer 2 topology before deleting the Layer 2 topology. See 7.5.2 Tracing VLANs, page 7-219.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, select the topology that you want to delete and choose **Configuration > Delete L2 Topology** (or click the **Delete L2 Topology** tool).

Step 3 In the confirmation dialog box, click **Yes**.

7.10.8 Enabling Layer 2 Services

To ensure that provisioning is available for Layer 2 services, the Layer 2 topology attributes must be configured correctly on the underlying optical circuits. A Layer 2 topology can be configured using the TL1 interface, CTC, or Prime Optical. Layer 2 topologies configured using Prime Optical are Layer 2 service-ready. Layer 2 topologies configured using the TL1 interface, CTC, or Prime Optical Create Circuit wizard are not Layer 2 service-ready. Some examples of the latter case are:

- The optical circuit(s) of the Layer 2 topology are provisioned using the TL1 interface for Operations System Modifications for the Integration of Network Elements (OSMINE) compliance.
- You want to resize the optical circuits and instead of deleting the entire Layer 2 topology, you delete each circuit from an existing Layer 2 topology and add a new circuit with the new size until all circuits have been resized. This could result in a service outage.
- You want to add or delete an optical circuit from an existing Layer 2 topology.

Complete the following steps to enable Layer 2 services:

Step 1 Create a point-to-point, RPR, or 802.17 RPR topology with ML-series cards using the TL1 interface, CTC, or the Create Circuit wizard.

Step 2 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**. The Layer 2 Topology table opens. The new topology is listed and its Layer 2 Service Resync Status is *L2Service NotReady*.

Step 3 In the Layer 2 Topology table, choose **Configuration > Enable L2 Service**. Depending on which type of topology you are enabling, one of the following dialog boxes displays: point-to-point and/or RPR (see Table 7-60) or 802.17 RPR (see Table 7-61).

Step 4 After making your selections, click **Apply**.

If circuits forming the RPR are created with names following the CTM naming convention (for example, *cktname.1CTML* or *cktname.2CTML*), the RPR has the name *cktname*. If the CTM naming convention is not followed, the RPR has the name of one of the circuits in the RPR topology.

Table 7-60 Field Descriptions for the Enable L2 Service—Point-to-Point and RPR Bandwidth Tab

Field	Description
Multicast Priority Queuing	
Enable Multicast Group 1	Check to enable the Multicast Group 1 bandwidth and Class of Service text boxes and display the default values for those text boxes. **Note** The Enable Multicast Group 1 check box is checked by default during Layer 2 topology modification if you previously specified the multicast bandwidth parameters for the L2 topology (either during L2 topology creation or during the last modify operation), and you can modify the Multicast Group 1 and Class of Service text boxes. If the Multicast Group 1 and Class of Service text boxes were not configured when the Layer 2 topology was created (and hence these check boxes are unchecked by default), you can check the check box to configure the Multicast Group 1 and Class of Service text boxes for the group if required. To remove the priority multicast command already set for the topology, you can uncheck the check box and the command is removed from the card.
Multicast Group 1 (%)	The default value is 1%. Edit this value as required. The valid range is from 1 to 95.
Class of Service	The default value is 4. Edit this value as required. The valid range is from 0 to 7.

Table 7-60 Field Descriptions for the Enable L2 Service—Point-to-Point and RPR Bandwidth Tab (continued)

Field	Description
Enable Multicast Group 2	Check to enable the Multicast Group 2 bandwidth and Class of Service text boxes and display the default values for those text boxes. **Note** The Enable Multicast Group 2 check box is checked by default during Layer 2 topology modification if you previously specified the multicast bandwidth parameters for the L2 topology (either during L2 topology creation or during the last modify operation), and you can modify the Multicast Group 2 and Class of Service fields. If the Multicast Group 2 and Class of Service fields were not configured when the Layer 2 topology was created (and hence these check boxes are unchecked by default), you can check the check box to configure the Multicast Group 2 and Class of Service fields for the group if required. To remove the priority multicast command already set for the topology, you can uncheck the check box and the command is removed from the card.
Multicast Group 2 (%)	The default value is 1%. Edit this value as required. The valid range is from 1 to 95.
Class of Service	The default value is 6. Edit this value as required. The valid range is from 0 to 7.
Low Latency Queue	Low Latency Queueing (LLQ) is used for latency/delay-sensitive traffic such as voice. On ML-series and CE-series cards, there is no limit on the bandwidth allocation of LLQ at the L2 topology level. It is limited only by input rate limiting of specific ports. Because some ports might be *trusted* (external CoS becomes internal CoS), Prime Optical does not know how much bandwidth might be used by LLQ, so it cannot reduce the calculated available bandwidth by the correct amount for the L2 topology. The actual available bandwidth allocation is the displayed available bandwidth value minus the amount (if any) that will be used for LLQ traffic.
SP Management	Allows you to modify the bandwidth percentage used for the SP management traffic class. Values are 0 to 99. If the value is 0, Prime Optical does not set this value in the CLI for the cards participating in the topology.
Committed Rate	Allows you to modify the bandwidth percentage used for the CIR traffic class. Values are 0 to 99. If the value is 0, Prime Optical does not set this value in the CLI for the cards participating in the topology.
AVVID Control	Allows you to set the bandwidth percentage used for the AVVID control. Values are 0 to 99. If the value is 0, Prime Optical does not set this value in the CLI for the cards participating in the topology.
Default Best Effort	Allows you to modify the default bandwidth percentage used for the best-effort traffic class. Values are 0 to 99. By default, Prime Optical does not allow you to proceed if you set this field to 0, and Prime Optical automatically assigns any remaining bandwidth as the best-effort bandwidth. For example, if you enter 0, Prime Optical automatically assigns 99 as the best-effort bandwidth.
Available (%)	Displays the available bandwidth.
CoS Commit	Committed CoS. This value is set when applying the base card configuration and the value is the same on all the cards in the topology. CoS values below this value are discard eligible.
Class of Service	Class of service for LLQ, SP management, CIR/PIR, and AVVID control types of traffic. The valid range is from 0 to 7.

Table 7-61 Field Descriptions for the Enable L2 Service—802.17 RPR Bandwidth Tab

Field	Description
Class A	Modify the traffic limit, in Mb/s, for Class A traffic. The range depends on the topology circuit size. For details, see "IEEE 802.17 RPR Base Card Configuration" in *Cisco Prime Optical 9.6.3 ML Provisioning Methodology*.
Class A1	Modify the traffic limit, in Mb/s, for Class A1 traffic. The range depends on the topology circuit size. For details, see "IEEE 802.17 RPR Base Card Configuration" in *Cisco Prime Optical 9.6.3 ML Provisioning Methodology*.
Class B-CIR	Modify the traffic limit, in Mb/s, for Class B-CIR traffic. The range depends on the topology circuit size. For details, see "IEEE 802.17 RPR Base Card Configuration" in *Cisco Prime Optical 9.6.3 ML Provisioning Methodology*.
Fairness Mode	*Display only.* Aggressive fairness mode is applied on all of the ML cards participating in the 802.17 RPR topology. Aggressive rate fairness is responsive to rate adjustments to requests. Conservative rate fairness is not supported.
Protection Frame	*Display only.* Jumbo frame support is applied on all of the ML cards participating in the 802.17 RPR topology. Jumbo frame support is set at the ring level and carried in the attribute discovery messages.
Class Map Configuration	
Low Latency Queue	Select **a**, **b**, or **c** from the drop-down list to map low latency queuing to the selected service class. Choose **None** if you do not want to create the class map.
SP Management	Select **a**, **b**, or **c** from the drop-down list to map SP management to the selected service class. Choose **None** if you do not want to create the class map.
Committed Rate	Select **a**, **b**, or **c** from the drop-down list to map the committed rate to the selected service class. Choose **None** if you do not want to create the class map.
AVVID Control	Select **a**, **b**, or **c** from the drop-down list to map the AVVID control to the selected service class. Choose **None** if you do not want to create the class map.
Default Best Effort	Select **a**, **b**, or **c** from the drop-down list to map the default best effort to the selected service class. Choose **None** if you do not want to create the class map.
CoS Commit	Committed CoS. This value is set when applying the base card configuration and the value is the same on all cards in the topology. CoS values below this value are discard eligible.
Class of Service	Class of service for LLQ, SP management, CIR/PIR, and AVVID control types of traffic. The valid range is from 0 to 7.

The maximum bandwidth for 802.17 RPR topologies per circuit size is as follows:

- STS-1: 51840 kb/s
- STS-3c: 155520 kb/s
- STS-6c: 311040 kb/s
- STS-9c: 466560 kb/s
- STS-12c: 622080 kb/s
- STS-24c: 1244160 kb/s
- VC3: 48960 kb/s
- VC4: 155520 kb/s

- VC4-2c: 311040 kb/s
- VC4-3c: 466560 kb/s
- VC4-4c: 622080 kb/s
- VC4-8c: 1244160 kb/s

7.10.9 Modifying Layer 2 Topologies

Note For the Layer 2 topology modification operation, you should wait until the changes are applied and reflected in the Layer 2 Topology table before modifying another Layer 2 topology.

Use the Modify Layer 2 Topology window to modify the parameters of the selected Layer 2 topology. The window has two tabs, General and Bandwidth.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, select the appropriate topology and choose **Configuration > Modify L2 Topology** (or click the **Modify L2 Topology** tool).

Step 3 Click the **General** tab to modify the settings in the following table, as required.

Table 7-62 Field Descriptions for the Modify Layer 2 Topology—General Tab

Field	Description
Modify Layer 2 Topology	
L2 Topology Name	Allows you to modify the name of the topology.
L2 Topology Alias	Allows you to modify the alias name of the topology.
Description	Allows you to modify the user-defined description of the topology.
L2 Topology Type	*Display only.* Displays the topology type (point-to-point, RPR, or 802.17 RPR).
L2 Topology Size	*Display only.* Displays the topology size.

Step 4 Click **Apply** to apply your settings or **Reset** to use the default settings.

Note A progress animator is displayed while the new settings are being applied.

Step 5 Click the **Bandwidth** tab to modify the settings in the following table, as required.

Note Prime Optical allows you to enter multiple CoS values that are the same. This is harmless and is consistent with the ML CLI, which allows the entry of multiple CoS values but sets only one value.

Table 7-63 Field Descriptions for the Modify Layer 2 Topology—Bandwidth Tab

Field	Description
L2 Topology Bandwidth	
The maximum bandwidth for 802.17 RPR topologies per circuit size is: • STS-1: 51840 kb/s • STS-3c: 155520 kb/s • STS-6c: 311040 kb/s • STS-9c: 466560 kb/s • STS-12c: 622080 kb/s • STS-24c: 1244160 kb/s • VC3: 48960 kb/s • VC4: 155520 kb/s • VC4-2c: 311040 kb/s • VC4-3c: 466560 kb/s • VC4-4c: 622080 kb/s • VC4-8c: 1244160 kb/s	
Class A *(for 802.17 RPR topologies)*	Modify the traffic limit, in Mb/s, for Class A traffic. The range depends on the topology circuit size. For details, see "IEEE 802.17 RPR Base Card Configuration" in *Cisco Prime Optical 9.6.3 ML Provisioning Methodology*.
Class A1 *(for 802.17 RPR topologies)*	Modify the traffic limit, in Mb/s, for Class A1 traffic. The range depends on the topology circuit size. For details, see "IEEE 802.17 RPR Base Card Configuration" in *Cisco Prime Optical 9.6.3 ML Provisioning Methodology*.
Class B-CIR *(for 802.17 RPR topologies)*	Modify the traffic limit, in Mb/s, for Class B-CIR traffic. The range depends on the topology circuit size. For details, see "IEEE 802.17 RPR Base Card Configuration" in *Cisco Prime Optical 9.6.3 ML Provisioning Methodology*.
Fairness Mode *(for 802.17 RPR topologies)*	*Display only.* Aggressive fairness mode is applied on all of the ML cards participating in the 802.17 RPR topology. Aggressive rate fairness is responsive to rate adjustments to requests. Conservative rate fairness is not supported.
Protection Frame *(for 802.17 RPR topologies)*	*Display only.* Jumbo frame support is applied on all of the ML cards participating in the 802.17 RPR topology. Jumbo frame support is set at the ring level and carried in the attribute discovery messages.
Enable Multicast Group 1 *(for point-to-point and RPR topologies)*	Check the Enable Multicast Group 1 check box to enable the Multicast Group 1 bandwidth and Class of Service text boxes and display the default values for those text boxes. **Note** The Enable Multicast Group 1 check box is checked by default during Layer 2 topology modification if you previously specified the multicast bandwidth parameters for the L2 topology (either during L2 topology creation or during the last modify operation), and you can modify the Multicast Group 1 and Class of Service text boxes. If the Multicast Group 1 and Class of Service text boxes were not configured when the Layer 2 topology was created (and hence these check boxes are unchecked by default), you can check the check box to configure the Multicast Group 1 and Class of Service text boxes for the group if required. To remove the priority multicast command already set for the topology, you can uncheck the check box and the command is removed from the card.

Table 7-63 Field Descriptions for the Modify Layer 2 Topology—Bandwidth Tab (continued)

Field	Description
Multicast Group 1 *(for point-to-point and RPR topologies)*	Check the Enable Multicast Group 1 check box to enable the Multicast Group 1 bandwidth box. The default value (1%) is displayed. Edit this value as required. The valid range is from 1 to 95.
Class of Service *(for point-to-point and RPR topologies)*	Check the Enable Multicast Group 1 check box to enable the Class of Service box. The default value (4) is displayed. Edit this value as required. The valid range is from 0 to 7.
Enable Multicast Group 2 *(for point-to-point and RPR topologies)*	Check the Enable Multicast Group 2 check box to enable the Multicast Group 2 bandwidth and Class of Service text boxes and display the default values for those text boxes. **Note** The Enable Multicast Group 2 check box is checked by default during Layer 2 topology modification if you previously specified the multicast bandwidth parameters for the L2 topology (either during L2 topology creation or during the last modify operation), and you can modify the Multicast Group 2 and Class of Service fields. If the Multicast Group 2 and Class of Service fields were not configured when the Layer 2 topology was created (and hence these check boxes are unchecked by default), you can check the check box to configure the Multicast Group 2 and Class of Service fields for the group if required. To remove the priority multicast command already set for the topology, you can uncheck the check box and the command is removed from the card.
Multicast Group 2 *(for point-to-point and RPR topologies)*	Check the Enable Multicast Group 2 check box to enable the Multicast Group 2 bandwidth box. The default value (1%) is displayed. Edit this value as required. The valid range is from 1 to 95.
Class of Service *(for point-to-point and RPR topologies)*	Check the Enable Multicast Group 2 check box to enable the Class of Service box. The default value (6) is displayed. Edit this value as required. The valid range is from 0 to 7.
Class Map Configuration	
Low Latency Queue	Low Latency Queueing (LLQ) is used for latency/delay-sensitive traffic such as voice. On ML-series and CE-series cards, there is no limit on the bandwidth allocation of LLQ at the L2 topology level. It is limited only by input rate limiting of specific ports. Because some ports might be *trusted* (external CoS becomes internal CoS), Prime Optical does not know how much bandwidth might be used by LLQ, so it cannot reduce the calculated available bandwidth by the correct amount for the L2 topology. The actual available bandwidth allocation is the displayed available bandwidth value minus the amount (if any) that will be used for LLQ traffic. For 802.17 RPR topologies, the LLQ value is not a percentage but a selectable value. Choose **a**, **b**, or **c** from the drop-down list to map low latency queuing to the selected service class. Choose **None** if you do not want to create the class map.
SP Management	Allows you to modify the bandwidth percentage used for the SP management traffic class. Values are 0 to 99. If the value is 0, Prime Optical does not set this value in the CLI for the cards participating in the topology. For 802.17 RPR topologies, the SP Management value is not a percentage but a selectable value. Choose **a**, **b**, or **c** from the drop-down list to map SP management to the selected service class. Choose **None** if you do not want to create the class map.

Table 7-63 Field Descriptions for the Modify Layer 2 Topology—Bandwidth Tab (continued)

Field	Description
Committed Rate	Allows you to modify the bandwidth percentage used for the CIR traffic class. Values are 0 to 99. If the value is 0, Prime Optical does not set this value in the CLI for the cards participating in the topology. For 802.17 RPR topologies, the Committed Rate value is not a percentage but a selectable value. Choose **a**, **b**, or **c** from the drop-down list to map the committed rate to the selected service class. Choose **None** if you do not want to create the class map.
AVVID Control	Allows you to set the bandwidth percentage used for the AVVID control. Values are 0 to 99. If the value is 0, Prime Optical does not set this value in the CLI for the cards participating in the topology. For 802.17 RPR topologies, the AVVID Control value is not a percentage but a selectable value. Choose **a**, **b**, or **c** from the drop-down list to map the AVVID control to the selected service class. Choose **None** if you do not want to create the class map.
Default Best Effort	Allows you to modify the default bandwidth percentage used for the best-effort traffic class. Values are 0 to 99. By default, Prime Optical does not allow you to proceed if you set this field to 0, and Prime Optical automatically assigns any remaining bandwidth as the best-effort bandwidth. For example, if you enter 0, Prime Optical automatically assigns 99 as the best-effort bandwidth. For 802.17 RPR topologies, the Default Best Effort value is not a percentage but a selectable value. Choose **a**, **b**, or **c** from the drop-down list to map the default best effort to the selected service class. Choose **None** if you do not want to create the class map.
Available (Excluding LLQ) *(for point-to-point and RPR topologies)*	Displays the available bandwidth.
CoS Commit	Committed CoS. This value is set when applying the base card configuration and the value is the same on all the cards in the topology. CoS values below this value are discard eligible.
Class of Service	Class of service for LLQ, SP management, CIR/PIR, and AVVID control types of traffic. The valid range is from 0 to 7.

Step 6 Click **Apply** to apply your settings or **Reset** to use the default settings.

Step 7 Click **Close**.

7.10.10 Filtering the Layer 2 Topology Table

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**. The Layer 2 Topology table opens.

Step 2 Choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog opens.

Step 3 Use the Filter dialog box to filter data according to criteria that you select and to display the results in the Layer 2 Topology table. The following table provides descriptions.

Step 4 After making your selections, click **OK**.

Table 7-64 Field Descriptions for the Layer 2 Topology Table Filter Dialog Box

Tab	Description
L2 Topology Names	Displays the available topologies. Click **Add** and **Remove** to move topologies to and from the selected list. If you want to filter topologies and the name is not important, check the **Ignore Topology Names** check box.
L2 Topology Size	Allows you to filter topologies based on circuit size. Click **All** to include all circuit sizes in the filter.
L2 Topology Type	Allows you to filter topologies based on topology type. Click **All** to include all topology types in the filter.
L2 Topology State	Allows you to filter topologies based on circuit state (Complete or Incomplete). Click **All** to include all circuit states in the filter.

7.10.11 Modifying Ports in Layer 2 Topologies

Use the Modify Ports dialog box to modify Layer 2 topology endpoints.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Modify Ports**. The Modify Ports dialog box opens. The following table provides descriptions.

Step 3 Configure the values in the NE/Slot and Enable/Disable Port areas as required.

Step 4 Click **Apply**. The new values are set on the selected card.

Note A progress animator is displayed while the new values are applied to the selected card.

Table 7-65 Field Descriptions for the Modify Ports Dialog Box

Field	Description
NE/Slot Area	
NE ID	Select an NE from the drop-down list.
Slot	Select an ML card slot number from the drop-down list.
Ether Tab	
Port	Select the port number on the ML card.
State	Choose **Enable** to enable the port or **Disable** to disable the port.
MTU	Enter the maximum transmission unit (MTU) size. The valid range is from 64 to 9000. The default MTU size is 1500.

Table 7-65 Field Descriptions for the Modify Ports Dialog Box (continued)

Field	Description
Speed	Select the speed from the drop-down list. Values are 10, 100, and auto. For an ML1000 card, auto is the only supported option.
Duplex	Select the Duplex value from the drop-down list. Values are full, half, and auto, based on the type of card selected. For example, for an ML1000 card, auto is the only supported option.
Flow Control (send)	Select the Flow Control (send) value from the drop-down list. Values are off, on, and desired. These values are supported by both Fast Ethernet and Gigabit Ethernet ports.
Flow Control (receive)	Select the Flow Control (receive) value from the drop-down list. Values are off, on, and desired. These values are supported by Gigabit Ethernet ports only.
CDP	Choose **Enable** to enable Cisco Discovery Protocol (CDP) on the ML100 or ML1000 card. Choose **Disable** to disable CDP on the ML-series card. The CDP feature enables the ML card to send packets at regular intervals to discover other devices. CDP is used primarily to obtain protocol addresses of neighboring devices and discover the platform of those devices. CDP can also be used to show information about the interfaces that the router uses.
PoS Tab	
Port	Select the port number on the ML card.
State	Choose **Enable** to enable the port or **Disable** to disable the port.
MTU	Enter an MTU size. The valid range is from 64 to 9000. The default MTU size is 1500. **Note** You cannot set the MTU size on a PoS port for an RPR topology. MTU size for the PoS port can only be set for a PTP topology.
SPR Tab	
Note The SPR tab is visible only when the Modify Ports dialog box is launched from an RPR port.	
Port	Select the port number on the ML card.
MTU	Enter an MTU size for a PTP topology for the POS port. The valid range is from 64 to 9000. The default MTU size is 1500. **Note** You cannot set the MTU size for an SPR interface for a PTP topology.

7.10.12 Inserting or Deleting a Card on an RPR Topology

This section describes how to add or remove a card on an existing RPR topology.

Note After an add or remove card operation, the new circuits are listed in the Circuit table and have the system time, rather than CTML2, appended to the circuit name and circuit alias.

7.10.12.1 Inserting a Card into an Existing RPR Topology

Note During the addition or removal of an ML-series card on an RPR topology, the POS interfaces of the circuits being deleted are automatically shut down before deletion. After the new circuits are created, the POS interfaces are automatically re-enabled. Shutting down the POS ports upon card insertion or removal ensures Layer 2 protection, so that traffic between all other cards is not lost.

Note Station IDs uniquely identify ML cards in the RPR ring. While inserting an ML card into an RPR topology (whose resynchronization state is Complete), the inserted ML card is assigned a station ID equal to the highest station ID in the existing RPR topology plus 1 (provided the highest station ID is less than or equal to 254). If the highest station ID is 254, unused station IDs in the topology less than 254 are used. The station ID of the ML card can be viewed in the Cisco IOS config file, within the interface SPR1 command block (applies only to an RPR topology). The following example shows a configuration snippet where the ML card is assigned a station ID of 1:

```
interface SPR1
no ip address
no keepalive
spr station-id 1
hold-queue 150 in
!
```

Step 1 Create a complete RPR topology. See 7.10.6.2 Creating an RPR or 802.17 RPR Layer 2 Topology, page 7-263. The L2 Sync State of the topology must be Complete to add a new ML card.

Step 2 Take note of the card that will be added to the RPR topology.

Step 3 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**. The Layer 2 Topology table opens.

Step 4 In the Layer 2 Topology table, choose the appropriate L2 topology and choose **Configuration > Add/Remove Card**. The Add/Remove Card wizard opens. The following table provides descriptions.

Note The default circuit size for SONET and SDH is STS1 and VC4, respectively. During an add/remove card operation, if the topology size is equal to STS1 or VC4 for the new circuit segments to be provisioned, no warning message displays. However, if the topology size is greater than STS1 or VC4, and if all of the new circuit segments to be provisioned are equal to the default circuit size, a warning message displays.

Table 7-66 Field Descriptions for the Add/Remove Card Wizard

Field	Description
Navigation Pane	
The navigation pane on the left side of the wizard tells you where you are in the process of adding or removing cards. You can use the navigation pane to jump quickly from one task to the next, or to an already visited task. Using the navigation pane is faster than using the Back and Next buttons, because you can jump over multiple panes in one step versus clicking Back or Next and moving through the panes sequentially. **Tip** As you proceed through the wizard, the panes you have visited are highlighted in white and identified by a number.	
Layer 2 Topology Information	
L2 Topology Name	Displays the name of the selected L2 topology.
Description	Enter a description for the new topology.
L2 Topology Type	Select the type of topology you want to create (point-to-point or RPR). **Note** The contents of subsequent wizard panes are dependent on the Topology Type selected.
L2 Topology Size	Select the topology size. When the size of the circuit underneath is not the same, the value is Mixed.
Operation Type Selection	
Add Card	Click this radio button to add a card. **Note** The insertion of a card results in one circuit being deleted from the existing RPR and two new circuits being created.
Remove Card	Click this radio button to remove a card. **Note** The deletion of a card results in two circuits being deleted from the existing RPR and one new circuit being created.
Add Card Selection	
Available Cards	Select a card from the list and click **Add** to add it to the Selected Cards list.
Selected Cards	Displays the card selected for the Layer 2 topology. Select a card and click **Remove** to remove it from the Selected Cards list.
Remove Card Selection	
Configured Cards	Select a card from the list and click **Add** to add it to the Deleted Cards list.
Deleted Cards	Displays the card selected for the Layer 2 topology. Select a card and click **Remove** to remove it from the Deleted Cards list.
Delete Circuit Segment Info	
Src NE	Displays the ID of the NE selected as the source node.
Src Slot	Displays the ID of the source slot.
Src Port	Displays the ID of the source port.
Dest NE	Displays the ID of the NE selected as the destination node.
Dest Slot	Specify the destination slot.
Dest Port	Displays the ID of the destination port.
Circuit Type	Specify the type of circuit: STS and STS-v for SONET NEs; VC_HO_PATH_VCAT_CIRCUIT, VC_HO-v, VC_LO_PATH_VCAT_CIRCUIT, and VC_LO-v for SDH NEs.

Table 7-66 Field Descriptions for the Add/Remove Card Wizard (continued)

Field	Description
Circuit Size	Specify the size of the circuit. STS circuit sizes are STS-1, STS-3c, STS-6c, STS-9c, STS-12c, and STC-24c. SDH circuit sizes are VC3, VC4, VC4-2c, VC4-3c, VC4-4c, and VC4-8c.
Route Type	Select **Auto** to route automatically or **Manual** to route manually.
Status	Displays the circuit segment status information.
Inserted Circuit Segment Info	
Src NE	Displays the ID of the NE selected as the source node.
Src Slot	Displays the ID of the source slot.
Src Port	Displays the ID of the source port.
Dest NE	Displays the ID of the NE selected as the destination node.
Dest Slot	Specify the destination slot.
Dest Port	Displays the ID of the destination port.
Circuit Type	Specify the type of circuit: STS and STS-v for SONET NEs; VC_HO_PATH_VCAT_CIRCUIT, VC_HO-v, VC_LO_PATH_VCAT_CIRCUIT, and VC_LO-v for SDH NEs.
Circuit Size	Specify the size of the circuit. STS circuit sizes are STS-1, STS-3c, STS-6c, STS-9c, STS-12c, and STC-24c. SDH circuit sizes are VC3, VC4, VC4-2c, VC4-3c, VC4-4c, and VC4-8c.
Route Type	Select **Auto** to route automatically or **Manual** to route manually.
Status	Displays the circuit segment status information.
Routing Preferences	
Route Automatically	Allows you to enable or disable automatic route selection. If enabled, Prime Optical automatically determines the route for the circuit. If the source and destination of the circuit are on the same node, automatic routing is enabled. If disabled, you can specify the spans associated with the circuit. Under the Manual Route area, the Graphical radio button is selected by default.
Auto Route	• Using Required Nodes/Links—(Available only if Route Automatically is checked) If checked, Prime Optical automatically routes the circuit through the required nodes and/or links. • Review Route Before Creation—(Available only if Route Automatically is checked) Check this check box to review the route before it is created. • VT-DS3 Mapper Conversion—(Available only if Route Automatically is checked) If checked, you can route the circuit using the DS3XM12 card.
Time Slot Restriction	If checked, you can enter an STS/VC4 value (to be used end-to-end) that Prime Optical uses to automatically determine the route for the circuit. Circuit creation fails if the same STS/VC4 is not available end-to-end. If circuit creation fails, you can try again using different values. The valid range is from 1 to 192 for SONET, or from 1 to 64 for SDH networks. **Note** Time Slot Restriction is not available for OCHCC and OCHNC circuit creation types. **Note** For VCAT circuits, you must enter multiple STS/VC4 values in the Member Preferences table > Time Slot Restriction field. The STS/VC4 values that you enter in the Time Slot Restriction field cannot be identical, or circuit creation will fail with an error message.

Table 7-66 Field Descriptions for the Add/Remove Card Wizard (continued)

Field	Description
Fully Protected Path	If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit in a UPSR DRI topology by checking Dual Ring Interconnect. Alternatively, if the circuit must pass across unprotected links, Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications: • Required—Ensures that the primary and alternate paths of the UPSR portions of the complete circuit path are node-diverse. • Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. • Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.
Node-Diverse Path	• Required—Ensures that the primary and alternate paths of the UPSR portions of the complete circuit path are node-diverse. • Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. • Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.
Protection Channel Access	To route the circuit on a BLSR protection channel, if available, uncheck the Fully Protected Path check box, and check the Protection Channel Access check box.
Dual Ring Interconnect	If you selected Fully Protected Path and the circuit will be routed on a UPSR DRI, check the Dual Ring Interconnect check box. **Note** For DRI and iDRI manually created circuits, you must double-click the DRI span for it to become DRI. A single-click does not enable the DRI span.
Diverse Shared Risk Link Group (SRLG)	If checked, fully protected circuits are routed through working and protected links that do not share risk groups.
Circuit Summary	Summarizes the selections you made in the wizard panes. To change the circuit summary, click **Back** and change your selection(s).
Manual Provisioning	
Links/Nodes	Selected Node—Select the links/nodes in the graphic to populate the selected node field. **Tip** Use the arrows to expand or reduce the graphical area, if required.
Spans	• Available Spans—Lists the available spans. Span information includes: – From—Start point of the span – To—Endpoint of the span – Source STS – VT – DRI Span • Selected Spans—Click **Add** to add the selected spans to the Selected Spans list or click **Remove** to remove spans from the Selected Spans list.

Step 5 Click the **Add Card** radio button to add a card or click the **Remove Card** radio button to remove a card from the selected L2 topology.

Tip Fields highlighted in white in the Add/Remove Card wizard can be configured; those highlighted in gray cannot be selected or configured.

Step 6 Click **Next**.

Step 7 In the Add Card Selection pane, select a card from the list and click **Add** to add it to the Selected Cards list.

Step 8 Use the **Up** or **Down** arrows to move cards up or down according to the spans.

Step 9 Click **Next**. In the Delete Circuit Segment Info pane, the circuit to be deleted is displayed.

Step 10 Click **Yes** to continue. The Deleting Circuits dialog box opens, confirming that the circuits are being deleted.

The Insert Circuit Segment Info pane opens, displaying the circuits on the L2 topology that will exist after adding or removing the card. Circuits with a white background must be created to complete the add or remove operation.

Note For an IEEE 802.17 RPR, the sizes of the new circuits must be compatible with the values assigned to the A, A1, and B-CIR traffic classes in the base card configuration of the L2 topology. For details, see "IEEE 802.17 RPR Base Card Configuration" in *Cisco Prime Optical 9.6.3 ML Provisioning Methodology*.

Step 11 Click **Next**. A dialog box opens, confirming POS port shutdown on circuits being deleted and circuit deletion. Click **Yes** to continue.

Step 12 If you specified the route type for a specific segment as Auto, continue to Step 14. If you specified the route type for a specific segment as Manual, continue to Step 15. If you selected to route the entire RPR automatically, complete the following information:

- Fully Protected Layer 1—If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit if the circuit must pass across unprotected links. Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications:
  - Required—Prime Optical ensures that the primary and alternate paths within the UPSR portions of the complete circuit path are node-diverse.
  - Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path.
  - Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.
- Protection Channel Access—If Fully Protected Layer 1 is not selected, enable PCA to route the circuit on a BLSR protection channel.

Step 13 If you specified the route type for a specific segment as Manual, continue to Step 15. If you selected to route the entire RPR automatically, continue to Step 16. If you specified the route type for a specific segment as Auto, complete the following information:

a. Using Required Nodes/Links—Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links.

b. Review Route Before Creation—Check this check box to review the route before it is created.

c. Fully Protected Layer 1—If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit if the circuit must pass across unprotected links. Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications:

- Required—Prime Optical ensures that the primary and alternate paths within the UPSR portions of the complete circuit path are node-diverse.
- Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path.
- Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.

d. Protection Channel Access—If Fully Protected Layer 1 is not selected, enable PCA to route the circuit on a BLSR protection channel. Once you enable PCA, a label reading PCA will appear on the link.

e. Click **Next** to specify the route constraints (available when Route Automatically and Using Required Nodes/Links are enabled):

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Nodes—Click this radio button if you want to add nodes to the route.
- Links—Click this radio button if you want to add links to the route; then, choose **Current NE ID**, **Adj NE ID**, or **Available Links**.

f. Click **Include** to add the selected node or link to the route constraint, or **Exclude** to remove the selected node or link from the route constraint.

g. If the Review Route Before Creation check box (available when Route Automatically and Review Route before Creation are enabled) is checked and there are more segments for which you need to specify the routing information, click **Next**. RPR circuit segment details are displayed.

Step 14 If you specified the route type for a specific segment as Manual, complete the following information:

a. Fully Protected Layer 1—If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit if the circuit must pass across unprotected links. Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications:

- Required—Prime Optical ensures that the primary and alternate paths within the UPSR portions of the complete circuit path are node-diverse.
- Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path.

- Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.

b. Protection Channel Access—If Fully Protected Layer 1 is not selected, enable PCA to route the circuit on a BLSR protection channel. Once you enable PCA, a label reading PCA will appear on the link.

c. Click **Next** to specify the following information:

- Source Node—Displays the source node.
- Destination—Displays the destination node.
- Current Node—Displays the current node.
- Adj NEID—Select the adjacent NE ID from the drop-down list.
- Available Links—Select a link from the drop-down list.

d. Select the span from the Available Spans area. Span information includes:

- From—Start point of the span.
- To—Endpoint of the span.
- Source—Select the source (STS for SONET NEs; VC4 for SDH NEs) from the drop-down list.

e. Click **Add** to add the span to the Selected Spans list. Click **Remove** to remove spans from the Selected Spans list.

f. Click **Next Hop** to specify links and nodes for the next hop. Complete substeps a through c for each hop.

g. Click **Reset** to reset link and node information.

h. Click **Alternate Route** to provision an alternate route.

i. If there are more segments for which you need to specify the routing information, click **Next**. The Inserted Circuit Segments Info pane appears.

Step 15 Repeat Step 12 through Step 14 until all required circuits are created.

Step 16 Click **Finish** to add the new card. An Enabling POS Ports confirmation dialog box opens, and a "no shut" is performed on the POS ports, which are shut down and then re-enabled. The Add/Remove Card wizard closes and you are returned to the Layer 2 Topology table.

7.10.12.2 Removing a Card from an Existing RPR Topology

To remove an ML card from a topology, at least two other ML cards must be part of the topology, because a valid topology has endpoints on at least two different NEs. For example, if you have two ML cards on a single NE, an L2 topology cannot be created across the two ML cards. If you have a topology with three ML cards (two cards on one NE and a third card on another NE), removal of the third card from the topology is not a valid operation because it reduces the number of NEs from two to one.

Note During the addition or removal of an ML-series card to or from an RPR topology, the POS interfaces of the circuits being deleted are automatically shut down before deletion. After the new circuits are created, the POS interfaces are automatically re-enabled. Shutting down the POS ports upon card insertion or removal ensures Layer 2 protection, so that traffic between all other cards is not lost.

Step 1 Create a complete RPR topology. See 7.10.6.2 Creating an RPR or 802.17 RPR Layer 2 Topology, page 7-263. The L2 service resynchronization status of the topology must be Complete to remove an ML card.

Step 2 Take note of the card that will be removed from the RPR topology.

Step 3 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**. The Layer 2 Topology table opens.

Step 4 In the Layer 2 Topology table, select the appropriate L2 topology and choose **Configuration > Add/Remove Card**. The Add/Remove Card wizard opens. Table 7-66 on page 7-277 describes the fields in the wizard.

Step 5 Click the **Remove Card** radio button to remove a card from the selected L2 topology.

Tip Fields highlighted in white in the Add/Remove Card wizard can be configured; those highlighted in gray cannot be selected or configured.

Step 6 Click **Next**.

Step 7 In the Remove Card Selection pane, select a card in the list and click **Add** to add it to the Deleted Cards list.

Step 8 Click **Next**. In the Delete Circuit Segment Info pane, the circuit that will be deleted is displayed.

Step 9 Click **Next**.

Step 10 In the Insert Circuit Segments Info pane, make your selections, as required.

Note In case of an IEEE 802.17 RPR, the sizes of the new circuits must be compatible with the values assigned to the class A, class A1, and class B-CIR traffic classes in the base card configuration of the L2 topology. For details, see "IEEE 802.17 RPR Base Card Configuration" in *Cisco Prime Optical 9.6.3 ML Provisioning Methodology*.

Step 11 Click **Next**. A dialog box opens; click **Yes** to confirm circuit deletion. The Deleting Circuits dialog box opens, confirming that the circuits are being deleted.

Step 12 The Insert Circuit Segment Info pane opens, displaying the circuits on the L2 topology that will exist after removing the card. Circuits with a white background must be created to complete the operation. When **Next** is clicked, the POS ports on the circuit are shut down and the circuit is deleted.

Step 13 If you specified the route type for a specific segment as Auto, continue to Step 14. If you specified the route type for a specific segment as Manual, continue to Step 15. If you selected to route the entire RPR automatically, complete the following information:

- Fully Protected Layer 1—If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit if it must pass across unprotected links. Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications:

  - Required—Prime Optical ensures that the primary and alternate paths within the UPSR portions of the complete circuit path are node-diverse.
  - Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path.
  - Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.

- Protection Channel Access—If Fully Protected Layer 1 is not selected, enable PCA to route the circuit on a BLSR protection channel.

Step 14 If you specified the route type for a specific segment as Manual, continue to Step 15. If you selected to route the entire RPR automatically, continue to Step 16. If you specified the route type for a specific segment as Auto, complete the following information:

a. Using Required Nodes/Links—Check this check box to let Prime Optical automatically route the circuit through the required nodes and/or links.

b. Review Route Before Creation—Check this check box to review the route before it is created.

c. Fully Protected Layer 1—If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit if the circuit must pass across unprotected links. Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications:

- Required—Prime Optical ensures that the primary and alternate paths within the UPSR portions of the complete circuit path are node-diverse.
- Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path.
- Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.

d. Protection Channel Access—If Fully Protected Layer 1 is not selected, enable PCA to route the circuit on a BLSR protection channel.

e. Click **Next** to specify the route constraints (available when Route Automatically and Using Required Nodes/Links are enabled):

- Src NE ID—*Display only.*
- Dest NE ID—*Display only.*
- Nodes—Click this radio button to add nodes to the route.
- Links—Click this radio button to add links to the route; then, choose **Current NE ID**, **Adj NE ID**, or **Available Links**.

f. Click **Include** to add the selected node or link to the route constraint, or **Exclude** to remove the selected node or link from the route constraint.

g. If the Review Route Before Creation check box (available when Route Automatically and Review Route before Creation are enabled) is checked and there are more segments for which you need to specify the routing information, click **Next**. RPR circuit segment details are displayed.

Step 15 If you specified the route type for a specific segment as Manual, complete the following information:

a. Fully Protected Layer 1—If selected, Prime Optical ensures that the circuit is fully protected. You can provision the circuit if the circuit must pass across unprotected links. Prime Optical creates a primary and alternate circuit route (virtual UPSR) based on the following node diversity specifications:

- Required—Prime Optical ensures that the primary and alternate paths within the UPSR portions of the complete circuit path are node-diverse.
- Desired—Prime Optical attempts node diversity. If node diversity is impossible, Prime Optical uses primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path.
- Don't Care: Link Diverse Only—Prime Optical creates primary and alternate paths that are link-diverse for the UPSR portions of the complete circuit path. The paths might be node-diverse, but Prime Optical does not check for node diversity.

b. Protection Channel Access—If Fully Protected Layer 1 is not selected, enable PCA to route the circuit on a BLSR protection channel.

c. Click **Next** to specify the following information:

- Source Node—Displays the source node.
- Destination—Displays the destination node.
- Current Node—Displays the current node.
- Adj NEID—Select the adjacent NE ID from the drop-down list.
- Available Links—Select a link from the drop-down list.

d. Select the span from the Available Spans area. Span information includes:

- From—Start point of the span.
- To—Endpoint of the span.
- Source STS.

e. Click **Add** to add the span to the Selected Spans list. Click **Remove** to remove spans from the Selected Spans list.

f. Click **Next Hop** to specify links and nodes for the next hop. Complete substeps a through c for each hop.

g. Click **Reset** to reset link and node information.

h. Click **Alternate Route** to provision an alternate route.

i. If there are more segments for which you need to specify the routing information, click **Next**. The Inserted Circuit Segments Info pane opens.

Step 16 Click **Finish** to remove the card. An Enabling POS Ports confirmation dialog opens, and a "no shut" is performed on the POS ports, which are shut down and then re-enabled. The Add/Remove Card wizard closes and you are returned to the Layer 2 Topology table.

7.10.13 Layer 2 Service Management Tasks

VLAN service is a collection of bridge groups within a Layer 2 topology. It can span multiple ML-series cards on a particular Layer 2 topology. In a point-to-point topology, no Layer 2 configuration is done on E-series, G-series, ML-100T-8, CE-100T-8, or OC-N cards. In an RPR topology, a VLAN can span the entire ring.

You can configure a VLAN service that consists of multiple service drops (Ethernet drops). Each service drop is classified according to:

- Port type—NNI or UNI
- Connection type—Dot1Q, QinQ, or Untagged

In a VLAN service, the recommended mix of port type and connection type is as follows:

- UNI QinQ and NNI Dot1Q
- UNI Dot1Q, UNI Untagged, and NNI Dot1Q

The following table summarizes the service drop configurations and associated parameters.

Table 7-67 Summary of Service Drop Configurations

Port Type	Connection Type	Port VLAN ID	Layer 2 Tunneling (stp, cdp, vtp)	Mode (Dot1Q tunnel)	Encap (Dot1Q)
UNI	Dot1Q	1–4093	—	—	Yes
NNI	Dot1Q	Service Provider VLAN ID	—	—	Yes
UNI	Untagged	—	—	—	—
UNI	QinQ	—	Yes	Yes	—

Use the following procedures to manage Layer 2 services:

- 7.10.13.1 Creating a Layer 2 Service, page 7-287
- 7.10.13.2 Showing a Layer 2 Service, page 7-297
- 7.10.13.3 Modifying a Layer 2 Service, page 7-297
- 7.10.13.4 Filtering the L2 Services Table, page 7-298
- 7.10.13.5 Deleting a Layer 2 Service, page 7-298
- 7.10.13.6 Showing an IP SLA, page 7-299
- 7.10.13.7 Creating an IP SLA, page 7-299
- 7.10.13.8 Enabling an IP SLA, page 7-300
- 7.10.13.9 Deleting an IP SLA, page 7-300
- 7.10.13.10 Restarting an IP SLA, page 7-301
- 7.10.13.11 Enabling or Disabling PM Data Collection for Each Drop Port, page 7-301
- 7.10.13.12 Viewing the L2 Service Drop Ports Table, page 7-301
- 7.10.13.13 Filtering the L2 Service Drop Ports Table, page 7-302
- 7.10.13.14 Creating L2 Service Drops, page 7-302

- 7.10.13.15 Deleting L2 Service Drops, page 7-308
- 7.10.13.16 Modifying L2 Service Drops, page 7-308
- 7.10.13.17 Viewing the QoS for Layer 2 Service Drop Port Table, page 7-310
- 7.10.13.18 Configuring a Layer 2 Service Resynchronization, page 7-311

7.10.13.1 Creating a Layer 2 Service

Use the Create Layer 2 Service wizard to create a new Layer 2 service.

Note Before creating a Layer 2 service, be sure that the topology state and the Layer 2 service resynchronization state are both Complete in the Layer 2 Topology table. See 7.10.5 Viewing the Layer 2 Topology Table, page 7-242.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**. The Layer 2 Topology table opens.

Step 2 In the Layer 2 Topology table, select the topology on which to create the Layer 2 service.

Step 3 Choose **Configuration > Create L2 Service**. The Create Layer 2 Service wizard opens. The following table provides descriptions.

Table 7-68 Field Descriptions for the Create Layer 2 Service Wizard

Field	Description
L2 Service Information	
Layer 2 Topology Name	The name of the topology on which the Layer 2 service is created.
Service Provider VLAN ID	A unique number in a topology that is used to represent the VLAN. The valid range for service provider VLAN IDs is 1 to 4093. By default, the first VLAN number is displayed as 2, because VLAN 1 is an administration VLAN. You can change the default value and create VLAN 1, if it is available.
Managed VLAN	If checked, allows you to create a managed VLAN for an IP SLA.
Customer Information	
Customer ID	The unique identification number of the customer for whom the Layer 2 service is being created.
Service ID	The service identification number of the customer for whom the Layer 2 service is being created.
Layer 2 Service Summary	
—	Summarizes the selections you made in the wizard panes. To change the L2 service summary, click **Back** and change your selection(s).
Selected Drops (Node/Slot/Port)	The drop ports selected in the L2 Service Drop Ports table.
L2 Service Drops Selection	
NE ID	Select the user-defined name of the selected NE.
Available L2 Service Drops	
Slot	The ML-series card slot number.

Table 7-68 Field Descriptions for the Create Layer 2 Service Wizard (continued)

Field	Description
Type	The ML-series card type.
Port	The port number on the ML-series card: • If the port number is preceded by C, it refers to the port number of the port channel interface. • If the port number is preceded by P, it refers to the port number of the Ethernet interface.
Port Type	The available port type—UNI, NNI, or Any. If both UNI and NNI port types are available, Any is displayed.
Connection Type	The connection type—QinQ, dot1q, Untagged, or Any. For the UNI port type, connection types are QinQ, dot1q, and Untagged. For the NNI port type, only the dot1q connection type is allowed. If all types are available, this field is shown as *Any*.
Selected L2 Service Drops	
NE ID	The user-defined name of the selected NE.
Slot	The ML-series card slot number.
Type	Displays the ML-series card type—ML100 or ML1000.
Port	The port number on the ML-series card: • If the port number is preceded by C, it refers to the port number of the port channel interface. • If the port number is preceded by P, it refers to the port number of the Ethernet interface.
Port Type	The available port type—UNI, NNI, or Any. If both UNI and NNI port types are available, Any is displayed.
Connection Type	The connection type—QinQ, dot1q, Untagged, or Any. For the UNI port type, connection types are QinQ, dot1q, and Untagged. For the NNI port type, only the dot1q connection type is allowed. If all types are available, this field is shown as *Any*.
Add/Remove	Click **Add** to add the selected drop from the Available Layer 2 Service Drops list to the Selected L2 Service Drops list. Click **Remove** to remove drops from the Selected L2 Service Drops list.
Service Drops Configuration > Service Drops tab	
Apply QoS Parameters to All UNI Ports	When selected, the quality of service (QoS) parameters specified in the QoS Parameters screen are applied to all the drops.
RSTP Enable	When checked, Rapid Spanning Tree Protocol (RSTP) is enabled for the VLAN.
NE ID	The user-defined name of the selected NE.
Slot	The slot number of the ML-series card.
Type	The ML-series card type.
Port	The port number on the ML-series card: • If the port number is preceded by C, it refers to the port number of the port channel interface. • If the port number is preceded by P, it refers to the port number of the Ethernet interface.

Table 7-68 Field Descriptions for the Create Layer 2 Service Wizard (continued)

Field	Description
Enable	Used to enable or disable the drop port. When checked, the drop port is enabled.
Port Type	The port type—UNI or NNI.
Connection Type	The connection type. For the UNI port type, the connection type is QinQ, dot1q, or Untagged. For the NNI port type, only the NNI connection type is permitted.
Port VLAN ID	The port VLAN ID used for dot1q drops. By default, the NNI dot1q drop is populated with the SP VLAN ID.
CoS Accounting	When checked, the collection of CoS PM on a VLAN service drop is enabled.
RSTP	When checked, RSTP is enabled. This checkbox is enabled only when you configure a dot1q drop of the VLAN.
QoS Parameters	
Match Any	Matches all the traffic. When selected, all other fields (DSCP, IP Precedence, and CoS) are disabled.
Match DSCP	Matches the DSCP value. The valid range is from 0 to 63.
DSCP Value	Displays the DSCP value.
Match IP	Matches the IP value. The valid range is from 0 to 7.
IP Value	Displays the IP value.
Match CoS	Matches the CoS value. The valid range is from 0 to 7.
CoS Value	Displays the CoS value.
AND/OR	Selecting AND/OR indicates Match All and Match Any of the traffic classifications, respectively. The QoS profiles that are created with AND criteria are applied to dot1Q and QinQ and untagged (subinterface). For AND and OR criteria, a single value is allowed on CoS, DSCP, and IP Precedence. Selecting OR indicates Match Any of the traffic classifications (Match DSCP, Match IP Precedence, or Match CoS), respectively. The QoS profiles that are created with the OR criteria are not applied to dot1Q (subinterface).
CIR Type	Displays the CIR type.
Committed Rate	Displays the committed traffic rate value.
Committed Burst Size	Displays the committed burst size.
CIR CoS Type	Committed traffic CoS type (Trust or CoS Marked).
CIR CoS Value	Committed traffic CoS value. The valid range is from 0 to 7.
Excess Action	Excess traffic action type (Discard or Allow).
Peak Rate	Displays the peak traffic rate value.
Peak Burst Size	Displays the peak traffic burst value.
PIR CoS Type	Displays the peak traffic CoS type (Trust or CoS Marked).
PIR CoS Value	Displays the peak traffic CoS value. The valid range is from 0 to 7.
Violate Action	Displays the violate traffic action type (Discard or Allow).
Violate CoS	Displays the violate traffic CoS type (Trust or CoS Marked).

Table 7-68 Field Descriptions for the Create Layer 2 Service Wizard (continued)

Field	Description
Violate CoS Value	Displays the violate traffic CoS value. The valid range is from 0 to 7.
Best Effort Type	Displays the best-effort traffic type (Line-Rate or Rate-Limited).
Max Rate	Displays the maximum rate value.
Max Burst Size	Displays the maximum burst value.
Service Drops Configuration > Port Attributes	
NE ID	Select a user-defined NE name from the drop-down lists.
Slot	Select the ML card slot number from the drop-down lists.
Type	Displays the ML-series card type—ML100 or ML1000.
Port	Select the port number on the ML card. The port number is preceded by P, which indicates an Ethernet port.
MTU	Enter an MTU size. The valid range is from 64 to 9000. The default value is 1500.
Speed	Select the speed from the drop-down list. The Speed drop-down list displays three values: 10, 100, and auto. For an ML1000 card, auto is the only supported option.
Duplex	Select the Duplex value from the drop-down list. The Duplex drop-down list displays three values: full, half, and auto, based upon the type of card selected. For example, for an ML1000 card, auto is the only supported option.
Flow Control (send)	Select the Flow Control (send) value from the drop-down list. The Flow Control (send) drop-down box displays three values: off, on, and desired. These values are supported by both the Fast Ethernet and Gigabit Ethernet ports.
Flow Control (receive)	Select the Flow Control (receive) value from the drop-down list. The Flow Control (receive) drop-down box displays three values: off, on, and desired. These values are supported by the Gigabit Ethernet ports only.
Service Drops Configuration > IP SLA	
NE ID	Displays the NE ID.
Slot	Displays the slot number of the ML-series card.
Type	Displays the type of ML-series card.
IP Address	Displays the IP address of the NE.
Subnet	Displays the subnetwork mask ID of the NE.
Protocol	Displays the protocol.
QoS Parameters > Profile	
Load from QoS Profile	Select the QoS profile from the list displayed. See 7.11.3 Creating QoS Profiles, page 7-324 for details on how to create a QoS profile. **Note** The remainder of the QoS parameters displayed on this tab are described earlier in this table.
Match Any	Matches all the traffic. When selected, all other fields (DSCP, IP Precedence, and CoS) are disabled.
Match DSCP	Matches the DSCP value. The valid range is from 0 to 63.
DSCP Value	Displays the DSCP value.
Match IP	Matches the IP value. The valid range is from 0 to 7.

Table 7-68 Field Descriptions for the Create Layer 2 Service Wizard (continued)

Field	Description
IP Value	Displays the IP value.
Match CoS	Matches the CoS value. The valid range is from 0 to 7.
CoS Value	Displays the CoS value.
AND/OR	Selecting AND/OR indicates Match All and Match Any of the traffic classifications, respectively. The QoS profiles that are created with AND criteria are applied to dot1Q and QinQ and untagged (subinterface). For AND and OR criteria, a single value is allowed on CoS, DSCP, and IP Precedence. Selecting OR indicates Match Any of the traffic classifications (Match DSCP, Match IP Precedence, or Match CoS), respectively. The QoS profiles that are created with the OR criteria are not applied to dot1Q (subinterface).
CIR Type	Displays the CIR type.
Committed Rate	Displays the committed traffic rate value.
Committed Burst Size	Displays the committed burst size.
CIR CoS Type	Committed traffic CoS type (Trust or CoS Marked).
CIR CoS Value	Committed traffic CoS value. The valid range is from 0 to 7.
Excess Action	Excess traffic action type (Discard or Allow).
Peak Rate	Displays the peak traffic rate value.
Peak Burst Size	Displays the peak traffic burst value.
PIR CoS Type	Displays the peak traffic CoS type (Trust or CoS Marked).
PIR CoS Value	Displays the peak traffic CoS value. The valid range is from 0 to 7.
Violate Action	Displays the violate traffic action type (Discard or Allow).
Violate CoS	Displays the violate traffic CoS type (Trust or CoS Marked).
Violate CoS Value	Displays the violate traffic CoS value. The valid range is from 0 to 7.
Best Effort Type	Displays the best-effort traffic type (Line-Rate or Rate-Limited).
Max Rate	Displays the maximum rate value.
Max Burst Size	Displays the maximum burst value.
QoS Parameters > Custom QoS	
Load from QoS Profile	Select the QoS profile from the list displayed. See 7.11.3 Creating QoS Profiles, page 7-324 for details on how to create a QoS profile. **Note** The remainder of the QoS parameters displayed on this tab are described earlier in this table.
Policing > Classification	
Match Any	Matches all the traffic. When selected, all other fields (DSCP, IP Precedence, and CoS) are disabled.
Match DSCP	Matches the DSCP value. The valid range is from 0 to 63.
Match IP Precedence	Matches the IP precedence value. The valid range is from 0 to 7.

Table 7-68 Field Descriptions for the Create Layer 2 Service Wizard (continued)

Field	Description
Match CoS	Matches the CoS value. The valid range is from 0 to 7.
AND	Selecting AND indicates Match All and Match Any of the traffic classifications, respectively. The QoS profiles that are created with AND criteria are applied only to dot1Q (subinterface). For AND criteria only, a single value is allowed on CoS, DSCP, and IP Precedence.
OR	Selecting OR indicates Match Any of the traffic classifications (Match DSCP, Match IP Precedence, or Match CoS), respectively. The QoS profiles that are created with the OR criteria are not applied to dot1Q (subinterface).
Policing > Committed Traffic	
Line Rate	Rate and burst of the Ethernet port are applicable.
Rate Limited	User-specified rate and burst limits are applicable.
Committed Rate	Displays the committed rate.
Committed Burst Size	Displays the committed burst size.
Policing > Committed Traffic > Committed CoS Marking	
Trust	CoS transmit value set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Policing > Excess Traffic	
Discard	Excess traffic action should be set to “drop.”
Allow	Excess traffic with CoS, as marked by the user, is transmitted.
Peak Rate	Peak rate value.
Peak Burst	Peak burst value.
Policing > Excess Traffic > Excess CoS Marking	
Trust	CoS transmit value set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Policing > Violations	
Discard	Excess traffic action should be set to “drop.”
Allow	Excess traffic with CoS, as marked by the user, is transmitted.
Policing > Violations > Violations CoS Marking	
Trust	CoS transmit value set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Policing > Best Effort	
Line Rate	Rate and burst of the Ethernet port are applicable.
Rate Limited	User-specified rate and burst limits are applicable.
Max Rate	The maximum rate value.
Max Burst	The maximum burst value.
Policing > Best Effort > Best Effort CoS Marking	

Table 7-68 Field Descriptions for the Create Layer 2 Service Wizard (continued)

Field	Description
Trust	CoS transmit value set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Service Drops Configuration > Service Drops > Service Drops area	
Apply QoS Parameters to All UNI Ports	When selected, the QoS parameters specified in the QoS Parameters screen are applied to all the drops.
RSTP Enable	When checked, RSTP is enabled.
NE ID	The user-defined name of the selected NE.
Slot	Information about the slot.
Type	Displays the ML-series card type.
Port	The port number on the ML-series card: • If the port number is preceded by C, it refers to the port number of the port channel interface. • If the port number is preceded by P, it refers to the port number of the Ethernet interface.
Enable	Used to enable or disable the drop port. When checked, the drop port is enabled.
Port Type	The port type—UNI or NNI.
Connection Type	The connection type. For the UNI port type, the connection type is QinQ, dot1q, or Untagged. For the NNI port type, only the NNI connection type is permitted.
Port VLAN ID	The port VLAN ID used for dot1q drops. By default, the NNI dot1q drop is populated with the service provider VLAN ID.
CoS Accounting	When checked, the collection of CoS PM on a VLAN service drop is enabled.
RSTP	When checked, RSTP is enabled. This is enabled only when the you configure a dot1q drop of the VLAN.
PM State	Check this check box to collect PM data for each drop port in an ML-series card. Checking the PM State box sets the Cisco IOS cos accounting command in each appropriate front port.
Service Drops Configuration > Service Drops > QoS Parameters area	
Match Any	Matches all the traffic. When selected, all other fields (DSCP, IP Precedence, and CoS) are disabled.
Match DSCP	Matches the DSCP value. The valid range is from 0 to 63.
DSCP Value	Displays the DSCP value.
Match IP	Matches the IP value. The valid range is from 0 to 7.
IP Value	Displays the IP value.
Match CoS	Matches the CoS value. The valid range is from 0 to 7.
CoS Value	Displays the CoS value.

Table 7-68 Field Descriptions for the Create Layer 2 Service Wizard (continued)

Field	Description
AND/OR	Selecting AND/OR indicates Match All and Match Any of the traffic classifications, respectively. The QoS profiles that are created with AND criteria are applied to dot1Q and QinQ and untagged (subinterface). For AND and OR criteria, a single value is allowed on CoS, DSCP, and IP Precedence. Selecting OR indicates Match Any of the traffic classifications (Match DSCP, Match IP Precedence, or Match CoS), respectively. The QoS profiles that are created with the OR criteria are not applied to dot1Q (subinterface).
Committed Rate	Displays the committed traffic rate value.
Committed Burst Size	Displays the committed burst size.
CIR CoS Type	Committed traffic CoS type (Trust or CoS Marked).
CIR CoS Value	Committed traffic CoS value. The valid range is from 0 to 7.
Excess Action	Excess traffic action type (Discard or Allow).
Peak Rate	Displays the peak traffic rate value.
Peak Burst Size	Displays the peak traffic burst value.
PIR CoS Type	Displays the peak traffic CoS type (Trust or CoS Marked).
PIR CoS Value	Displays the peak traffic CoS value. The valid range is from 0 to 7.
Violate Action	Displays the violate traffic action type (Discard or Allow).
Violate CoS	Displays the violate traffic CoS type (Trust or CoS Marked).
Violate CoS Value	Displays the violate traffic CoS value. The valid range is from 0 to 7.
Best Effort Type	Displays the best-effort traffic type (Line-Rate or Rate-Limited).
Max Rate	Displays the maximum rate value.
Max Burst Size	Displays the maximum burst value.
Service Drops Configuration > Port Attributes	
NE ID	Select a user-defined NE name from the drop-down lists.
Slot	Select the ML card slot number from the drop-down lists.
Type	Displays the ML-series card type—ML100 or ML1000.
Port	Select the port number on the ML card. The port number is preceded by P, which indicates an Ethernet port.
MTU	Enter an MTU size. The valid range is from 64 to 9000. The default value is 1500.
Speed	Select the speed from the drop-down list. The Speed drop-down list displays three values: 10, 100, and auto. For an ML1000 card, auto is the only supported option.
Duplex	Select the Duplex value from the drop-down list. The Duplex drop-down list displays three values: full, half, and auto, based upon the type of card selected. For example, for an ML1000 card, auto is the only supported option.

Table 7-68 Field Descriptions for the Create Layer 2 Service Wizard (continued)

Field	Description
Flow Control (send)	Select the Flow Control (send) value from the drop-down list. The Flow Control (send) drop-down box displays three values: off, on, and desired. These values are supported by both the Fast Ethernet and Gigabit Ethernet ports.
Flow Control (receive)	Select the Flow Control (receive) value from the drop-down list. The Flow Control (receive) drop-down box displays three values: off, on, and desired. These values are supported by the Gigabit Ethernet ports only.

Step 4 In the L2 Service Information pane, complete the following information:

- L2 Topology Name
- Service Provider VLAN ID
- Managed VLAN
- Customer ID
- Service ID

Step 5 Click **Next**.

Step 6 In the L2 Service Drop Ports Selection pane, complete the following information:

a. Select one of the NEs (from the NE ID drop-down list) on which to configure drops as part of the L2 service being created. After the NE is selected, all the available drops and their capabilities are displayed in the Available Drops area.

b. Select the L2 service drop ports. Click **Add** to add L2 service ports to the Selected L2 Service Drop Ports list. Click **Remove** to remove L2 service ports from the list.

c. Repeat substeps a and b to capture all the drops on different NEs that will be a part of the L2 service.

Note If Managed VLAN is checked, you can only select one drop from each ML-series card.

Step 7 Click **Next**.

Step 8 Configure the drop ports in the Service Drops tab by specifying the following information:

- Apply QoS Parameters to All UNI Ports—Check this check box to apply the QoS parameters to all UNI ports.
- RSTP Enable—Check this check box to enable RSTP.
- NE ID—Displays the user-defined name of the selected NE.
- Slot—Displays the slot where the card is located.
- Type—Displays the type of ML-series card.
- Port—Displays the port number. If the port number is preceded by C, it refers to the port number of the port channel interface. If the port number is preceded by P, it refers to the port number of the Ethernet interface.
- Enable—Check this check box to enable drop port state. Uncheck it to disable the drop port state.
- Port Type—Select the port type from the drop-down list for each of the drops selected in the previous screen.

- Con Type—Select the connection type from the drop-down list for each of the drops selected in the previous screen.
- Port VLAN ID—Specify the port VLAN ID for the dot1q drops.
- PM State—Check this check box to collect PM data for each drop port in an ML-series card. Checking the PM State box sets the Cisco IOS cos accounting command in each appropriate front port.

Step 9 Click the Port Attributes tab. A confirmation window appears. Click **Yes** to continue.

Step 10 Configure the port attributes in the Port Attributes tab. Table 7-68 provides descriptions.

Step 11 Click **Next**.

Note You can select individual drop ports for QoS configuration or check the Apply QoS Parameters to All UNI Ports check box. If you select individual drop ports, you will need to repeat Step 8 through Step 14 for each drop port selected.

Step 12 The QoS Parameters pane opens, displaying the Profile and Custom QoS tabs. QoS parameters are applied to UNI ports. Select the QoS profile to use from the Load from QoS Profile drop-down list.

Step 13 Select the Custom QoS tab. The Custom QoS tab allows you to customize the QoS profile you selected.

Step 14 Configure the fields in the Policing area. Table 7-68 describes the fields in the Custom QoS tab.

Note The tabs displayed in the Policing area are dimmed or available depending on the selection you made from the Load from QoS Profile drop-down list. When Best Effort is selected, the Classification and Best Effort tabs in the Policing area are active and can be configured. When CIR/PIR is selected, the Classification, Committed Traffic, Excess Traffic, and Violations tabs in the Policing area are active and can be configured.

Step 15 Click **Finish** to create the Layer 2 service.

Step 16 In the confirmation dialog box, click **OK**.

Note A progress animator is displayed during this operation.

Note If the status of a Layer 2 topology is Incomplete but all the spans are present, it means that there is a configuration problem in the Layer 2 topology and you cannot add Layer 2 services that use this Layer 2 topology. You must delete the Layer 2 topology and add it again. See 7.10.6 Creating Layer 2 Topologies, page 7-247 or 7.10.7 Deleting Layer 2 Topologies, page 7-266.

Note If you try to provision a Layer 2 service while the server resynchronization is in progress, an error message is displayed. Wait awhile before trying again. Also, there is a VLAN ID assigned for each Layer 2 service provisioning operation. If the same error is encountered, the VLAN ID is not available until the Prime Optical server recovers it.

7.10.13.2 Showing a Layer 2 Service

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**. The L2 Services table opens, displaying all the Layer 2 services that are configured on a Layer 2 topology. The following table provides descriptions.

Table 7-69 Field Descriptions for the L2 Services Table

Column	Description
Service Provider VLAN ID	A unique number in a topology that is used to represent the VLAN. The valid range for service provider VLAN IDs is 1 to 4093. By default, the first VLAN number is displayed as 2, because VLAN 1 is an administration VLAN. You can change the default value and create VLAN 1, if it is available.
Customer ID	Displays the unique identification number of the customer for whom the L2 service is being created.
Service ID	Displays the service identification number of the customer for whom the L2 service is being created.
VLAN Status	Displays the drop sufficiency of the L2 service; valid values are Incomplete and Complete. The VLAN status is Incomplete if there are not sufficient drops for the L2 service. For RPR topologies, if there is not at least one drop per two ML-series cards in the topology, the VLAN status is Incomplete. For point-to-point topologies, the VLAN status is Incomplete if there is not at least one drop per ML card in the topology.
IP SLA Managed VLAN	A value of True means that the circuit is an IP SLA-managed VLAN circuit. A value of False means that the circuit is not an IP SLA-managed VLAN circuit. IP SLA-managed VLAN status can be: • Complete-IP SLA Discovery In Progress—Managed VLAN discovered completely and IP SLA discovery in progress. • Complete-IP SLA Discovery Failed—Managed VLAN discovered completely and IP SLA discovery failed due to an error in retrieving IP SLA data.

7.10.13.3 Modifying a Layer 2 Service

Use the Modify L2 Service dialog box to modify some of the parameters of the selected L2 service.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**.

Step 3 In the L2 Services table, select a service to modify; then, choose **Configuration > Modify L2 Service**. The Modify L2 Service dialog box opens.

Step 4 In the Modify L2 Service dialog box, modify the information described in the following table, as required.

Table 7-70 Field Descriptions for the Modify L2 Service Dialog Box

Area	Description
Customer ID	Customer identification.
Service ID	Service identification.

Step 5 Click **Apply**.

Step 6 Click **Close**.

7.10.13.4 Filtering the L2 Services Table

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**.

Step 3 In the L2 Services table, choose **File > Filter** (or click the **Filter Data** tool). The L2 Service table filter opens. The following table provides descriptions.

Step 4 After making your selections, click **OK**.

Table 7-71 Field Descriptions for the L2 Service Table Filter Dialog Box

Field	Description
Customer ID	Displays a list of available customer IDs. Click **Add** or **Remove** to move customer IDs to and from the Selected Customer IDs list and then run the filter. If you check **Ignore All Customer IDs**, Prime Optical ignores the customer IDs in the filter criteria.
Service ID	Displays a list of available service IDs. Click **Add** or **Remove** to move service IDs to and from the Selected Service IDs list and then run the filter. If you check **Ignore All Service IDs**, Prime Optical ignores the service IDs in the filter criteria.

7.10.13.5 Deleting a Layer 2 Service

Note You cannot delete an IP SLA-managed VLAN if there are IP SLAs associated with it. Be sure to delete all IP SLAs associated with the Layer 2 service before deleting the Layer 2 service.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**.

Step 3 In the L2 Services table, select one or more services to delete; then, choose **Configuration > Delete L2 Service**.

Step 4 In the confirmation dialog box, click **Yes**.

Note A progress animator is displayed during the deletion operation.

7.10.13.6 Showing an IP SLA

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**.

Step 3 In the L2 Services table, select an L2 service and choose **Configuration > Show IP SLA**. The IP SLA table opens, displaying all of the IP SLAs that were created for the selected L2 service. The following table provides descriptions.

Table 7-72 Field Descriptions for the IPSLA Table

Field	Description
IP SLA Number	Displays the IP SLA number.
NE ID	Displays the NE ID.
Slot Number	Displays the slot number.
Equipment Type	Displays the equipment type.
Host IP Address	Displays the host IP address.
Destination IP Address	Displays the destination IP address.
Operation Type	Displays the operation type.
Operation Status	Displays the operation status.

7.10.13.7 Creating an IP SLA

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**. The L2 Services table opens.

Step 3 In the L2 Services table, select the L2 service on which to create the IP SLA and choose **Configuration > Create IP SLA**. The Create IPSLA Information wizard opens.

Step 4 Specify the following information:

- Service Provider VLAN ID—*Display only.*
- IP SLA ID—*Display only.*
- Source IP Address—Select the source IP address from drop-down list.
- Destination IP Address—Select the destination IP address from drop-down list.
- Probe Type—Select the probe type from the drop-down list. Values are either Jitter or Echo. If you select Echo, proceed to Step 7.
- Enable IP SLA—Check to enable IP SLA.
- External Destination IP Address—Check to enter the external destination IP address. (The Destination IP Address drop-down list is disabled.)

Step 5 Click **Next**.

Step 6 Specify the following information:

- Destination Port—Specify the destination port. The range is from 1 to 65535.
- No. of Packets—Specify the number of packets. The range is from 1 to 60000.
- Interval—Specify the time interval (in seconds) for collecting information. The range is from 1 to 60000.
- Operation Frequency—Specify the operation frequency. The range is from 1 to 604800.
- TOS—Specify the value that corresponds to the type of service. The range is from 1 to 255.

Step 7 Click **Finish**.

7.10.13.8 Enabling an IP SLA

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**.

Step 3 In the L2 Services table, select an L2 service and choose **Configuration > Show IP SLA**.

Step 4 In the IP SLA table, select an IP SLA and choose **Configuration > Enable IP SLA**.

7.10.13.9 Deleting an IP SLA

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**.

Step 3 In the L2 Services table, select an L2 service and choose **Configuration > Show IP SLA**.

Step 4 In the IP SLA table, select an IP SLA to delete and choose **Configuration > Delete IP SLA**.

Step 5 In the confirmation dialog box, click **Yes**.

7.10.13.10 Restarting an IP SLA

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**.

Step 3 In the L2 Services table, select an L2 service and choose **Configuration > Show IP SLA**.

Step 4 In the IP SLA table, select an IP SLA to restart and choose **Configuration > Restart IP SLA**.

7.10.13.11 Enabling or Disabling PM Data Collection for Each Drop Port

Prime Optical allows you to enable or disable PM data collection for each appropriate drop port in an ML-series card. You can enable or disable PM data collection while:

- Creating a Layer 2 service (see 7.10.13.1 Creating a Layer 2 Service, page 7-287)
- Adding drop ports (see 7.10.13.14 Creating L2 Service Drops, page 7-302)
- Modifying drops (see 7.10.13.16 Modifying L2 Service Drops, page 7-308)

Note The enhanced statistics are only supported in the enhanced (nondefault) microcode image. The barebone configuration file that contains this command is bareboneCLI_Security_Enhanced_Microcode.txt.

7.10.13.12 Viewing the L2 Service Drop Ports Table

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services.**

Step 3 In the L2 Services table, select a service; then, choose **Configuration > Show Drops**. The L2 Service Drop Ports table opens, listing all the drops in the selected service. The following table provides descriptions.

Table 7-73 Field Descriptions for the L2 Service Drop Ports Table

Column	Description
NE ID	User-defined name of the selected NE.
Slot Number	ML card slot number on which the drop is present.
Port	ML card port physical number on which the drop is present.
Port	ML card port physical number on which the drop is present.
Port VLAN ID	Port VLAN ID used for dot1q drops.
Interface Type	Interface type of the ML card. Values are Fast Ethernet, Gigabit Ethernet, or port channel.

Table 7-73 Field Descriptions for the L2 Service Drop Ports Table (continued)

Column	Description
Port Type	Port type. Values are UNI or NNI.
Con Type	Connection type. Values are QinQ, dotq, or Untagged.
QoS Profile Name	Name of the QoS profile. **Note** Due to discrepancies between the ML card CLI and the values stored in the Prime Optical database, the QoS profile name might be shown as "Custom QoS" even though you specified a different QoS profile type. In this scenario, choose **Configuration > Show QoS** to view the QoS table for a particular drop and determine the exact configuration of the QoS profile set on the card for that drop.
Drop Status	Displays whether a drop is shut down or enabled.
CoS PM State	Check this check box to collect PM data for each drop port in an ML-series card. Checking the PM State box sets the Cisco IOS cos accounting command in each appropriate front port.
RSTP	When checked, RSTP is enabled.

7.10.13.13 Filtering the L2 Service Drop Ports Table

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**.

Step 3 In the L2 Services table, select a service to which to add drops.

Step 4 Choose **Configuration > Show Drops**. The L2 Service Drop Ports table opens.

Step 5 Choose **File > Filter** (or click the **Filter Data** tool). The L2 Service Drop Ports Filter dialog box opens.

Step 6 Use the table filter to filter circuit data according to criteria that you select and to display the results in the table.

Step 7 Click **OK**.

7.10.13.14 Creating L2 Service Drops

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs or CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**.

Step 3 In the L2 Services table, select a service to which to add drops.

Step 4 Choose **Configuration > Show Drops**. The L2 Service Drop Ports table opens.

Step 5 Choose **Configuration > Add Drops**. The Add L2 Service Drops wizard opens. The following table provides descriptions.

Table 7-74 Field Descriptions for the Add L2 Service Drops Wizard

Field	Description
L2 Service Drop Ports Selection	
NE ID	Displays the user-defined name of the NEs. Select an NE from the drop-down list. After the NE is selected, all the available drops and their capabilities are displayed in the Available L2 Service Drop Ports list.
Available L2 Service Drop Ports	
Select the L2 service drop ports. Click **Add** to add L2 service ports to the Configured L2 Service Drop Ports list. Click **Remove** to remove L2 service ports from the list. Repeat to add or remove all the drops on different NEs that will be a part of the L2 service.	
NE ID	Displays the user-defined name of the NEs. Select an NE from the drop-down list. After the NE is selected, all the available drops and their capabilities are displayed in the Available L2 Service Drop Ports list.
Slot	ML-series card slot number.
Type	ML-series card type—ML100 or ML1000.
Port	Port number on the ML card.
Port Type	Displays the available port type—UNI, NNI, or Any. If both UNI and NNI port types are available, Any is displayed.
Con Type	Connection type can be QinQ, dot1q, Untagged, or Any. For the UNI port type, connection types are QinQ, dot1q, and Untagged. For the NNI port type, only the dot1q connection type is allowed. If all types are available, this field is shown as *Any*.
L2 Service Summary	
L2 Topology Name	Name of the topology on which the Layer 2 service drop is created.
Service Provider VLAN ID	A unique number in a topology that is used to represent the VLAN. The valid range for service provider VLAN IDs is 1 to 4093. By default, the first VLAN number is displayed as 2, because VLAN 1 is an administration VLAN. You can change the default value and create VLAN 1, if it is available.
Customer ID	Displays the unique identification number of the customer for whom the Layer 2 service drop is being created.
Service ID	Displays the service identification number of the customer for whom the Layer 2 service drop is being created.
Selected Drops (Node/Slot/Port)	Displays the drop ports selected in the L2 Service Drop Ports table.
Service Drops Configuration > Service Drops tab	
Apply QoS Parameters to All UNI Ports	When selected, the QoS parameters specified in the QoS Parameters screen are applied to all the drops.
RSTP Enable	When checked, RSTP is enabled.
NE ID	Displays the user-defined name of the selected NE.
Slot	Displays information about the slot.
Type	ML-series card type—ML100 or ML1000.
Port	Port number on the ML card.
Enable	When checked, the drop port is enabled.

Table 7-74 Field Descriptions for the Add L2 Service Drops Wizard (continued)

Field	Description
Port Type	Displays the port type—UNI or NNI.
Con Type	Connection type. For the UNI port type, the connection type can be QinQ, dot1q, or Untagged. For the NNI port type, only NNI is permitted.
Port VLAN ID	Port VLAN ID used for dot1q drops. For NNI dot1q drops, this field is populated by default with the service provider VLAN ID.
PM State	Check this check box to collect PM data for each drop port in an ML-series card. Checking the PM State box sets the Cisco IOS cos accounting command in each appropriate front port.
Service Drops Configuration > Port Attributes tab	
NE ID	Select a user-defined NE name from the drop-down lists.
Slot	Select the ML card slot number from the drop-down lists.
Type	Displays the ML-series card type—ML100 or ML1000.
Port	Select the port number on the ML card.
MTU	Enter an MTU size. The valid range is from 64 to 9000. The default value is 1500.
Speed	Select the speed from the drop-down list. The Speed drop-down list displays three values: 10, 100, and auto. For an ML1000 card, auto is the only supported option.
Duplex	Select the Duplex value from the drop-down list. The Duplex drop-down list displays three values: full, half, and auto, based upon the type of card selected. For example, for an ML1000 card, auto is the only supported option.
Flow Control (send)	Select the Flow Control (send) value from the drop-down list. The Flow Control (send) drop-down box displays three values: off, on, and desired. These values are supported by both the Fast Ethernet and Gigabit Ethernet ports.
Flow Control (receive)	Select the Flow Control (receive) value from the drop-down list. The Flow Control (receive) drop-down box displays three values: off, on, and desired. These values are supported by the Gigabit Ethernet ports only.
QoS Parameters	
Match Any	Matches all the traffic. When selected, all other fields (DSCP, IP Precedence, and CoS) are disabled.
Match DSCP	Matches the DSCP value. The valid range is from 0 to 63.
DSCP Value	Displays the DSCP value.
Match IP	Matches the IP value. The valid range is from 0 to 7.
IP Value	Displays the IP value.
Match CoS	Matches the CoS value. The valid range is from 0 to 7.
CoS Value	Displays the CoS value.
AND	Selecting AND indicates Match All and Match Any of the traffic classifications, respectively. The QoS profiles that are created with AND criteria are applied only to dot1Q (subinterface). For AND criteria only, a single value is allowed on CoS, DSCP, and IP Precedence.
OR	Selecting OR indicates Match Any of the traffic classifications (Match DSCP, Match IP Precedence, or Match CoS), respectively. The QoS profiles that are created with the OR criteria are not applied to dot1Q (subinterface).
Committed Rate	Displays the committed traffic rate value.

Table 7-74 Field Descriptions for the Add L2 Service Drops Wizard (continued)

Field	Description
Committed Burst Size	Displays the committed burst size.
CIR CoS	Committed traffic CoS type (Trust or CoS Marked).
CIR CoS Value	Committed traffic CoS value. The valid range is from 0 to 7.
Excess Action	Excess traffic action type (Discard or Allow).
Peak Rate	Displays the peak traffic rate value.
Peak Burst Size	Displays the peak traffic burst value.
PIR CoS	Displays the peak traffic CoS type (Trust or CoS Marked).
PIR CoS Value	Displays the peak traffic CoS value. The valid range is from 0 to 7.
Violate Action	Displays the violate traffic action type (Discard or Allow).
Violate CoS	Displays the violate traffic CoS type (Trust or CoS Marked).
Violate CoS Value	Displays the violate traffic CoS value. The valid range is from 0 to 7.
Best Effort Type	Displays the best-effort traffic type (Line-Rate or Rate-Limited).
Max Rate	Displays the maximum rate value.
Max Burst Size	Displays the maximum burst value.
QoS Parameters > Profile	
Load from QoS Profile	Select the QoS profile from the list displayed. See 7.11.3 Creating QoS Profiles, page 7-324 for details on how to create a QoS profile. **Note** The remainder of the QoS parameters displayed on this tab are described earlier in this table.
QoS Parameters > Custom QoS	
Load from QoS Profile	Select the QoS profile from the list displayed. See 7.11.3 Creating QoS Profiles, page 7-324 for details on how to create a QoS profile. **Note** The remainder of the QoS parameters displayed on this tab are described earlier in this table.
Policing > Classification	
Match Any	Matches all the traffic. When selected, all other fields (DSCP, IP Precedence, and CoS) are disabled.
Match DSCP	Matches the DSCP value. The valid range is from 0 to 63.
Match IP Precedence	Matches the IP precedence value. The valid range is from 0 to 7.
Match CoS	Matches the CoS value. The valid range is from 0 to 7.
AND	Selecting AND indicates Match All and Match Any of the traffic classifications, respectively. The QoS profiles that are created with AND criteria are applied only to dot1Q (subinterface). For AND criteria only, a single value is allowed on CoS, DSCP, and IP Precedence.
OR	Selecting OR indicates Match Any of the traffic classifications (Match DSCP, Match IP Precedence, or Match CoS), respectively. The QoS profiles that are created with the OR criteria are not applied to dot1Q (subinterface).
Policing > Committed Traffic	
Line Rate	Rate and burst of the Ethernet port are applicable.

Table 7-74 Field Descriptions for the Add L2 Service Drops Wizard (continued)

Field	Description
Rate Limited	User-specified rate and burst limits are applicable.
Committed Rate	Displays the committed rate.
Committed Burst Size	Displays the committed burst size.
Policing > Committed Traffic > Committed CoS Marking	
Trust	CoS transmit value set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Policing > Excess Traffic	
Discard	Excess traffic action should be set to “drop.”
Allow	Excess traffic with CoS, as marked by the user, is transmitted.
Peak Rate	Peak rate value.
Peak Burst	Peak burst value.
Policing > Excess Traffic > Excess CoS Marking	
Trust	CoS transmit value set to 0.
Mark CoS	The Layer 2 CoS marked. The valid range is from 0 to 7.
Policing > Violations	
Discard	Excess traffic action should be set to “drop.”
Allow	Excess traffic with CoS, as marked by the user, is transmitted.
Policing > Violations > Violations CoS Marking	
Trust	CoS transmit value set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Policing > Best Effort	
Line Rate	Rate and burst of the Ethernet port are applicable.
Rate Limited	User-specified rate and burst limits are applicable.
Max Rate	The maximum rate value.
Max Burst	The maximum burst value.
Policing > Best Effort > Best Effort CoS Marking	
Trust	CoS transmit value set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Service Drops Configuration (Service Drop)	
Apply QoS Parameters to All UNI Ports	When selected, the QoS parameters specified in the QoS Parameters screen are applied to all the drops.
RSTP Enable	When checked, RSTP is enabled.
NE ID	The user-defined name of the selected NE.
Slot	Information about the slot.
Type	Displays the ML-series card type—ML100 or ML1000.
Port	The port number on the ML card.
Enable	Used to enable or disable the drop port. When checked, the drop port is enabled.

Table 7-74 Field Descriptions for the Add L2 Service Drops Wizard (continued)

Field	Description
Port Type	The port type—UNI or NNI.
Con Type	The connection type. For the UNI port type, the connection type is QinQ, dot1q, or Untagged. For the NNI port type, only the NNI connection type is permitted.
Port VLAN ID	The port VLAN ID used for dot1q drops. By default, the NNI dot1q drop is populated with the service provider VLAN ID.
PM State	Check this check box to collect PM data for each drop port in an ML-series card. Checking the PM State box sets the Cisco IOS cos accounting command in each appropriate front port.
QoS Parameters	The QoS parameters displayed on this screen are described earlier in this table.

Step 6 In the L2 Service Drop Ports Selection section, complete the following information:

a. Select one of the NEs in the NE ID drop-down list. After the NE is selected, all the available drops and their capabilities are displayed in the Available L2 Service Drop Ports list.

b. Select the L2 service drop ports. Click **Add** to add Layer 2 service ports to the Configured L2 Service Drop Ports list. Click **Remove** to remove Layer 2 service ports from the list.

c. Repeat substeps a and b to add or remove all the drops on different NEs that will be a part of the Layer 2 service.

Step 7 Click **Next**.

Step 8 In the Service Drops tab, complete the following information:

- Apply QoS Parameters to All UNI Ports—Check this check box to apply the QoS parameters to all UNI ports.
- Enable RSTP—Check this check box to enable RSTP.
- Enable—Check this check box to enable the drop port state. Uncheck it to disable the drop port state.
- Port Type—Select the port type.
- Con Type—Select the connection type.
- Port VLAN ID—Enter the VLAN ID for the dot1q drops.
- PM State—Check this check box to collect PM data for each drop port in an ML-series card. Checking the PM State box sets the Cisco IOS cos accounting command in each appropriate front port.

Note You can select individual drop ports for QoS configuration or check the Apply QoS Parameters to All UNI Ports check box. If you select individual drop ports, you will need to repeat Step 8 through Step 14 for each drop port selected.

Step 9 Click the Port Attributes tab. A confirmation window appears. Click **Yes** to continue.

Step 10 Configure the port attributes in the Port Attributes tab. Table 7-74 provides descriptions.

Step 11 Click **Next**.

Step 12 Review the QoS parameters and their corresponding values in the QoS Parameters area.

Step 13 Review the Layer 2 service summary in the L2 Service Summary area.

Step 14 Click **Next**.

Step 15 The QoS Parameters pane opens, displaying the Profile and Custom QoS tabs. QoS parameters are applied to UNI ports. Select the QoS profile to use from the Load from QoS Profile drop-down list.

Step 16 Click the **Custom QoS** tab, which allows you to customize the QoS profile you selected.

Step 17 Configure the fields displayed in the Policing area. Table 7-74 provides descriptions.

Note The tabs displayed in the Policing area are dimmed or available depending on the selection you made from the Load from QoS Profile drop-down list. When Best Effort is selected, the Classification and Best Effort tabs in the Policing area are active and can be configured. When CIR/PIR is selected, the Classification, Committed Traffic, Excess Traffic, and Violations tabs in the Policing area are active and can be configured.

Step 18 Click **Finish** to add the Layer 2 service drop.

Step 19 In the confirmation dialog box, click **OK**.

7.10.13.15 Deleting L2 Service Drops

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**.

Step 3 In the L2 Services table, select a service on which to delete drops.

Step 4 Choose **Configuration > Show Drops**. The L2 Service Drop Ports table opens.

Step 5 Choose **Configuration > Delete Drops**. The Modify L2 Service dialog box opens.

Step 6 In the confirmation dialog box, click **Yes**.

Note A progress animator is displayed while the delete operation is being performed.

7.10.13.16 Modifying L2 Service Drops

Use the Modify L2 Drops window to modify the selected L2 drops.

Note The Ethernet port attributes (for example, MTU, speed, and flow control), COS accounting, and port enabling/disabling values are not automatically mirrored to the standby ML card when modified on the active ML card. These values can be modified manually on the standby cards using NE Explorer.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, choose **Configuration > Show L2 Services**.

Step 3 In the L2 Services table, select a service on which to modify drops.

Step 4 Choose **Configuration > Show Drops**. The L2 Service Drop Ports table opens.

Step 5 Choose **Configuration > Modify Drops**. The Modify L2 Service Drops dialog box opens.

Step 6 Click the **Enable/Disable Drop** tab if you want to enable or disable drops. Check the **Enable** check box to enable the drop port state, and uncheck it to disable the drop port state. Check the **RSTP Enable** check box to enable RSTP.

Step 7 Click the **QoS** tab if you want to enable QoS parameters per drop; then, specify the following QoS parameters:

- CIR/PIR—If selected, specify the following information:
  - Committed information rate—The range is from 1 to 800 Mb/s for Gigabit Ethernet ML-series cards and 1 to 90 Mb/s for FE ML-series cards.
  - Max CIR Burst—Cisco default is 8000 bytes. The range is from 8000 to 64000 bytes.
  - Peak Information Rate—The range is from 96000 to 800000000 bits per second. PIR should be greater than or equal to CIR.
  - Max PIR Burst—Cisco default is 64000 bytes. The range is from 8000 to 64000 bytes. PIR burst should be greater than or equal to CIR burst.
- Best Effort—If selected, the following are set to the default values:
  - Best Effort Max Value—Corresponds to the CIR value. Cisco default is 96000 bits per second.
  - Burst—Corresponds to the Max CIR Burst value. Cisco default is 8000 bytes.

Note The PIR and Max PIR Burst do not need to be set. The card software sets these values to the same values as CIR and Max CIR Burst, respectively.

Step 8 Click the **Performance Monitoring** tab. Check the **PM State** box to collect PM data for each drop port in an ML-series card. Checking the PM State box sets the Cisco IOS cos accounting command in each appropriate front port.

Step 9 Click the **Port Properties** tab. Configure the following information if required:

- NE ID—Select a user-defined NE name from the drop-down lists.
- Slot—Select the ML card slot number from the drop-down lists.
- Type—Displays the ML-series card type: ML100 or ML1000.
- Port—Select the port number on the ML card.
- MTU—Enter an MTU size. The valid range is from 64 to 9000. The default value is 1500.
- Speed—Select the speed from the drop-down list. The Speed drop-down list displays three values: 10, 100, and auto. For an ML1000 card, auto is the only supported option.
- Duplex—Select the Duplex value from the drop-down list. The Duplex drop-down list displays three values: full, half, and auto, based upon the type of card selected. For example, for an ML1000 card, auto is the only supported option.
- Flow Control (send)—Select the Flow Control (send) value from the drop-down list. The Flow Control (send) drop-down box displays three values: off, on, and desired. These values are supported by both the Fast Ethernet and Gigabit Ethernet ports.

- Flow Control (receive)—Select the Flow Control (receive) value from the drop-down list. The Flow Control (receive) drop-down box displays three values: off, on, and desired. These values are supported by the Gigabit Ethernet ports only.

Step 10 Click **Apply** to apply your settings or click **Reset** to use default settings.

Note A progress animator is displayed.

Step 11 Click **Close**.

7.10.13.17 Viewing the QoS for Layer 2 Service Drop Port Table

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**. The Layer 2 Topology table opens.

Step 2 Choose **Configuration > Show L2 Services**. The Layer 2 Services table opens.

Step 3 Choose **Configuration > Show Drops**. The Layer 2 Services Drop Ports table opens.

Step 4 Choose **Configuration > Show QoS**. The QoS for Layer 2 Service Drop Port table opens. The following table provides descriptions.

Table 7-75 Field Descriptions for the QoS for Layer 2 Service Drop Port Table

Column	Description
QoS Class Name	Name of the class map and QoS class of the selected Layer 2 service drop.
Match Any	Matches all the traffic. When selected, all other fields (DSCP, IP Precedence, and CoS) are disabled.
Match IP Precedence	Matches the IP precedence value. The valid range is from 0 to 7.
IP Precedence Value	Displays the IP precedence value.
Match DSCP	Matches the DSCP value. The valid range is from 0 to 63.
DSCP Value	Displays the DSCP value.
Match CoS	Matches the CoS value. The valid range is from 0 to 7.
AND	Selecting AND indicates Match All and Match Any of the traffic classifications, respectively. The QoS profiles that are created with AND criteria are applied only to dot1Q (subinterface). For AND criteria only, a single value is allowed on CoS, DSCP, and IP Precedence.
OR	Selecting OR indicates Match Any of the traffic classifications (Match DSCP, Match IP Precedence, or Match CoS), respectively. The QoS profiles that are created with the OR criteria are not applied to dot1Q (subinterface).
CoS Value	Displays the CoS value.
CIR Type	Displays the CIR type.
CIR Rate	Committed rate, in bits per second (b/s).

Table 7-75 Field Descriptions for the QoS for Layer 2 Service Drop Port Table (continued)

Column	Description
CIR Burst	Committed burst, in bytes.
CIR CoS Type	Committed traffic CoS type (Trust or CoS Marked).
CIR CoS Value	Committed traffic CoS value. The valid range is from 0 to 7.
Excess Action	Excess traffic action type (Discard or Allow).
PIR Rate	Peak rate, in b/s.
PIR Burst	Peak burst, in bytes.
PIR CoS Type	Displays the peak traffic CoS type (Trust or CoS Marked).
PIR CoS Value	Displays the peak traffic CoS value. The valid range is from 0 to 7.
Violate Action	Displays the violate traffic action type (Discard or Allow).
Violate CoS Value	Displays the violate traffic CoS value. The valid range is from 0 to 7.
Best Effort Type	Displays the best-effort traffic type (Line-Rate or Rate-Limited).
Best Effort Rate	Maximum rate, in b/s.
Best Effort Burst	Maximum burst, in bytes.

7.10.13.18 Configuring a Layer 2 Service Resynchronization

Note

- When configuring Layer 2 service resynchronization, data provisioning is disabled. It is recommended that resynchronization become less frequent on the provisioning server and more frequent on the monitoring server.
- The L2 Service Resync Delay field setting is the same for both SONET and SDH NE services. If you change this value in the Control Panel for CTC-based SONET NEs, the same value is reflected for CTC-based SDH NEs, and vice versa.

Complete the following steps to configure a Layer 2 service resynchronization:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Expand **NE Service**.

Step 3 Select either **CTC-Based SONET NEs** or **CTC-Based SDH NEs**.

Step 4 In the L2 Service Resync Delay field, enter the number of seconds before the Layer 2 service resynchronization resumes. The Cisco default is 600 seconds.

Step 5 Click **Save**.

7.10.14 Resynchronizing Layer 2 Topologies

You can resynchronize Layer 2 topologies that are in the following states:

- Sync Failed
- L2Service NotReady
- Partially Completed
- Complete

Note This feature only restarts the L2 topology resynchronization state. It does not forcefully apply any configuration on the ML-series card to complete the synchronization in the L2 topology.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > L2 Topology Table**.

Step 2 In the Layer 2 Topology table, select the topology that you want to resynchronize and choose **Configuration > Resync L2 Topology**. The Prime Optical server reschedules the Layer 2 topology resynchronization process. After it has completed, Prime Optical performs the following:

- Detect base card configuration
- Discover VLANs
- Update L2 topology state

7.10.15 Discovering Layer 2 Topologies

You can initiate a manual discovery of L2 topologies by triggering events for valid L1 circuits in the database. If the network contains split or incomplete L2 topologies, it is helpful to discover the missing topologies.

Step 1 In the Domain Explorer window, select a group or NE node and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Discover L2 Topologies**.

Step 2 Click **Yes** at the following prompt:

```
Use this command only for split or undiscovered topologies. This command rediscovers the
L2 topologies and causes loss of topology description information. Do you want to
continue?
```

This action initiates a forceful discovery of the RPR and point-to-point topologies that are present under the selection context. During the discovery, topologies are deleted from the Layer 2 Topology table and then rediscovered.

7.10.16 Changing the Framing Mode for ML-Series Cards

This section describes how to change the framing mode for ML-series cards to HDLC, GFP, or RPR 802.17.

7.10.16.1 Changing the Framing Mode from HDLC to GFP

Depending on your configuration, complete one of the following steps for all cards that are involved in the L2 topology:

Step 1 For ONS 15454 ML cards, do the following:

a. Select an ONS 15454 NE in the Domain Explorer and choose **Configuration > NE Explorer**.

b. Click the ML card in the shelf view.

c. Click the **Identification** tab.

d. Change the Card Mode value to **GFP-F**.

e. Click **Apply**.

f. Click **Yes** at the following prompt:

```
This will commit your changes to the NE permanently. Do you want to continue?
```

g. Click **Yes** at the following prompt:

```
Changing the card mode will cause the NE to reboot. Make the change anyway?
```

Step 2 For ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH ML-series cards, do the following:

a. Launch the Cisco IOS CLI to the card.

b. Enter the following CLI commands for all interfaces that are involved in the L2 topology:

```
default46#config
Configuring from terminal, memory, or network [terminal]? t
Enter configuration commands, one per line. End with CNTL/Z.
default46(config)#interface interface-ID-pos0-or-pos1
default46(config-if)#pos mode gfp fcs-disabled
#End
default46#write mem
#show controllers pos0-or-pos1
```

The **show controllers** command returns output that is similar to the following example:

```
default46#show controllers pos 0
Interface POS0
Hardware is Packet Over SONET
Framing Mode: GFP
Concatenation: VCAT
Alarms reportable to CLI: AIS-P LOP-P UNEQ-P TIM-P PLM-P ENCAP-MISMATCH RDI-P PD
I-P SF-P SD-P OOU_TPT-STS LOM-STS SQM-STS
Link state change defects: AIS LOP UNEQ PLM ENCAP RDI PDI LOA LOM SQM
Link state change time: 200 (msec)
```

7.10.16.2 Changing the Framing Mode from GFP to HDLC

Depending on your configuration, complete one of the following steps for all cards that are involved in the L2 topology:

Step 1 For ONS 15454 ML cards, do the following:

a. Select an ONS 15454 NE in the Domain Explorer and choose **Configuration > NE Explorer**.

b. Click the ML card in the shelf view.

c. Click the **Identification** tab.

d. Change the Card Mode value to **HDLC**.

e. Click **Apply**.

f. Click **Yes** at the following prompt:

```
This will commit your changes to the NE permanently. Do you want to continue?
```

g. Click **Yes** at the following prompt:

```
Changing the card mode will cause the NE to reboot. Make the change anyway?
```

Step 2 For ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH ML-series cards, do the following:

a. Launch the Cisco IOS CLI to the card.

b. Enter the following CLI commands for all interfaces that are involved in the L2 topology:

```
default46#config
Configuring from terminal, memory, or network [terminal]? t
Enter configuration commands, one per line. End with CNTL/Z.
default46(config)#interface interface-pos0-or-pos1
default46(config-if)# no pos mode gfp
#End
default46#write mem
#show controllers pos0-or-pos1
```

The **show controllers** command returns output that is similar to the following example:

```
default46#show controllers pos 0
Interface POS0
Hardware is Packet Over SONET
Framing Mode: GFP
Concatenation: VCAT
Alarms reportable to CLI: AIS-P LOP-P UNEQ-P TIM-P PLM-P ENCAP-MISMATCH RDI-P PD
I-P SF-P SD-P OOU_TPT-STS LOM-STS SQM-STS
Link state change defects: AIS LOP UNEQ PLM ENCAP RDI PDI LOA LOM SQM
Link state change time: 200 (msec)
```

7.10.16.3 Changing the Framing Mode to RPR 802.17

RPR 802.17 is supported on the following ONS 15454 cards only:

- ML100T-12
- ML100X-8
- ML1000-2

Complete the following steps to change the framing mode to RPR 802.17 for all cards that are involved in the L2 topology:

Step 1 Select an ONS 15454 NE in the Domain Explorer and choose **Configuration > NE Explorer**.

Step 2 Click the ML card in the shelf view.

Step 3 Click the **Identification** tab.

Step 4 Change the Card Mode value to **RPR 802.17**.

Step 5 Click **Apply**.

Step 6 Click **Yes** at the following prompt:

```
This will commit your changes to the NE permanently. Do you want to continue?
```

Step 7 Click **Yes** at the following prompt:

```
Changing the card mode will cause the NE to reboot. Make the change anyway?
```

Step 8 After changing the card mode to RPR 802.17, you must reload the barebone configuration on the ML card. See 7.10.1 Initializing Layer 2 Cards, page 7-237.

7.10.17 Provisioning ML-Series Cards to Receive SNMP Traps

Note In a gateway NE-end NE (GNE-ENE) setup when the ENEs are not connected to the LAN, the only way that the Prime Optical server can communicate to the ENEs is through the GNE. When configuring the SNMP settings of the GNE, the GNE node must work as the SNMP proxy. The ENE nodes forward the SNMP traps to the Prime Optical server through the GNE. This means that the trap destination for the ENE nodes must be the GNE.

Step 1 In the Domain Explorer tree, select the NE that contains ML-series cards and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **SNMP** subtab.

Step 4 If the NE is connected to the LAN-connected NE (LNE) or GNE, do the following:

a. Check the **Allow SNMP Set** check box.

b. If the LNE or GNE is acting as an SNMP proxy to forward traps from the ENE or DCC-connected NE, check the **Allow SNMP Proxy** check box.

c. Click **Apply**.

d. Click **Create**. The Create SNMP Trap Destination dialog box opens.

e. Complete the following fields in the Create SNMP Trap Destination dialog box:

- IP Address—Enter the IP address of the Prime Optical server.
- Community Name—Enter a community name that matches the community name in the node properties pane.
- UDP Port—Enter **162** (Cisco default).
- Trap Version—Choose **SNMPv1** or **SNMPv2c**.

f. Click **OK**.

g. Click **Apply**.

Step 5 If the NE is not connected to the LAN but is DCC-connected to other NEs, do the following:

a. Check the **Allow SNMP Set** and **Allow SNMP Proxy** check boxes on the ENE.

b. Click **Apply**.

c. Click **Create**. The Create SNMP Trap Destination dialog box opens.

d. Complete the following fields in the Create SNMP Trap Destination dialog box:

- IP Address—Create the relay IP address with the IP address of the GNE.
- Community Name—Enter a community name that matches the community name in the node properties pane.
- UDP Port—Enter **391**.
- Trap Version—Choose **SNMPv1** or **SNMPv2c**.
- Relay {A | B | C} IP Address, Relay {A | B | C} Community Name—Enter the relay IP addresses of all intermediate NEs that are part of the relay with the relay community name.

e. Click **OK**.

f. Click **Apply**.

7.10.18 Initializing ML-Series Cards

Initializing the ML-series cards of ONS 15310 CL SONET, ONS 15310 MA SDH, ONS 15310 MA SONET, ONS 15454 SDH, and ONS 15454 SONET NEs involves the following tasks:

- Configuring the card mode
- Downloading the base card configuration (BCC) barebone file

Complete the following steps to initialize the ML-series cards:

Step 1 In the Domain Explorer window, select the Prime Optical domain, group, ONS 15310 CL SONET, ONS 15310 MA SDH, ONS 15310 MA SONET, ONS 15454 SDH, or ONS 15454 SONET NE; then, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Initialize ML Cards**. The Initialize ML Cards wizard opens.

Step 2 Select one or more NEs from the Available NEs list; then, click **Add** to add them to the Selected NEs list. Click **Remove** to remove the NE(s) from the Selected NEs list. The list of available NEs depends on the following conditions:

- If you selected the Prime Optical domain in the Domain Explorer window, the list of available NEs includes ONS 15310 CL SONET, ONS 15310 MA SDH, ONS 15310 MA SONET, ONS 15454 SDH, or ONS 15454 SONET NEs that have at least one ML-series card that is not involved in any L2 topology.
- If you selected a group in the Domain Explorer window, the list of available NEs includes the following:
  - NEs that belong to the group and contain at least one ML-series card that is not involved in any L2 topology.
  - NEs that are linked to the NEs of the group and contain at least one ML-series card that is not involved in any L2 topology.
- If you selected an NE in the Domain Explorer window, the list of available NEs includes the following:

- The selected NE, if it contains at least one ML-series card that is not involved in any L2 topology.
- NEs that are linked to the selected NE and contain at least one ML-series card that is not involved in any L2 topology.

Note The Card Mode operation is disabled if the Selected NEs list contains at least one ONS 15310 CL SONET, ONS 15310 MA SDH, or ONS 15310 MA SONET NE.

Step 3 Click **Next**.

Step 4 In the Card Selection area, select the ML-series card to initialize from the Available Cards list; then, click **Add**. Click **Remove** to remove an ML-series card from the Selected Cards list.

Note Select at least one ML-series card for each NE that you selected in Step 2.

Step 5 To configure the BCC barebone file, do the following:

a. In the ML Parameters area, be sure that the **Configure BCC** check box is checked.

b. In the File to BCC area, select one of the following radio buttons:

- Local—The BCC barebone file is on your local client workstation. Enter the path for the file, or click **Browse** to search for it.
- Server—The BCC barebone file is located on a server. Use the drop-down list to select a server.

Note Be sure that the BCC barebone file that you select is applicable to the NE on which the file will be uploaded.

Step 6 To set the card mode parameter, do the following:

a. In the ML Parameters area, check the **Configure Card Mode** check box.

b. Select **HDLC**, **GFP-F**, or **RPR 802.17** from the Card Mode drop-down list.

Note The Configure Card Mode check box and Card Mode drop-down list are disabled if you selected at least one ONS 15310 CL SONET, ONS 15310 MA SDH, or ONS 15310 MA SONET NE in Step 2.

Step 7 (Optional) In the Job Comments text box, enter comments about the ML-series card initialization.

Step 8 To set a time for the ML-series card initialization, choose one of the following radio buttons:

- Now—Begins the ML-series card initialization immediately.
- At Time—Specifies when to begin the ML-series card initialization.

Step 9 Click **Finish**. The selected ML-series cards are restarted, and a new entry is added to the Job Monitor table with the Task Type parameter set to “Initialize ML cards.” The Audit Log reports any errors.

7.10.19 Managing Port Channel Link Aggregation on ML-Series Cards

ML-series cards offer port channel (also known as *link aggregation*) for Gigabit Ethernet and Fast Ethernet ports.

Port channel is a trunking technology that groups multiple full-duplex, IEEE 802.3 Gigabit Ethernet/Fast Ethernet interfaces to provide fault-tolerant, high-speed links to switches, routers, and servers. Port channel forms a single higher bandwidth routing or bridging endpoint and was designed primarily for host-to-switch connectivity. Port channel provides the following benefits:

- Logical aggregation of bandwidth
- Load balancing
- Fault tolerance

To govern reciprocal peer packet transmission, ML cards support Link Aggregation Control Protocol (LACP) on the aggregated channels. LACP, which is defined as part of the IEEE specification 802.3ad, provides load balancing and automatic creation of port channels by exchanging LACP packets between ports. LACP learns the capabilities of port groups dynamically and informs the other ports. Once LACP identifies correctly matched Ethernet links, it facilitates grouping the links into a port channel.

The following table lists the link aggregation features that Prime Optical supports for ML100T-12, ML100X-8, and ML1000-2 cards on ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH NEs.

Table 7-76 Link Aggregation Features Supported in Prime Optical

Link Aggregation Feature	Supported?
Create, modify, or delete a port channel	Yes
Add or remove members to or from a port channel	Yes
Configure LACP in active, passive, or transparent mode	Yes
Configure LACP port priority	Yes
Configure VLAN on a port channel	Yes
Configure the port channel ID	No
Configure the LACP system priority	No
Configure the port channel IP address	No
Monitor the port channel interface	No
Limit the LACP maximum bundle	No
Configure link aggregation across multiple ML-series cards	N/A
Configure policing on port channel interfaces	N/A
Configure Subnetwork Access Protocol (SNAP) or Interswitch Link (ISL) encapsulated frames	N/A

The following table lists the maximum number of port channels and port channel members that ML-series cards can support.

Table 7-77 Maximum Number of Port Channels and Members per Card

Card Type	Maximum No. of Fast Ethernet and Gigabit Ethernet Channels	Maximum No. of Members
ML1000-2	2	2
ML100T-12	6	4
ML100X-8	4	4

The following sections describe how to create, modify, and delete port channels and port channel members.

7.10.19.1 Creating a Port Channel

Step 1 Select one of the following NEs in the Domain Explorer tree and choose **Configuration > NE Explorer**:

- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH
- ONS 15454 SONET
- ONS 15454 SDH

Step 2 In the tree view of the NE Explorer window, select the ML100T-12, ML100X-8, or ML1000-2 card.

Step 3 Click the **Port Channel** tab.

Step 4 In the Port Channel Table area, click the **Create** button. The Create Port Channel ID dialog box opens.

Note The Create button is dimmed if the ML card already contains the maximum number of port channels.

Step 5 Configure the fields described in the following table.

Step 6 Click **Apply**. The new port channel interface is created and appears in the Port Channel Table area.

Table 7-78 Field Descriptions for the Create Port Channel ID Dialog Box

Field	Description
Port Channel ID	*Display only.* The port channel ID identifies the port channel interface. Prime Optical generates the ID automatically; the range is from 1 to 64.
Admin State	Select the status of the port channel interface (Up or Down).

Table 7-78 Field Descriptions for the Create Port Channel ID Dialog Box (continued)

Field	Description
MTU	Enter the maximum transmission unit (MTU) size, which is the largest acceptable packet size configured for the port channel interface. The range is from 64 to 9000 bytes; the Cisco default is 1500 bytes. **Note** For ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH NEs, the MTU field is read-only.
Hold Queue In	Enter the size of the memory packet input queue. The range is from 0 to 4096 bytes. If you check the Auto check box, the value that Prime Optical displays depends on the previous interface settings on the selected ML card. (This behavior is the same as for manual Cisco IOS configurations.)
Hold Queue Out	Enter the size of the memory packet output queue. The range is from 0 to 4096 bytes. If you check the Auto check box, the output queue size is determined automatically, and the Hold Queue Out field is dimmed.

7.10.19.2 Modifying a Port Channel

Step 1 In the Domain Explorer tree, select the NE that contains the aggregate link that you want to modify and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the ML100T-12, ML100X-8, or ML1000-2 card.

Step 3 Click the **Port Channel** tab.

Step 4 In the Port Channel Table area, select the port channel interface; then, click the **Modify** button. The Modify Port Channel ID dialog box opens.

Step 5 Modify the fields described in the following table.

Step 6 Click **Apply**. The modified port channel interface appears in the Port Channel Table area.

Table 7-79 Field Descriptions for the Modify Port Channel ID Dialog Box

Field	Description
Port Channel ID	*Display only.* The port channel ID identifies the port channel interface. Prime Optical generates the ID automatically; the range is from 1 to 64.
Admin State	Modify the status of the port channel interface (Up or Down).
MTU	Modify the MTU size, which is the largest acceptable packet size configured for the port channel interface. The range is from 64 to 9000 bytes; the Cisco default is 1500 bytes. **Note** For ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH NEs, the MTU field is read-only.

Table 7-79 Field Descriptions for the Modify Port Channel ID Dialog Box (continued)

Field	Description
Hold Queue In	Modify the size of the memory packet input queue. The range is from 0 to 4096 bytes. If you check the Auto check box, the value that Prime Optical displays depends on the previous interface settings on the selected ML card. (This behavior is the same as for manual Cisco IOS configurations.)
Hold Queue Out	Modify the size of the memory packet output queue. The range is from 0 to 4096 bytes. If you check the Auto check box, the output queue size is determined automatically, and the Hold Queue Out field is dimmed.

7.10.19.3 Deleting a Port Channel

Step 1 In the Domain Explorer tree, select the NE that contains the port channel and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the ML100T-12, ML100X-8, or ML1000-2 card.

Step 3 Click the **Port Channel** tab.

Step 4 In the Port Channel Table area, select the port channel interface that you want to delete; then, click the **Delete** button.

Note You cannot delete an aggregate link that contains active members. You must first disaggregate all of the associated members from the port channel, then delete the empty port channel.

Step 5 In the confirmation dialog box, click **OK**. The port channel interface disappears from the Port Channel Table area.

7.10.19.4 Creating a Port Channel Member

Step 1 Select one of the following NEs in the Domain Explorer tree and choose **Configuration > NE Explorer**:

- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH
- ONS 15454 SONET
- ONS 15454 SDH NE

Step 2 In the tree view of the NE Explorer window, select the ML100T-12, ML100X-8, or ML1000-2 card.

Step 3 Click the **Port Channel** tab.

Step 4 In the Port Channel Members Table area, click the **Add** button. The Add Port Channel Member on Port Channel ID dialog box opens.

Note The Add button is dimmed if the ML card already contains the maximum number of port channel members.

Step 5 Configure the fields described in the following table.

Step 6 Click **Apply**. The new port channel member is created and appears in the Port Channel Members Table area.

Table 7-80 Field Descriptions for the Add Port Channel Member on Port Channel ID Dialog Box

Field	Description
Ethernet Port	Select the available Ethernet front port, which identifies the port channel member.
LACP Enabled	If checked, Link Aggregation Control Protocol (LACP) is enabled. If unchecked, LACP is disabled, and the LACP Mode and LACP Port Priority fields are dimmed.
LACP Mode	Specify the mode for LACP packet exchange between ports: • Transparent—LACP is disabled. • Active—Places a port into an active negotiating state, in which the port initiates negotiations with remote ports by sending LACP packets. • Passive—Places a port into a passive negotiating state, in which the port responds to LACP packets it receives but does not initiate LACP negotiation. In this mode, the port channel group attaches the interface to the bundle.
LACP Port Priority	Enter the number for LACP to use with the port number to form the port identifier. The port priority determines which ports should be put in standby mode when there is a hardware limitation that prevents all compatible ports from aggregating. The range is from 1 to 65535. If you check the Auto check box, the priority is determined automatically, and the LACP Port Priority field is dimmed.

7.10.19.5 Modifying a Port Channel Member

Step 1 In the Domain Explorer tree, select the NE that contains the port channel member and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the ML100T-12, ML100X-8, or ML1000-2 card.

Step 3 Click the **Port Channel** tab.

Step 4 In the Port Channel Members Table area, select the port channel member; then, click the **Modify** button. The Modify Port Channel Member on Port Channel ID dialog box opens.

Step 5 Modify the fields described in the following table.

Step 6 Click **Apply**. The modified port channel member appears in the Port Channel Members Table area.

Table 7-81 Field Descriptions for the Modify Port Channel Member on Port Channel ID Dialog Box

Field	Description
Ethernet Port	*Display only.* The port number identifies the selected Ethernet front port.
LACP Enabled	*Display only.* Once the port member has been added, you cannot change the Link Aggregation Control Protocol (LACP) Enabled value. To change the LACP Enabled value, you must first remove the port channel member; then, you can add a new port channel member with the correct LACP Enabled value.
LACP Mode	*Display only.* Once the port member has been added, you cannot change the LACP mode. To change the LACP mode, you must first remove the port channel member; then, you can add a new port channel member with the correct LACP mode.
LACP Port Priority	Modify the number for LACP to use with the port number to form the port identifier. The port priority determines which ports should be put in standby mode when there is a hardware limitation that prevents all compatible ports from aggregating. The range is from 1 to 65535. If you check the Auto check box, the priority is determined automatically, and the LACP Port Priority field is dimmed.

7.10.19.6 Deleting a Port Channel Member

Step 1 In the Domain Explorer tree, select the NE that contains the port channel member and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the ML100T-12, ML100X-8, or ML1000-2 card.

Step 3 Click the **Port Channel** tab.

Step 4 In the Port Channel Members Table area, select the port channel member that you want to delete; then, click the **Remove** button.

Step 5 In the confirmation dialog box, click **OK**. The port channel member disappears from the Port Channel Members Table area.

7.11 Managing QoS Profiles

QoS profiles provide a flexible and powerful way of specifying a QoS configuration. They allow you to define a number of sets of QoS classes for different types of service requirements. The major advantages of provisioning using QoS profiles are the ability to create similar types of services quickly using the same profile and the flexibility to customize certain values of a selected profile.

Note There is no association between the values of QoS profiles and values of QoS parameters used in an L2 service drop port instance.

Managing the QoS profiles is accomplished from the QoS Profile table.

7.11.1 QoS Profile Management Tasks

Use the following procedures to manage ONS 15454 SONET and ONS 15454 SDH DWDM nodes:

- 7.11.1 QoS Profile Management Tasks, page 7-324
- 7.11.2 Viewing the QoS Profile Table, page 7-324
- 7.11.3 Creating QoS Profiles, page 7-324
- 7.11.4 Modifying QoS Profiles, page 7-326
- 7.11.5 Duplicating QoS Profiles, page 7-328
- 7.11.6 Deleting QoS Profiles, page 7-329
- 7.11.7 Viewing the QoS Classes Table, page 7-329

7.11.2 Viewing the QoS Profile Table

In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > QoS Profile Table**. The QoS Profile table opens. The following table provides descriptions.

Table 7-82 Field Descriptions for the QoS Profile Table

Column Name	Description
Profile Name	Displays the name of the QoS profile.
Profile Type	Displays the QoS profile type.
Profile Description	Displays a description of the selected profile.

7.11.3 Creating QoS Profiles

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > QoS Profile Table**. The QoS Profile table opens.

Step 2 Choose **Configuration > Create QoS Profile** (or click the **Create QoS Profile** icon). The Create QoS Profile dialog box opens. The following table provides descriptions.

Table 7-83 Field Descriptions for the Create QoS Profile Dialog Box

Field	Description
Profile Name	Displays the name of the selected profile.
Profile Type	Allows you to select the type of profile to create. Choose Best Effort, CIR/PIR, or Advanced. • When Best Effort is selected, the Classification and Best Effort tabs in the Policing area are active and can be configured. • When CIR/PIR or Advanced is selected, the Classification, Committed Traffic, Excess Traffic, and Violations tabs in the Policing area are active and can be configured.

Table 7-83 Field Descriptions for the Create QoS Profile Dialog Box (continued)

Field	Description
Description	Enter a description for the profile.
Policing > Classification	
Match Any	Matches all the traffic. When selected, all other fields (DSCP, IP Precedence, and CoS) are disabled.
Match DSCP	Matches the DSCP value. The valid range is from 0 to 63.
Match IP Precedence	Matches the IP precedence value. The valid range is from 0 to 7.
Match CoS	Matches the CoS value. The valid range is from 0 to 7.
AND	Selecting AND indicates Match All and Match Any of the traffic classifications, respectively. The QoS profiles that are created with AND criteria are applied only to dot1Q (subinterface). For AND criteria only, a single value is allowed on CoS, DSCP, and IP Precedence.
OR	Selecting OR indicates Match Any of the traffic classifications (Match DSCP, Match IP Precedence, or Match CoS), respectively. The QoS profiles that are created with the OR criteria are not applied to dot1Q (subinterface).
Policing > Committed Traffic	
Line Rate	Rate and burst of the Ethernet port are applicable.
Rate Limited	User-specified rate and burst limits are applicable.
Committed Rate	Displays the committed rate.
Committed Burst Size	Displays the committed burst size.
Policing > Committed Traffic > CoS Marking	
Trust	CoS transmit value set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Policing > Excess Traffic	
Discard	Excess traffic action should be set to “drop.”
Allow	Excess traffic with CoS, as marked by the user, is transmitted.
Peak Rate	Peak rate value.
Peak Burst	Peak burst value.
Policing > Excess Traffic > Excess CoS Marking	
Trust	CoS transmit value set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Policing > Violations	
Discard	Violate traffic action should be set to “drop.”
Allow	Excess traffic with CoS, as marked by the user, is transmitted.
Policing > Violations > Violations CoS Marking	
Trust	CoS transmit value set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Policing > Best Effort	
Line Rate	Rate and burst of the Ethernet port are applicable.

Table 7-83 Field Descriptions for the Create QoS Profile Dialog Box (continued)

Field	Description
Rate Limited	User-specified rate and burst limits are applicable.
Max Rate	Displays the maximum rate value.
Max Burst	Displays the maximum burst value.
Policing > Best Effort > Best Effort CoS Marking	
Trust	CoS transmit value is set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.

Step 3 Enter a name for the QoS profile in the Profile Name field.

Step 4 Select the type of profile you want to create from the Profile Type drop-down list.

Step 5 Configure the fields in the Classification, Committed Traffic, Excess Traffic, Violations, and Best Effort tabs, as necessary.

Step 6 Click **Add** to add the configuration to the list displayed in the table. Repeat this step to add more than one policing configuration to the QoS profile.

Step 7 Click **Save**.

Step 8 In the confirmation dialog box, click **OK**. The new QoS profile appears in the QoS Profiles table.

7.11.4 Modifying QoS Profiles

The Modify QoS Profile wizard allows you to modify selected QoS profiles.

Note

- The profile name and profile type cannot be changed in the Modify QoS Profile wizard. To change the name or type of QoS profile, you must create a new profile.
- You cannot modify a QoS profile that was created through the Create Layer 2 Service, Add Drops, or Modify Drops wizards. However, you can view an existing QoS profile, customize another QoS profile like it, and apply it to a drop.
- If a customized QoS profile was first applied to a VLAN code drop and then modified, the new values will not be automatically applied to the same VLAN code drop. If the changes need to be applied to the VLAN code drop, Operator users should modify it with a QoS template.

Complete the following steps to modify QoS profiles:

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > QoS Profile Table**. The QoS Profile table opens.

Step 2 Select a profile in the QoS Profile table and choose **Configuration > Modify QoS Profile** (or click the **Modify QoS Profile** icon). The Modify QoS Profile wizard opens. The following table provides descriptions.

Table 7-84 Field Descriptions for the Modify QoS Profile Wizard

Field	Description
Profile Name	*Display only.* Displays the name of the selected profile.
Profile Type	*Display only.* Displays the type of profile (Best Effort, CIR/PIR, or Advanced). • When Best Effort is selected, the Classification and Best Effort tabs in the Policing area are active and can be configured. • When CIR/PIR or Advanced is selected, the Classification, Committed Traffic, Excess Traffic, and Violations tabs in the Policing area are active and can be configured.
Description	Enter a description for the profile.
Policing > Classification	
Match Any	Matches all the traffic. When selected, all other fields (DSCP, IP Precedence, and CoS) are disabled.
Match DSCP	Matches the DSCP value. The valid range is from 0 to 63.
Match IP Precedence	Matches the IP precedence value. The valid range is from 0 to 7.
Match CoS	Matches the CoS value. The valid range is from 0 to 7.
AND	Selecting AND indicates Match All and Match Any of the traffic classifications, respectively. The QoS profiles that are created with AND criteria are applied only to dot1Q (subinterface). For AND criteria only, a single value is allowed on CoS, DSCP, and IP Precedence.
OR	Selecting OR indicates Match Any of the traffic classifications (Match DSCP, Match IP Precedence, or Match CoS), respectively. The QoS profiles that are created with the OR criteria are not applied to dot1Q (subinterface).
Policing > Committed Traffic	
Line Rate	Rate and burst of the Ethernet port are applicable.
Rate Limited	User-specified rate and burst limits are applicable.
Committed Rate	Displays the committed rate.
Committed Burst Size	Displays the committed burst size.
Policing > Committed Traffic > Committed CoS Marking	
Trust	CoS transmit value is set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Policing > Excess Traffic	
Discard	Excess traffic action should be set to “drop.”
Allow	Excess traffic with CoS, as marked by the user, is transmitted.
Peak Rate	Peak rate value.
Peak Burst	Peak burst value.
Policing > Excess Traffic > Excess CoS Marking	
Trust	CoS transmit value is set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Policing > Violations	
Discard	Excess traffic action should be set to “drop.”

Table 7-84 Field Descriptions for the Modify QoS Profile Wizard (continued)

Field	Description
Allow	Excess traffic with CoS, as marked by the user, is transmitted.
Policing > Violations > Violations CoS Marking	
Trust	CoS transmit value is set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is from 0 to 7.
Policing > Best Effort	
Line Rate	Rate and burst of the Ethernet port are applicable.
Rate Limited	User-specified rate and burst limits are applicable.
Max Rate	The maximum rate value.
Max Burst	The maximum burst value.
Policing > Best Effort > Best Effort CoS Marking	
Trust	CoS transmit value is set to 0.
Mark CoS	The Layer 2 Mark CoS value entered. The valid range is 0 to 7.

Step 3 Configure the parameters displayed in the various tabs, as necessary.

Step 4 Click **Add** to add the configuration to the list displayed in the table. Repeat this step to add more than one policing configuration to the QoS profile.

Step 5 Click **Save**.

Step 6 In the confirmation dialog box, click **OK**. The modified QoS profile appears in the QoS Profiles table.

7.11.5 Duplicating QoS Profiles

Prime Optical allows you to create a new QoS profile by cloning an existing QoS profile.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > QoS Profile Table**. The QoS Profile table opens.

Step 2 Select the QoS profile that you want to duplicate.

Step 3 Choose **Configuration > Duplicate QoS Profile** (or click the **Duplicate QoS Profile** icon). The Duplicate QoS Profile dialog box opens.

Step 4 Enter a name for the new QoS profile.

Step 5 Click **OK** to create the new duplicated QoS profile.

Step 6 In the confirmation dialog box, click **OK**. The new QoS profile appears in the QoS Profile table. You can now modify the new QoS profile if required.

7.11.6 Deleting QoS Profiles

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > QoS Profile Table**. The QoS Profile table opens.

Step 2 Select the QoS profile that you want to delete.

Step 3 Choose **Configuration > Delete QoS Profile** (or click the **Delete QoS Profile** icon).

Step 4 In the confirmation dialog box, click **Yes**.

Step 5 In the subsequent confirmation dialog box, click **OK**. The QoS Profile is deleted from the QoS Profile table.

7.11.7 Viewing the QoS Classes Table

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > QoS Profile Table**. The QoS Profile table opens.

Step 2 Choose **Configuration > Show QoS Profile** (or click the **Show QoS Profile** tool). The QoS Classes table opens. The following table provides descriptions.

Table 7-85 Field Descriptions for the QoS Classes Table

Column	Description
Match Any	Matches all the traffic. When selected, all other fields (DSCP, IP Precedence, and CoS) are disabled.
Match IP Precedence	Matches the IP precedence value. The valid range is from 0 to 7.
IP Precedence Value	Displays the IP precedence value.
Match DSCP	Matches the DSCP value. The valid range is from 0 to 63.
DSCP Value	Displays the DSCP value.
Match CoS	Matches the CoS value. The valid range is from 0 to 7.
CoS Value	Displays the CoS value.
AND	AND indicates Match All or Match Any of the traffic classifications, respectively.
OR	Selecting OR indicates Match Any of the traffic classifications (Match DSCP, Match IP Precedence, or Match CoS), respectively. The QoS profiles that are created with the OR criteria are not applied to dot1Q (subinterface).
Committed Traffic Type	Displays the committed traffic type.
Committed Rate	Displays the committed rate.
Committed Burst	Displays the committed burst size.
Committed CoS Type	Displays the committed CoS type.

Table 7-85 Field Descriptions for the QoS Classes Table (continued)

Column	Description
Committed CoS Value	Displays the committed CoS value.
Excess Action	Excess traffic action type (Discard or Allow).
Peak Rate	Peak rate value.
Peak Burst	Peak burst value.
PIR CoS Type	Displays the peak traffic CoS type (Trust or CoS Marked).
PIR CoS Value	Displays the peak traffic CoS value. The valid range is from 0 to 7.
Violate Action	Displays the violate traffic action type (Discard or Allow).
Violate CoS Value	Displays the violate traffic CoS value. The valid range is from 0 to 7.
Best Effort Type	Displays the best-effort traffic type (Line-Rate or Rate-Limited).
Best Effort Rate	Maximum rate.
Best Effort Burst	Maximum burst.

7.12 Managing DWDM Nodes

Use the tasks described in the following table to manage ONS 15454 SONET and ONS 15454 SDH DWDM nodes.

Note Internal patchcords that involve passive cards can be viewed in Prime Optical, but can only be provisioned in CTC.

Use the following procedures to manage ONS 15454 SONET and ONS 15454 SDH DWDM nodes:

- 7.12.1 Calculating DWDM Connections—ONS 15454 SONET and ONS 15454 SDH R7.2 and Earlier, page 7-331
- 7.12.2 Calculating Internal Patchcord Connections—ONS 15454 SONET and ONS 15454 SDH R8.0 and R9.0, page 7-331
- 7.12.3 Creating DWDM Connections—ONS 15454 SONET and ONS 15454 SDH R7.2 and Earlier, page 7-332
- 7.12.4 Creating Internal Patchcords—ONS 15454 SONET and ONS 15454 SDH R8.0 and Later, page 7-332
- 7.12.5 Deleting DWDM Connections or Internal Patchcords, page 7-334

7.12.1 Calculating DWDM Connections—ONS 15454 SONET and ONS 15454 SDH R7.2 and Earlier

To verify if the DWDM connection matches the connections on the DWDM design plan:

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Connections** subtab.

Step 4 Click **Calculate Connections**. The DWDM connections are displayed with the following information:

- Slot-From
- Unit-From
- Port-From
- Slot-To
- Unit-To
- Port-To
- State

7.12.2 Calculating Internal Patchcord Connections—ONS 15454 SONET and ONS 15454 SDH R8.0 and R9.0

Tip This section applies to NE releases from 8.0 to 9.0. For NE releases 9.1 and later, see 7.12.11.2 Configuring ANS on Release 9.1 and Later NEs, page 7-342.

It is possible for Prime Optical to automatically create an internal patchcord if a node is configured correctly. To calculate internal patchcord connections so the TCC card can create the internal patchcord based on the card provisioned in the node:

Note Internal patchcords that involve passive cards can be viewed but not provisioned in Prime Optical. Provisioning must be done in CTC.

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Connections** subtab.

Step 4 Click **Calculate Connections**. The internal patchcord connections are displayed with the following information:

- From—The unit or port from which the internal patchcord originates.
- To—The unit or port to which the internal patchcord terminates.
- Wavelength—Shows the wavelength value if the internal patchcord is between two channel ports. Otherwise, it shows *N/A*.

7.12.3 Creating DWDM Connections—ONS 15454 SONET and ONS 15454 SDH R7.2 and Earlier

Note Internal patchcords that involve passive cards cannot be viewed in Prime Optical for NE releases earlier than 9.3.

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Connections** subtab.

Step 4 Click **Create**. The Create Optical Link dialog box opens.

Step 5 Specify the following information:

- From Slot—Select the slot from which the DWDM connection will originate.
- From Port—Select the port from which the DWDM connection will originate.
- To Slot—Select the slot to which the DWDM connection will terminate.
- To Port—Select the port to which the DWDM connection will terminate.
- Bidirectional—Check if you want the DWDM connection to be bidirectional.

Step 6 Click **OK**.

7.12.4 Creating Internal Patchcords—ONS 15454 SONET and ONS 15454 SDH R8.0 and Later

The following section applies to NE releases from 8.0 to 9.0. On NE release 9.1 and later, the ability to create internal patchcords has been removed from CTM.

Note Internal patchcords that involve passive cards can only be created in CTC.

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Connections** subtab.

Note For OTU2_XP cards, the card name might be shown as XP_4_10G_LINE_CARD.

Step 4 Click **Create**. The Internal Patchcord wizard opens.

Step 5 Specify the following information:

- Trunk to Trunk (Layer 2)—If this radio button is selected, Prime Optical allows you to create patchcords between the trunk ports of 10GE_XP and GE_XP cards.

  Note The Layer 2 1+1 protection group is created only between client ports on GE_XP or 10GE_XP cards (in L2 over DWDM mode), and only if L2 trunk-to-trunk internal patchcords are created between the cards' trunk ports.

- OTS/OCH to OTS/OCH—If this radio button is selected, Prime Optical allows you to select an OTS or OCH port as the source and destination for the patchcord. For example, you can create OTS patchcords between an amplifier and a MUX, DMX, WSS, or WXC port. You can create OCH patchcords between TXP/MXP OCH ports.
- OCH-Trunk to OCH-Filter—If this radio button is selected, Prime Optical allows you to create patchcords from TXP trunk ports to MUX, DMX, or WSS ports.
- OCHNC Wavelength—*Available if the OCH-Trunk to OCH-Filter radio button is selected*. Specify the OCHNC wavelength.
- Bidirectional—*Available if the OTS/OCH to OTS/OCH radio button is selected.* If checked, it indicates that the patchcord is bidirectional and you need to select the ports for both directions.

Step 6 Click **Next**.

Step 7 Specify the internal patchcord source. Specify the following information; then, click **Next**:

- Shelf
- Slot
- TX port
- Reverse port

Step 8 Specify the internal patchcord destination. Specify the following information; then, click **Next**:

- Shelf
- Slot
- TX port
- Reverse port

Step 9 Review the internal patchcord summary.

Step 10 Click **Finish**.

7.12.5 Deleting DWDM Connections or Internal Patchcords

The following section applies to NE releases 9.0 and earlier. On NE release 9.1 and later, the ability to delete internal patchcords has been removed from Prime Optical.

Note Internal patchcords that involve passive cards can only be deleted in CTC.

If a DWDM connection or an internal patchcord does not match the DWDM design plan, you can delete the DWDM connection or internal patchcord.

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Connections** subtab.

Step 4 Select the DWDM connection or internal patchcord to delete.

Step 5 Click **Delete**.

Step 6 In the confirmation dialog box, click **OK**.

7.12.6 Importing Cisco MetroPlanner Configuration Files—ONS 15454 SONET and ONS 15454 SDH R6.0 and Earlier

If you have a Cisco MetroPlanner configuration file, you can import this file into the DWDM node to configure the node automatically.

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Provisioning** subtab.

Step 4 Click **Import**.

Step 5 Select the configuration file using the Open dialog box; then, click **OK**.

Step 6 Click **Apply**.

7.12.7 Provisioning DWDM Nodes Manually

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Provisioning** subtab.

Step 4 Depending on the optical type of the NE, modify the available parameters for each optical type as shown in the following table. For drop-down lists, select an item from the list. For numerics, double-click the field and type the new number.

Step 5 After making your selections, click **Apply**.

Table 7-86 ONS 15454 SONET and ONS 15454 SDH ANS Parameters—Provisioning Subtab

Parameter	Description	Options
OADM		
Network Type	Defines the DWDM network type.	The network type can be one of the following: • Metro-Core—Channels are equalized. (Cisco default value.) • Metro-Access—Channels are not equalized to minimize the number of amplifiers in the ring.
System Type	Defines the DWDM system type.	The system type can be one of the following: • SMF-28 32 Ch Control Gain (Cisco default value) • SMF-28 32 Ch Control Power • SMF-28 8 Ch Control Power • SMF-28 16 Ch Control Power
P_{in} OADM Stage	Sets the per-channel input power at the OADM stage.	–50 dBm to 30 dBm
P_{out} OADM Stage	Sets the per-channel power out at the OADM stage.	–50 dBm to 30 dBm
P_{out} Band 30.3	Sets the per-band power out for the 30.3 drop band.	–50 dBm to 30 dBm
P_{out} Band 34.2	Sets the per-band power out for the 34.2 drop band.	–50 dBm to 30 dBm
P_{out} Band 38.1	Sets the per-band power out for the 38.1 drop band.	–50 dBm to 30 dBm
P_{out} Band 42.1	Sets the per-band power out for the 42.1 drop band.	–50 dBm to 30 dBm
P_{out} Band 46.1	Sets the per-band power out for the 46.1 drop band.	–50 dBm to 30 dBm
P_{out} Band 50.1	Sets the per-band power out for the 50.1 drop band.	–50 dBm to 30 dBm

Table 7-86 ONS 15454 SONET and ONS 15454 SDH ANS Parameters—Provisioning Subtab (continued)

Parameter	Description	Options
P_{out} Band 54.1	Sets the per-band power out for the 54.1 drop band.	–50 dBm to 30 dBm
P_{out} Band 58.1	Sets the per-band power out for the 58.1 drop band.	–50 dBm to 30 dBm
Hub		
Network Type	Defines the DWDM network type.	The network type can be one of the following: • Metro-Core—Channels are equalized. (Cisco default value.) • Metro-Access—Channels are not equalized to minimize the number of amplifiers in the ring.
System Type	Defines the west-side DWDM fiber type, number of channels, and control mode.	The system type can be one of the following: • SMF-28 32 Ch Control Gain (Cisco default value) • SMF-28 32 Ch Control Power • SMF-28 8 Ch Control Power • SMF-28 16 Ch Control Power
Pdrop	Sets the expected power level on the client interface.	–50 dBm to 30 dBm
Pexpress	Sets the expected per-channel power on the pass-through interface.	–50 dBm to 30 dBm
Pout MUX Stage	Sets the per-channel power out at the multiplexing stage.	–50 dBm to 30 dBm
Terminal		
Network Type	Defines the west-side DWDM fiber type, number of channels, and control mode.	The network type can be one of the following: • SMF-28 32 Ch Control Gain (Cisco default value) • SMF-28 32 Ch Control Power • SMF-28 8 Ch Control Power • SMF-28 16 Ch Control Power
System Type	Defines the west-side DWDM fiber type, number of channels, and control mode.	The system type can be one of the following: • SMF-28 32 Ch Control Gain (Cisco default value) • SMF-28 32 Ch Control Power • SMF-28 8 Ch Control Power • SMF-28 16 Ch Control Power
Pdrop	Sets the expected power level on the client interface.	–50 dBm to 30 dBm
Pout MUX Stage	Sets the west-side per-channel power out at the multiplexing stage.	–50 dBm to 30 dBm

Table 7-86 ONS 15454 SONET and ONS 15454 SDH ANS Parameters—Provisioning Subtab (continued)

Parameter	Description	Options
Line		
Network Type	Defines the DWDM network type.	The network type can be one of the following: • Metro-Core—Channels are equalized. (Cisco default value.) • Metro-Access—Channels are not equalized to minimize the number of amplifiers in the ring.
System Type	Defines the west-side DWDM fiber type, number of channels, and control mode.	The system type can be one of the following: • SMF-28 32 Ch Control Gain (Cisco default value) • SMF-28 32 Ch Control Power • SMF-28 8 Ch Control Power • SMF-28 16 Ch Control Power

7.12.8 Provisioning the Power Level of DWDM Nodes

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Port Status** subtab.

Step 4 Click the **Launch ANS** button.

Step 5 In the confirmation dialog box, click **OK**. The Automatic Node Setup (ANS) adjusts the values of the variable optical attenuators (VOAs) to equalize the per-channel power at the amplifier level.

7.12.9 Checking the Span Loss Between DWDM Nodes

The Span Check subtab allows you to check the span loss between the selected node and the previous node in the chain. The span check is always in reception.

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Span Check** subtab.

Step 4 Click the **Retrieve Span Loss Values** button to run the span loss verification function and retrieve values for the measure span loss column.

Step 5 In the confirmation dialog box, click **OK**.

7.12.10 Managing APC Domains

The APC domain refers to a set of interconnected NEs on which to run the APC.

7.12.10.1 Viewing the APC Domain Table

In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > APC Domain Management**. The APC Domain table opens. The following table provides descriptions.

Table 7-87 Field Description for the APC Domain Table

Field	Description
Domain Name	Displays the APC domain name.
APC State	Displays the actual state of the APC. Possible values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.
APC Admin State	Displays the APC administrative state. Possible values are: • APC free to run—You can run the APC on the APC domain. • APC Force Disable—APC is disabled and you cannot run the APC on the APC domain.
Sides	Lists all the NEs and their sides that belong to the APC domain.

7.12.10.2 Running APC

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > APC Domain Management**.

Step 2 In the APC Domain table, select **Edit > Run APC** (or click the **Run APC** tool).

7.12.10.3 Viewing the APC Results

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > APC Domain Management**.

Step 2 Choose a domain from the APC Domain table and choose **Edit > APC Results** (or click the **APC Results** tool). The APC Results table opens. It contains APC data for the nodes and sides that belong to the selected domain. The following table provides descriptions.

Table 7-88 Field Descriptions for the APC Results Table

Field	Description
NE ID	Displays the ID of the node that belongs to the selected APC domain.
Side	Displays the side that belongs to the selected APC domain.
Parameter	Displays the APC parameter associated with the ports.
Last Modification	Displays the date and time when the power control setpoint was last modified.
Last Check	Displays the date and time when the power control setpoint was last verified.

7.12.10.4 Enabling and Disabling APC

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > APC Domain Management**.

Step 2 In the APC Domain table, do one of the following:

- Select **Edit > Enable APC** (or click the **Enable APC** tool) to enable APC.
- Select **Edit > Disable APC** (or click the **Disable APC** tool) to disable APC.

Caution Disabling APC should be performed only for specific maintenance actions. When APC is disabled, aging compensation calculations are not performed and circuits cannot be activated.

Step 3 Click **Yes** in the confirmation dialog box.

Step 4 Verify that the APC state of the APC domain changes to Disable.

7.12.10.5 Discovering the APC Domain

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > APC Domain Management**.

Step 2 In the APC Domain table, select **Edit > Discover APC Domain** (or click the **Discover APC Domain** tool).

7.12.11 Configuring Automatic Node Setup

You should run the Automatic Node Setup (ANS) wizard based on the input supplied by the Cisco MetroPlanner application. The Cisco MetroPlanner application generates an entire network setup/configuration based on customer requirements. The ANS wizard (launched from the Node Setup subtab) allows you to provision card and ANS parameters based on the content of an XML file that is generated by the Cisco MetroPlanner application. Using the contents of the XML file generated by the Cisco MetroPlanner application ensures that the NE configuration and optical parameters are set correctly.

You would normally run the ANS wizard when an NE has been inserted or discovered in Prime Optical (as long as Cisco MetroPlanner has been used for the customer network).

Preprovisioning is based on the output XML file that you select. The Cisco MetroPlanner application generates an XML configuration file for your network configuration. The Automatic Node Provisioning (ANP) XML file contains information that allows Prime Optical to provision:

- OPT-AMP-L role (booster/preamp)
- ANS provisioning parameters

7.12.11.1 Configuring ANS on Release 9.0 and Earlier NEs

Complete the following steps to run the ANS wizard on release 9.0 and earlier NEs:

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Node Setup** subtab. The following table provides descriptions.

Table 7-89 Field Descriptions for the Node Setup Subtab

Field	Description
XML Settings	
Select XML file	Click **Browse** to select an XML file (generated by the MetroPlanner application). Prime Optical automatically checks the XML file you select to verify that the file is formatted correctly.
Log Settings	
Select Log File	Click **Browse** to select a log file where the results of the operations you perform will be saved in ASCII format.
Launch ANS Wizard button	Click the **Launch Wizard** button to launch the ANS wizard.
ANS Node Selection	
Select Node Profile	From the list of available profiles displayed, select the node profile you want to apply to the NE.
ANS Section Selection	
Provision Card Parameters	Check the **Provision Card Parameters** check box to display the Provision Card Parameters window in the wizard. If you do not check this check box, the Provision Card Parameters window does not appear in the wizard.

Table 7-89 Field Descriptions for the Node Setup Subtab (continued)

Field	Description
Provision ANS Parameters	Check the **Provision ANS Parameter**s check box to display the Provision ANS Parameters window in the wizard. If you do not check this check box, the Provision ANS Parameters window does not appear in the wizard.
Provision Card Parameters	
Name	Name of the card parameter being set.
Value	Value of the card parameter being set.
Shelf	Shelf ID where the card is preprovisioned or equipped.
Slot	Slot number where the card is preprovisioned or equipped.
PPM	PPM number the card parameter refers to.
Log	Displays a list of commands Prime Optical executes to preprovision the card parameters.
Provision ANS Parameters	
Parameter	Name of the ANS parameter being set.
Value	Value of the ANS parameter being set.
Log	Displays a list of commands Prime Optical executes to preprovision the card parameters.
Apply button	Click the **Apply** button to begin preprovisioning. Once completed, the Log pane displays the results of the preprovisioning action. Operations that did not succeed are highlighted in red text. **Note** If a preprovisioning action fails while running the ANS wizard, the ANS wizard continues to execute (as CTC does) the remaining preprovisioning actions. Actions that did not succeed are highlighted in red text, detailing the failure and its cause. You can click the **Cancel** button to exit the ANS wizard, resolve the issue that prevented the highlighted action from executing, and then rerun the ANS wizard.
Finish button	Click the **Finish** button to close the wizard.

Note To avoid raising surplus alarms, it is recommended that you change the state of the selected NE to Under Maintenance before you perform any operations through CTC. You must change the state of the NE to Out of Service (OOS) in Prime Optical before launching the node layout preprovisioning from CTC. After the ANS execution completes successfully, you can change the state of the NE back to In Service.

Step 4 Click **Browse** to select the XML configuration file (generated by the Cisco MetroPlanner application) that you want to use to preprovision the NE. Prime Optical automatically examines the selected XML file to verify that the file is formatted correctly.

Step 5 Click **Browse** to select the log file where the results of the operations you perform will be saved.

Step 6 Click the **Launch Wizard** button. The first step of the Automatic Node Setup wizard appears. For an explanation of the fields that appear in the Automatic Node Setup wizard, see Table 7-89.

Step 7 From the list of profiles displayed, select the node profile you want to apply to the NE. The list of node profiles displayed is obtained from the XML configuration file selected in Step 4.

Step 8 Click **Next**. The ANS Selection area appears.

Step 9 Click the appropriate check boxes to select the corresponding windows you want to appear in the wizard:

- Provision Card Parameters—Check this check box to display the Provision Card Parameters window.
- Provision ANS Parameters—Check this check box to display the Provision ANS Parameters window.

Note You can check any of the check boxes displayed in the ANS Selection area as long as the corresponding information is present in the XML file. If you leave a check box unchecked, that selection does not appear in the wizard. For example, if you do not check the Provision Card Parameters check box, the corresponding window does not appear in the wizard.

Step 10 Click **Next**. Go to:

- Step 11 if you selected the Provision Card Parameters check box in Step 9.
- Step 13 if you selected the Provision ANS Parameters check box in Step 9.

Step 11 Click **Apply** to begin preprovisioning the card parameters. Once completed, the Log pane displays the results of the preprovisioning action. Operations that did not succeed are highlighted in red text.

Step 12 Click **Next**. The Provision ANS Parameters window appears if you checked the Provision ANS Parameters check box in Step 9. The name of the board parameter, its value, its shelf number, its slot, and the PPM of the board are displayed on the left side.

Step 13 Click **Apply** to begin preprovisioning the ANS parameters. Once completed, the Log pane displays the results of the preprovisioning actions. Operations that did not succeed are highlighted in red text. The Log pane displays the results of all the preprovisioning actions applied to the NEs.

Step 14 Click **Finish** to close the wizard.

7.12.11.2 Configuring ANS on Release 9.1 and Later NEs

Complete the following steps to run the ANS wizard on release 9.1 and later NEs:

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Node Setup** subtab. The following table provides descriptions.

Table 7-90 Field Descriptions for the Node Setup Subtab

Field	Description
XML Settings	
Select XML file	Click **Browse** to select an XML file (generated by the MetroPlanner application). Prime Optical automatically checks the XML file you select to verify that the file is formatted correctly.
Log Settings	
Select Log File	Click **Browse** to select a log file where the results of the operations you perform will be saved in ASCII format.

Table 7-90 Field Descriptions for the Node Setup Subtab (continued)

Field	Description
Launch ANS Wizard button	Click the **Launch Wizard** button to launch the ANS wizard.
ANS Node Selection	
Select Node Profile	From the list of available profiles displayed, select the node profile you want to apply to the NE.
Apply button	Click the **Apply** button to begin preprovisioning. Once completed, the Log pane displays the results of the preprovisioning action. You can view the action status in the Job Monitor table. (For more details, see 4.6.1.1 Viewing the Job Monitor Table, page 4-88.)
Finish button	Click the **Finish** button to close the wizard.

Note To avoid raising surplus alarms, it is recommended that you change the state of the selected NE to Under Maintenance before you perform any operations through CTC. You must change the state of the NE to Out of Service (OOS) in Prime Optical before launching the node layout preprovisioning from CTC. After the ANS execution completes successfully, you can change the state of the NE back to In Service.

Step 4 Click **Browse** to select the XML configuration file (generated by the Cisco MetroPlanner application) that you want to use to preprovision the NE. Prime Optical automatically examines the selected XML file to verify that the file is formatted correctly.

Step 5 Click **Browse** to select the log file where the results of the operations you perform will be saved.

Step 6 Click the **Launch Wizard** button. The first step of the Automatic Node Setup wizard appears. For an explanation of the fields that appear in the Automatic Node Setup wizard, see Table 7-90.

Step 7 From the list of profiles displayed, select the node profile you want to apply to the NE. The list of node profiles displayed is obtained from the XML configuration file selected in Step 4.

Step 8 Click **Apply** to begin preprovisioning the ANS parameters. Once completed, the Log pane displays the results of the preprovisioning action. You can view the action status in the Job Monitor table. (For more details, see 4.6.1.1 Viewing the Job Monitor Table, page 4-88.)

Step 9 Click **Finish** to close the wizard.

7.12.12 Creating Side Objects

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Side** subtab.

Step 4 Click **Create**. The Create Side dialog box opens.

Step 5 Specify the following:

- Side ID—Select a side ID from the drop-down list.
- Line In—Select the receive side of the OTS port from the drop-down list.
- Line Out—Select the transmit side of the OTS port from the drop-down list.

Step 6 Click **OK**.

7.12.13 Modifying Side Objects

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Side** subtab.

Step 4 Select the side to modify; then, click **Modify**. The Modify Side dialog box opens.

Step 5 Change the side ID.

Step 6 Click **OK**.

7.12.14 Deleting Side Objects

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Side** subtab.

Step 4 Select the side to delete; then, click **Delete**.

Step 5 In the confirmation dialog box, click **OK**.

7.12.15 Creating Alien Wavelength

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Alien Wavelength** subtab.

Step 4 Click **Create**. The Create Alien Wavelength dialog box opens.

In Card Selection:

- Type—Select the type of card on which the alien wavelength is configured (optical or passive)

Note Each of these card options is available only if the corresponding card type is available on the network.

- Shelf—Choose the shelf on which the card resides.
- Slot—Choose the slot in which the card resides.

Note Shelf and Slot fields are displayed only for optical cards.

- Port—Choose the card port on which the alien wavelength is configured.
- Lambda—Displays the lambda associated to the optical port.

In Settings:

- Alien Wavelength—Choose the alien wavelength class.
- FEC—Set the FEC mode on the alien wavelength channel. You may change the FEC mode. The available modes are:
  - Disabled
  - Standard
  - Enhanced
  - Enhanced I.4
  - Enhanced I.7

Step 5 Click **OK** to continue the operation, or click **Cancel**.

7.12.16 Editing Alien Wavelength

Step 1 In the Domain Explorer, select an ONS 15454 SONET or ONS 15454 SDH DWDM NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **DWDM** tab.

Step 3 Click the **Alien Wavelength** subtab.

Step 4 Select the alien wavelength to modify; then, click **Edit**.

The Edit Alien Wavelength dialog box opens.

Step 5 Change the alien wavelength class.

Click **OK** to continue the operation, or click **Cancel**.

Managing Security

This chapter describes Cisco Prime Optical security and how to manage users. This includes an overview of security domains and a description of the user security and NE security features available in Prime Optical.

This chapter contains the following sections:

- 8.1 Overview, page 8-1
- 8.2 Login Advisory Message, page 8-2
- 8.3 User Security, page 8-2
- 8.4 NE Security Management, page 8-41
- 8.5 Audit Log, page 8-72
- 8.6 Northbound Gateway Security, page 8-76

8.1 Overview

Why create a security policy?

- To create a baseline of your current security posture
- To set the framework for security implementation
- To define allowed and disallowed behaviors
- To help determine necessary tools and procedures
- To communicate consensus and define roles
- To define how to handle security incidents

The following security domains govern Prime Optical networks:

- Prime Optical client—A Prime Optical client must be created with one of the existing default user profiles or with a new custom user profile with appropriate access privileges. This new user profile should be created and assigned to a user.
- Prime Optical Operations Support System (OSS) users—OSS-to-Prime Optical sessions are configured by the Prime Optical GateWay EMS-to-NMS interface architectural component. See Chapter 12, "Managing Southbound and Northbound Interfaces" for more information about Prime Optical GateWay.

- NE users—An NE user account must be set up so Prime Optical can use it to communicate with the NE. NE user accounts are used to directly access the NE through the NE's craft tool or the command-line interface (CLI).

Prime Optical supports the following security features:

- Login advisory message
- User management and profiles
- NE access control
- Audit Log
- Northbound gateway security

8.2 Login Advisory Message

After logging into the Prime Optical client, a login advisory message is shown. By default, the advisory message reads:

```
NOTICE: This is a private computer system. Unauthorised access or use may lead to
prosecution.
```

Note The login advisory message is not shown if you login to Prime Optical through Prime Central.

You can customize the default advisory message as follows:

Step 1 Log into the Prime Optical server as the root or optusr user.

Step 2 Use a text editor to edit the OpticalPortalProperties.js file in the /opt/CiscoTransportManagerServer/tomcat/webapps/OpticalPortal/lib/xwt/nls directory. Edit the "advisory: property."

The new advisory message can contain up to 1600 characters.

Step 3 Save the changes.

All subsequent users who log into the Prime Optical client will see the new advisory message.

8.3 User Security

This section describes user security and management. This includes procedures on how to add a new user, modify a user's properties, delete a user, and end an active user session. It also includes procedures on how to add, modify, and delete custom profiles and how to perform NE user administration.

8.3.1 Restricting User Access

The **Administration > Users** menu launched from the Domain Explorer window, manages user security. Prime Optical administration allows restricted access logins to enable users to perform tasks based on detailed access privileges. For each action, a user is given read-only, read/write, or no access privileges.

8.3.2 User Privilege Profiles

By default, Prime Optical contains the following user profiles:

- SuperUser—Users who have access to all operations.
- SysAdmin—System administrators who manage Prime Optical access.
- NetworkAdmin—Typically, network operations center (NOC) supervisors who perform daily network NE operations. These operations do not include changing the NE username and password in the NE Authentication tab.
- Provisioner—Users who perform daily network surveillance, provisioning, and PM activities on specific NEs. Each provisioner can have only one active session. Provisioners cannot access administrative information.
- Operator—Users who perform daily network surveillance and PM activities on specific NEs. Each operator can have only one active session. Operators cannot access administrative information.

Prime Optical allows SuperUsers and SysAdmins to generate custom user profiles with certain privileges. Custom user profiles are grouped into categories and each category has a set of operations. After the user profiles are generated, they can be assigned to new Prime Optical users.

Note You must select the privileges for all possible operations, even for privileges related to modules that are not currently installed on the server.

8.3.3 Performing User Administration

This section describes how to perform user administration, including:

- 8.3.3.1 Viewing the Prime Optical Users Table, page 8-13
- 8.3.3.2 Creating a Prime Optical User, page 8-15
- 8.3.3.3 Modifying a Prime Optical User's Properties, page 8-18
- 8.3.3.4 Deleting a Prime Optical User, page 8-21
- 8.3.3.5 Viewing Logged In Prime Optical Users, page 8-22
- 8.3.3.6 Ending an Active Prime Optical User Session, page 8-22
- 8.3.3.7 Viewing a List of Failed Login Attempts, page 8-23
- 8.3.3.8 Locked User Account, page 8-23
- 8.3.3.8 Locked User Account, page 8-23
- 8.3.3.9 Changing Your User Password, page 8-23
- 8.3.3.10 Managing Security Advisory Messages, page 8-25
- 8.3.3.11 Setting User Preferences, page 8-26
- 8.3.3.12 Enabling or Disabling the Continuous Audible Alarm, page 8-29
- 8.3.3.13 Configuring Prime Optical Security Parameters, page 8-29
- 8.3.3.14 Sending Messages to Other Users, page 8-34
- 8.3.3.15 Viewing User Notification Messages, page 8-35

The following table lists the Prime Optical default user profiles and the privileges associated with each profile.

Note The SuperUser profile has access to all operations, and is not specifically listed in a separate column.

Note The NetworkAdmin profile has access to all NEs and groups. The SysAdmin profile has access to no NEs or groups.

Table 8-1 Prime Optical Default User Profiles

Operation	SysAdmin	NetworkAdmin	Provisioner	Operator
Domain Explorer				
File > New Group	Deny	Allow	Deny	Deny
File > Add Network Element(s)	Deny	Allow	Deny	Deny
File > Dashboard	Allow	Allow	Allow	Allow
File > Network Map	Deny	Allow	Allow	Allow
File > Subnetwork Explorer	Deny	Allow	Deny	Deny
File > Domain NE Table	Deny	Allow	Allow	Allow
File > TNE Devices	Deny	Allow	Deny	Deny
File > ENE Devices	Deny	Allow	Allow	Allow
File > Notify Users	Allow	Allow	Allow	Allow
File > Refresh Data	Allow	Allow	Allow	Allow
File > Debug Options	Allow	Allow	Allow	Allow
File > Exit	Allow	Allow	Allow	Allow
Edit > Cut	Deny	Allow	Deny	Deny
Edit > Copy	Deny	Allow	Deny	Deny
Edit > Paste	Deny	Allow	Deny	Deny
Edit > Delete	Deny	Allow	Deny	Deny
Edit > Delete All	Deny	Allow	Deny	Deny
Edit > Undelete	Deny	Allow	Deny	Deny
Edit > Expand	Deny	Allow	Allow	Allow
Edit > Collapse	Deny	Allow	Allow	Allow
Edit > Find	Deny	Allow	Allow	Allow
Edit > Find Next	Deny	Allow	Allow	Allow
Edit > User Preferences	Allow	Allow	Allow	Allow
Edit > Change Password	Allow	Allow	Allow	Allow
Fault > Alarm Browser	Allow	Allow	Allow	Allow
Fault > Alarm Log	Allow	Allow	Allow	Allow
Fault > Event Export Manager	Allow	Allow	Allow	Allow

Table 8-1 Prime Optical Default User Profiles (continued)

Operation	SysAdmin	NetworkAdmin	Provisioner	Operator
Fault > Ping NE	Deny	Allow	Allow	Allow
Fault > Test NE Connectivity	Deny	Allow	Allow	Allow
Fault > Stop Continuous Beep	Deny	Allow	Allow	Allow
Fault > SysLog Viewer	Deny	Allow	Allow	Allow
Performance > PM Query by NE Model	Deny	Allow	Allow	Allow
Performance > PM Query by Category	Deny	Allow	Allow	Allow
Performance > PM Collection Settings	Deny	Allow	Allow	Deny
Configuration > NE Explorer	Deny	Allow	Allow	Allow
Configuration > Link Table	Deny	Allow	Allow	Allow
Configuration > Create Circuit	Deny	Allow	Allow	Deny
Configuration > Manage VLANs	Deny	Allow	Allow	Deny
Configuration > Create Link	Deny	Allow	Allow	Deny
Configuration > Create Server Trail	Deny	Allow	Allow	Deny
Configuration > Compare Config Files	Deny	Allow	Deny	Deny
Configuration > *NE_Model* > BLSR Table	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Create BLSR	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > MS-SPRing Table	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Create MS-SPRing	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Equipment Inventory Table	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Initialize ML Cards	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > L2 Topology Table	—	Allow	Allow	Allow
Configuration > *NE_Model* > Create L2 Topology	—	Allow	Allow	Deny
Configuration > *NE_Model* > QoS Profile Table	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Create QoS Profile	Deny	Allow	Allow	Deny
Configuration > *NE_Model* > Discover L2 Topologies	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Alarm Profiles Management	Deny	Allow	Allow	Deny
Configuration > *NE_Model* > NE Defaults Management	Deny	Allow	Allow	Deny
Configuration > *NE_Model* > VLAN DB Profile Management	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Circuit Table	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Rolls Table	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Update Circuit	Deny	Allow	Allow	Deny
Configuration > *NE_Model* > Repair Circuit	Deny	Allow	Allow	Deny
Configuration > *NE_Model* > Configure Node	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Launch Web Interface	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Launch CLI	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Launch TL1 Interface	Deny	Allow	Allow	Allow

Table 8-1 Prime Optical Default User Profiles (continued)

Operation	SysAdmin	NetworkAdmin	Provisioner	Operator
Configuration > *NE_Model* > Launch Cisco Edge Craft	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Launch CTC	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > APC Domain Management	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Create SVLAN	Deny	Allow	Allow	Deny
Configuration > *NE_Model* > NE Discrepancy Table	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Discovery Info Table	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Resync with NE	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Template Manager	Deny	Allow	Allow	Deny
Configuration > *NE_Model* > Rediscover	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Rediscover All	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Launch IOS CLI	Deny	Allow	Allow	Allow
Configuration > *NE_Model* > Template Configuration	Deny	Allow	Deny	Deny
Configuration > PT System > Provision > Create TP Tunnel	Deny	Allow	Allow	Deny
Configuration > PT System > Provision > Create Pseudowire	Deny	Allow	Allow	Deny
Configuration > PT System > Provision > Create EVC	Deny	Allow	Allow	Deny
Configuration > PT System > Provision > QoS Provisioning	Deny	Allow	Allow	Deny
Configuration > PT System > Provision > QoS Editor	Deny	Allow	Allow	Deny
Configuration > PT System > Display > TP Tunnel Table	Deny	Allow	Allow	Deny
Configuration > PT System > Display > Pseudowire Table	Deny	Allow	Allow	Deny
Configuration > PT System > Display > EVC Table	Deny	Allow	Allow	Deny
Configuration > PT System > Advanced Troubleshooting > TP Tunnel XC Table	Deny	Allow	Deny	Deny
Configuration > PT System > Advanced Troubleshooting > Pseudowire XC Table	Deny	Allow	Deny	Deny
Configuration > PT System > Advanced Troubleshooting > EVC XC Table	Deny	Allow	Deny	Deny
Configuration > PT System > Advanced Troubleshooting > Refresh L2 Service Data Discovery	Deny	Allow	Deny	Deny
Administration > Job Monitor	Deny	Allow	Allow	Deny
Administration > Service Monitor	Allow	Deny	Deny	Deny
Administration > Self Monitor	Deny	Allow	Deny	Deny
Administration > Memory Backup	Deny	Allow	Deny	Deny
Administration > Memory Restore	Deny	Allow	Deny	Deny
Administration > Memory Backup Upload	Deny	Allow	Deny	Deny
Administration > Image Transfer	Deny	Allow	Deny	Deny
Administration > NE Software Table	Deny	Allow	Deny	Deny
Administration > Bulk Software Activation	Deny	Allow	Allow	Deny

Table 8-1 Prime Optical Default User Profiles (continued)

Operation	SysAdmin	NetworkAdmin	Provisioner	Operator
Administration > Software Management > Optical	Deny	Allow	Deny	Deny
Administration > SNTP Configuration	Deny	Allow	Deny	Deny
Administration > Bulk FTP Configuration	Deny	Allow	Allow	Allow
Administration > Users	Allow	Deny	Deny	Deny
Administration > GateWay/SNMP Users	Allow	Deny	Deny	Deny
Administration > Control Panel	Allow	Deny	Deny	Deny
Administration > Audit Log	Allow	Deny	Deny	Deny
Administration > Error Log	Allow	Allow	Deny	Deny
Administration > Supported NE Table	Allow	Allow	Deny	Deny
Administration > CTC Upgrade Table	Allow	Allow	Deny	Deny
Administration > CTC User Profiles	Allow	Allow	Deny	Deny
Administration > *NE_Model* > NE User Access Administration	Allow	Allow	Deny	Deny
Administration > *NE_Model* > Audit Trail Table	Allow	Allow	Deny	Deny
Administration > *NE_Model* > Security Advisory Management	Allow	Allow	Deny	Deny
Administration > *NE_Model* > NE Authentication	Allow	Allow	Deny	Deny
Administration > *NE_Model* > IOS Users Table	Deny	Allow	Allow	Deny
Administration > *NE_Model* > SNMPv3 Users	Allow	Allow	Allow	Allow
Administration > *NE_Model* > SNMPv3 MIB Views	Allow	Allow	Allow	Allow
Administration > *NE_Model* > SNMPv3 Group Access	Allow	Allow	Allow	Allow
Administration > *NE_Model* > SNMPv3 Trap Destinations	Allow	Allow	Allow	Allow
Administration > *NE_Model* > SNMPv3 Notification Filters	Allow	Allow	Allow	Allow
Administration > *NE_Model* > SNMPv3 Proxy Forwarder	Allow	Allow	Allow	Allow
Administration > *NE_Model* > SNMPv3 Proxy Trap Forwarder	Allow	Allow	Allow	Allow
Administration > *NE_Model* > SNMPv3 Remote Users	Allow	Allow	Allow	Allow
Administration > *NE_Model* > SNMPv3 Configuration	Allow	Allow	Allow	Allow
Administration > ONS 155XX > ONS 155XX SNMP Settings Table	Allow	Allow	Deny	Deny
Administration > ONS 155XX > Flash File Table	Allow	Allow	Deny	Deny
Network Map				
File > Open	Deny	Allow	Allow	Allow
File > Open (New Window)	Deny	Allow	Allow	Allow
File > Parent	Deny	Allow	Allow	Allow
File > Save	Deny	Allow	Allow	Allow
File > Save As Default	Deny	Allow	Deny	Deny
File > Revert To Default	Deny	Allow	Allow	Allow
File > Notify Users	Deny	Allow	Allow	Allow

Table 8-1 Prime Optical Default User Profiles (continued)

Operation	SysAdmin	NetworkAdmin	Provisioner	Operator
File > Refresh Data	Deny	Allow	Allow	Allow
File > Debug Options	Deny	Allow	Allow	Allow
File > Close	Deny	Allow	Allow	Allow
Edit > Enable Drag	Deny	Allow	Allow	Allow
Edit > Enable Offview	Deny	Allow	Allow	Allow
Edit > Change Map Background	Deny	Allow	Allow	Allow
Edit > Change Node Icon	Deny	Allow	Allow	Allow
Edit > Zoom In	Deny	Allow	Allow	Allow
Edit > Zoom Out	Deny	Allow	Allow	Allow
Edit > Zoom Area	Deny	Allow	Allow	Allow
Edit > Find	Deny	Allow	Allow	Allow
Edit > Find Next	Deny	Allow	Allow	Deny
Edit > Expand All Links	Deny	Allow	Allow	Allow
Edit > Collapse All Links	Deny	Allow	Allow	Allow
Edit > Circular Layout	Deny	Allow	Allow	Allow
Edit > Spring Layout	Deny	Allow	Allow	Allow
Edit > Table Layout	Deny	Allow	Allow	Allow
Edit > Declutter Layout	Deny	Allow	Allow	Allow
Edit > User Preferences	Deny	Allow	Allow	Allow
Edit > Change Password	Deny	Allow	Allow	Allow
Subnetwork Explorer				
File > Add New Network Partition	—	Allow	—	—
File > Add New Subnetwork	—	Allow	—	—
File > Add Network Element(s)	Deny	Deny	Deny	Allow
Alarm Browser				
Fault > Acknowledge Alarms	Allow	Allow	Allow	Allow
Fault > Acknowledge All Alarms	Allow	Allow	Allow	Allow
Fault > Clear Alarm(s)	Allow	Allow	Allow	Allow
Fault > Show Alarm Note	Allow	Allow	Allow	Allow
Fault > Hide Cleared Alarms	Allow	Allow	Allow	Allow
Fault > Hide Acknowledged Alarms	Allow	Allow	Allow	Allow
Fault > Reset All Alarms	Allow	Allow	Allow	Allow
Fault > Affected Circuits	Allow	Allow	Allow	Allow
Fault > Locate Alarm/Event	Allow	Allow	Allow	Allow
TNE Devices				
Edit > Open Tunnel	Deny	Allow	Deny	Deny

Table 8-1 Prime Optical Default User Profiles (continued)

Operation	SysAdmin	NetworkAdmin	Provisioner	Operator
Edit > Close Tunnel	Deny	Allow	Deny	Deny
Edit > Modify Tunnel	Deny	Allow	Deny	Deny
Link Table				
Edit > Modify Link	—	Allow	Allow	Deny
Edit > Delete Link	—	Allow	Allow	Deny
Configuration > Circuit Table	Deny	Allow	Allow	Allow
Configuration > Circuit Path Table	—	Allow	Allow	Deny
Configuration > Link Utilization Table	—	Allow	Allow	Deny
BLSR Table				
Edit > Edit BLSR	Deny	Allow	Allow	Deny
Edit > Delete BLSR	Deny	Allow	Allow	Deny
Edit > Upgrade BLSR	Deny	Allow	Allow	Deny
Edit > Switch BLSR	Deny	Allow	Allow	Deny
L2 Topology Table				
Configuration > Circuits	—	Allow	Allow	Allow
Configuration > ML Cards	Deny	Allow	Allow	Deny
Configuration > Create L2 Topology	—	Allow	Allow	Deny
Configuration > Modify L2 Topology	—	Allow	Allow	Deny
Configuration > Delete L2 Topology	—	Allow	Allow	Deny
Configuration > Create L2 Service	—	Allow	Allow	Deny
Configuration > Show L2 Services	—	Allow	Allow	Allow
Configuration > Modify Ports	—	Allow	Allow	Deny
Configuration > Enable L2 Service	Deny	Allow	Allow	Deny
Configuration > Add/Remove Card	Deny	Allow	Allow	Deny
Configuration > Resync L2 Topology	Deny	Allow	Allow	Deny
QoS Profile Table				
Configuration > Create QoS Profile	Deny	Allow	Allow	Deny
Configuration > Modify QoS Profile	Deny	Allow	Allow	Deny
Configuration > Delete QoS Profile	Deny	Allow	Allow	Deny
Configuration > Duplicate QoS Profile	Deny	Allow	Allow	Deny
Configuration > Show QoS Profile	Deny	Allow	Allow	Allow
Circuit Table				
Configuration > Open Circuit Span	—	Allow	Allow	Allow
Configuration > Create Circuit	—	Allow	Allow	Deny
Configuration > Modify Circuit	—	Allow	Allow	Deny
Configuration > Delete Circuit	—	Allow	Allow	Deny

Table 8-1 Prime Optical Default User Profiles (continued)

Operation	SysAdmin	NetworkAdmin	Provisioner	Operator
Configuration > High Level Trace Circuit	Deny	Allow	Allow	Deny
Configuration > Trace Circuit	—	Allow	Allow	Allow
Configuration > VLAN Table	—	Allow	Allow	Allow
Configuration > Show Circuit Note	—	Allow	Allow	Allow
Configuration > Roll Circuit	—	Allow	Allow	Deny
Configuration > Member Circuits	Allow	Allow	Allow	Allow
Configuration > Merge Table	—	Allow	Allow	Deny
Configuration > Reconfigure Circuit(s)	—	Allow	Allow	Deny
MS-SPRing Table				
Edit > Edit MS-SPRing	Deny	Allow	Allow	Allow
Edit > Delete MS-SPRing	Deny	Allow	Allow	Allow
Edit > Upgrade MS-SPRing	Deny	Allow	Allow	Allow
Edit > Switch MS-SPRing	Deny	Allow	Allow	Allow
Rolls Table				
Configuration > Complete Roll	—	Allow	Allow	Deny
Configuration > Finish Roll	—	Allow	Allow	Deny
Configuration > Cancel Roll	—	Allow	Allow	Deny
Configuration > Delete Roll	—	Allow	Allow	Deny
Configuration > Force Valid Signal	—	Allow	Allow	Deny
APC Domain				
Edit > Run APC	Deny	Allow	Allow	Deny
Edit > APC Results	Deny	Allow	Allow	Deny
Edit > Enable APC	Deny	Allow	Allow	Deny
Edit > Disable APC	Deny	Allow	Allow	Deny
Edit > Discover APC Domain	Deny	Allow	Allow	Deny
SVLAN Table				
Edit > Modify SVLAN	Deny	Allow	Allow	Deny
Edit > Delete SVLAN	Deny	Allow	Allow	Deny
Configuration > Create SVLAN	Deny	Allow	Allow	Deny
Configuration > Trace SVLAN	Deny	Allow	Allow	Deny
Configuration > Add Drop	Deny	Allow	Allow	Deny
Configuration > Delete Drop	Deny	Allow	Allow	Deny
Job Monitor Table				
Edit > Cancel Task	—	Allow	—	—
Edit > Cancel Job	—	Allow	—	—
Edit > User Note	—	Allow	—	—

Table 8-1 Prime Optical Default User Profiles (continued)

Operation	SysAdmin	NetworkAdmin	Provisioner	Operator
Edit > NE Software Table	—	Allow	—	—
NE Software Table				
Edit > Commit	—	Allow	—	—
Edit > Revert/Switch	—	Allow	—	—
Edit > Accept	—	Allow	—	—
Edit > Reset ML Cards	Deny	Deny	Deny	Deny
TP Tunnel Service Table				
Edit > Delete	Deny	Allow	Allow	Deny
Edit > View/Modify	Deny	Allow	Allow	View—Allow
				Modify—Deny
Configuration > Trace	Deny	Allow	Allow	Allow
Configuration > Pseudowire Table	Deny	Allow	Allow	Deny
PW Service Table				
Edit > Delete	Deny	Allow	Allow	Deny
Edit > View/Modify	Deny	Allow	Allow	View—Allow
				Modify—Deny
Configuration > Trace	Deny	Allow	Allow	Allow
EVC Service Table				
Edit > Delete	Deny	Allow	Allow	Deny
Edit > View/Modify	Deny	Allow	Allow	View—Allow
				Modify—Deny
Configuration > Trace	Deny	Allow	Allow	Allow
TP Tunnel XC Table				
Edit > Delete	Deny	Allow	Deny	Deny
Edit > TP Circuit Table	Deny	Allow	Deny	Deny
Configuration > Rediscover	Deny	Allow	Deny	Deny
Configuration > Refresh	Deny	Allow	Deny	Deny
Pseudowire XC Table				
Edit > Delete	Deny	Allow	Deny	Deny
Edit > Pseudowire Table	Deny	Allow	Deny	Deny
Configuration > Rediscover	Deny	Allow	Deny	Deny
Configuration > Refresh	Deny	Allow	Deny	Deny
EVC XC Table				
Edit > Delete	Deny	Allow	Deny	Deny
Edit > EVC Table	Deny	Allow	Deny	Deny
Configuration > Rediscover	Deny	Allow	Deny	Deny
Configuration > Refresh	Deny	Allow	Deny	Deny

Table 8-1 Prime Optical Default User Profiles (continued)

Operation	SysAdmin	NetworkAdmin	Provisioner	Operator
Prime Optical Users				
Edit > Create	Allow	—	—	—
Edit > Modify	Allow	—	—	—
Edit > Delete	Allow	—	—	—
Edit > Unlock	Allow	Deny	Deny	Deny
Administration > User Profiles	Allow	Deny	Deny	Deny
Administration > Logged In Users	Allow	Deny	Deny	Deny
Administration > Failed Login Attempts	Allow	Deny	Deny	Deny
Prime Optical User Profiles				
Edit > Create	Allow	Deny	Deny	Deny
Edit > View/Modify	Allow	Deny	Deny	Deny
Edit > Delete	Allow	Deny	Deny	Deny
Edit > Duplicate	Allow	Deny	Deny	Deny
Logged In Users Table				
Administration > Log Out User	Allow	Deny	Deny	Deny
OSS SNMPv3 Users Table				
Edit > Add	Deny	Deny	Deny	Deny
Edit > Modify	Deny	Deny	Deny	Deny
Edit > Delete	Deny	Deny	Deny	Deny
GateWay/CORBA Users Table				
Edit > Add	Deny	Deny	Deny	Deny
Edit > Modify	Deny	Deny	Deny	Deny
Edit > Delete	Deny	Deny	Deny	Deny
Administration > Logged In GateWay CORBA Users	Deny	Deny	Deny	Deny
Supported NE Table				
Edit > Add	Allow	Allow	—	—
Edit > Delete	Allow	Allow	—	—
CTC Upgrade Table				
Edit > Add	Allow	Allow	—	—
Edit > Activate	Allow	Allow	—	—
Edit > Delete	Allow	Allow	—	—
CTC User Profiles Table				
Edit > Create	Allow	Allow	—	—
Edit > Modify	Allow	Allow	—	—
Edit > Delete	Allow	Allow	—	—
NE User Access Administration				
Edit > Add	Allow	Allow	—	—

Table 8-1 Prime Optical Default User Profiles (continued)

Operation	SysAdmin	NetworkAdmin	Provisioner	Operator
Edit > Add Predefined Users	Allow	Allow	—	—
Edit > Modify	Allow	Allow	—	—
Edit > Delete	Allow	Allow	—	—
Edit > NE Active Users	Allow	Allow	—	—
NE Active Users Table				
Administration > Retrieve Last Activity Time	Deny	Allow	Deny	Deny
Administration > Log Out User	Deny	Allow	Deny	Deny
IOS Users Table				
Edit > Create	Deny	Allow	Allow	Deny
Edit > Modify	Deny	Allow	Allow	Deny
Edit > Delete	Deny	Allow	Allow	Deny
SNMP Community String				
Edit > Add	Allow	Allow	—	—
Edit > Delete	Allow	Allow	—	—
Edit > Modify	Allow	Allow	—	—
Flash File Table				
Edit > Verify	Allow	Allow	—	—
Edit > Delete	Allow	Allow	—	—
Edit > Undelete	Allow	Allow	—	—
Edit > Squeeze	Allow	Allow	—	—
Edit > Activate	Allow	Allow	—	—
SNMPv3 Users Table				
Edit > Add	Deny	Deny	Deny	Deny
Edit > View/Modify	Deny	Deny	Deny	Deny
Edit > Delete	Deny	Deny	Deny	Deny

8.3.3.1 Viewing the Prime Optical Users Table

The Prime Optical Users table displays basic information about Prime Optical users. The table menu options allow you to create new users, modify users, delete users, and unlock user accounts.

To view the Prime Optical Users table, choose **Administration > Users** in the Domain Explorer window. The following table provides descriptions.

Tip You can click any cell or row in the Prime Optical Users table and then type an alphanumeric character on your keyboard. The selection context jumps to the next username row that starts with that letter or number.

If there are multiple usernames that begin with the same letter or number, the selection context cycles through them. For example, if the Prime Optical Users table contains SuperUser and SysAdmin users, and you press the **s** key multiple times, the selected row toggles between SuperUser and SysAdmin.

Table 8-2 Field Descriptions for the Prime Optical Users Table

Field	Description
Username	Username of the selected Prime Optical user.
CTC Username	CTC username of the selected user. This name is used to launch CTC from Prime Optical.
User Privilege Level	User privilege level (SuperUser, SysAdmin, NetworkAdmin, Provisioner, Operator, or a custom profile).
User Domain Name	Name of the management domain where the username belongs.
Password Set Time (*time zone*)	Last time the password was set.
Locked State	Whether the user's account is locked or unlocked. If the user repeatedly tries unsuccessfully to log into the Prime Optical client (the default maximum is five attempts), the user's account is locked automatically. You can set the maximum number of login attempts a user is allowed before being locked out in the **Control Panel > Security Properties** pane.
Last Login Time (*time zone*)	Last time the user logged in.
Login Failed Attempts	Number of times the user tried to log in, but failed.
Login State	Administrative state (Enabled or Disabled) of the user.
User Description	Description of the user.
Password Change Enabled	Current state (Enabled or Disabled) of the password change option.
Multiple Login Enabled	Whether this user is allowed to perform multiple logins simultaneously.
Auto Disable Account	Number of days of nonuse that will prompt the account to be disabled automatically. The range is from 0 to 365 days, in 1-day increments. The Cisco default is 0 days, meaning the account will not be disabled automatically as a result of inactivity.

8.3.3.2 Creating a Prime Optical User

Note This functionality is disabled when Prime Optical is installed as part of Prime Central.

Use the Create New Prime Optical User wizard to add new Prime Optical users to the domain. Table 8-3 provides descriptions.

Step 1 In the Domain Explorer window, choose **Administration > Users**.

Step 2 In the Prime Optical Users table, choose **Edit > Create** (or click the **Create a New User** tool).

Step 3 In the Create New User wizard, fill in the following fields:

- Username
- User Password (and confirm password)
- User Privilege
- Domain Name
- Login State
- Password Change
- Description
- Auto Disable Account (days)
- Require Password Change on Next Login check box
- Use Global Settings check box
- Enable check box
- Period

Step 4 Click **Next**. When you are finished adding a new SuperUser, NetworkAdmin, or SysAdmin, click **Finish**.

Step 5 When adding a new Provisioner, Operator, or custom user profile, select the groups and NEs that the Provisioner or Operator will monitor. Selected groups and NEs appear in the Assigned Objects list. (SuperUsers and NetworkAdmins monitor the entire management domain, so there is no need to select groups or NEs when adding one of these users. SysAdmin users do not access any of the NEs.)

a. To assign groups, click the **Groups** radio button. In the Available Objects list, select the groups that will be assigned to the new user and click **Add**.

b. To assign NEs, click the **Network Elements** radio button. In the Available Objects list, select the NEs that will be assigned to the new user and click **Add**.

Note When individual NEs are assigned, these NEs will appear directly under the top level domain for the user in the Domain Explorer. It is possible that a given NE may have already been assigned as part of a group assignment to the user. In such a case, the same NE will appear directly under the top level domain and also within the assigned group. This behavior is consistent with the Domain Explorer's ability to represent the same group or NE within multiple locations of the hierarchy.

c. To remove groups or NEs from the Assigned Objects list, select the group or NE from the Assigned Objects list and click **Remove**.

d. Click **Next** (or **Finish**).

Step 6 When adding a new Provisioner, you can restrict the set of SONET or SDH circuit sizes that the user can provision. The selected SONET or SDH circuit sizes appear in the Assigned Circuit Sizes list.

a. To assign SONET circuits, click the **SONET** radio button. In the Available Circuit Sizes list, select the circuits that will be assigned to the user and click **Add**.

b. To assign SDH circuits, click the **SDH** radio button. In the Available Circuit Sizes list, select the circuits that will be assigned to the user and click **Add**.

c. To remove SONET or SDH circuits from the Assigned Circuit Sizes list, select the circuit size from the Assigned Circuit Sizes list and click **Remove**.

d. Click **Next** (or **Finish**).

Step 7 (Optional) In the CTC/Craft User Properties area, enter the username and password for accessing CTC-based NEs or NEs that support a TL1 interface. Then, confirm the password.

Note If the CTC/Craft User username and password have been defined for a given user, when that user launches a TL1 session to an NE that supports a TL1 interface, Prime Optical logs the user in automatically with the **ACT-USER** command, using the defined craft username and password.

Step 8 Click **Finish**.

The new user is listed in the Prime Optical Users table. For CTC-based NEs, the new user will be mapped to a CTC user but the CTC user will not be created in the NE database. To create a CTC user on the NE database, see 8.4.3 Managing NE User Access, page 8-48.

Table 8-3 Field Descriptions for the Create New Prime Optical User Wizard

Field	Description
User Properties Pane	
Username	Name that the user will use to access the system. The username must contain from three to twelve alphanumeric characters (A–Z, a–z, 0–9). Alphabetic characters are case-sensitive. The username must be unique and cannot contain spaces or special characters. **Note** After the username is set, it cannot be changed without deleting the user.

Table 8-3 Field Descriptions for the Create New Prime Optical User Wizard (continued)

Field	Description
User Password	Login password that the user will use to access the system. The password complexity is configurable in the **Control Panel > Security Properties** pane. By default, the user password must: • Contain at least six characters, but not more than 15 characters. • Contain at least two alphabetic characters (A–Z, a–z). Of the alphabetic characters, at least one must be uppercase and one must be lowercase. • Contain at least one numeric character (0–9). • Contain at least one special character (+ # % , . ; & !). The default special character set is TL1+UNIX. • Allow a special character as the first or last character. • Allow a numeric character as the first or last character. • Not contain the username or any circular shift of the username. An uppercase letter and its corresponding lowercase letter are considered equivalent. For example, if the username is Arthur, the password cannot contain the string arthur, rthura, thurar, hurart, urarth, or rarthu. • Differ from the old password by at least three characters. For example, if the old password is MikeBrady5!, the new password cannot be mikebrady5% because only the last character is different. However, the new password MikeBrady2!99 is acceptable because it differs from MikeBrady5! by three characters. **Note** By default, the minimum time between password changes is 20 days. The new password must differ from the previous password by 3 characters, and the new password is compared against the previous 10 passwords.
Confirm Password	Retype the password to confirm it.
User Privilege	User privilege level.
Domain Name	Domain name. When the user logs into the system, he or she sees all of the devices contained within this domain.
Login State	Permit (enable) or prevent (disable) the user from logging into the system.
Password Change	Permit (enable) or prevent (disable) the user from changing his or her password.
Description	Description of the new user.
Auto Disable Account (days)	Number of days of nonuse that will prompt the account to be disabled automatically. The range is from 0 to 365 days, in 1-day increments. The Cisco default is 0 days, meaning the account will not be disabled automatically as a result of inactivity.
Require Password Change on Next Login	If checked, the user is prompted to change his or her password upon next login to the Prime Optical client. If unchecked, the user is not required to change his or her password upon next login. By default, this option is checked.
Logout	Prime Optical automatically logs the user out of the Prime Optical session after the period in the Period field. Click **Use Global Settings** to use the settings from the Security window. If you do not select Use Global Settings, click **Enable** to activate logout for the selected user. Enter a logout length in the Period field.
User Login Sessions	Select whether to allow single or multiple user logins.
Assign Objects to User Pane (*for Provisioner and Operator users only*)	

Table 8-3 Field Descriptions for the Create New Prime Optical User Wizard (continued)

Field	Description
Select Object Type	Assign groups or NEs to the new user. **Note** The Discovered NEs and Deleted NEs groups cannot be assigned to a Provisioner, Operator, or custom user profile.
Select Objects	Select from the list of available objects that can be assigned to the new user. By clicking the **Add** and **Remove** buttons, you can move objects back and forth between the Available Objects list and the Assigned Objects list.
Assign Circuit Sizes to User Pane (*for Provisioner users only*)	
Select Circuit Size Type	Select the circuit types that are relevant, SONET or SDH.
Select Circuit Sizes	Select valid circuit sizes from the list of available circuit sizes. By clicking the **Add** and **Remove** buttons, you can move objects back and forth between the Available Circuit Sizes list and the Assigned Circuit Sizes list.
CTC/Craft User Properties Pane	
Username	Active username for accessing CTC-based NEs or NEs that support a TL1 interface. The username must contain at least six alphanumeric characters, but not more than 20 characters.
User Password	Login password for accessing CTC-based NEs or NEs that support a TL1 interface. The new password must: • Contain at least 6 alphanumeric characters, but not more than 10. • Contain at least two alphabetic characters (A–Z, a–z). • Contain at least one numeric character (0–9). • Contain at least one special character (+, #, or %).
Confirm Password	Retype the password to confirm it.

8.3.3.3 Modifying a Prime Optical User's Properties

Use the Modify Prime Optical User Properties wizard to modify the properties of an existing Prime Optical user. Table 8-4 provides descriptions.

Note Some fields are read-only when Prime Optical is installed as part of Prime Central.

Step 1 In the Domain Explorer window, choose **Administration > Users**.

Step 2 In the Prime Optical Users table, select the Prime Optical user whose user properties will be modified.

Step 3 Choose **Edit > View/Modify** (or click the **Modify User Properties** tool). The Modify User Properties wizard opens.

Step 4 Modify the following fields, as needed; then, click **Next**:

- User Password (and confirm password)

Note Regardless of the actual size of the old password, the Password and Confirm Password fields display only a fixed-length string. The fixed-length string contains 15 asterisks (*).

- User Privilege
- Domain Name
- Login State
- Password Change
- Description
- Auto Disable Account
- Require Password Change on Next Login check box
- Use Global Settings check box
- Enable check box
- Period
- User Login Sessions

Step 5 (Optional) For Provisioner, Operator, and custom user profiles, modify the list of assigned objects by adding groups or NEs to the Assigned Objects list or removing groups or NEs from the list. Click **Next**.

Step 6 (Optional) For Provisioners, modify the list of assigned circuit sizes by adding or removing SONET or SDH circuit sizes from the list. Click **Next**.

Step 7 (Optional) Modify the user's CTC/craft username and password for accessing CTC-based NEs or NEs that support a TL1 interface. For username and password constraints, see Table 8-4.

Step 8 Click **Finish**. The user whose properties were modified is listed in the Prime Optical Users table.

Note
- After you change the user privilege level, you receive a message that tells you that the selected user will be logged out. Click **OK**. This activity is reported in the Audit Log.
- The user whose privilege has been changed receives the message "A user with administration privileges has changed the privileges of this user. The application will be closed." The user is then logged out.
- You cannot change the user privilege of the last instance of a SysAdmin user. You must create another SysAdmin user before changing the user privilege level of the other SysAdmin user.

Table 8-4 Field Descriptions for the Modify User Properties Wizard

Field	Description
Cisco Prime Optical User Properties Pane	
Username	*Display only.* Active username for accessing the system. The username must contain from three to twelve alphanumeric characters (A–Z, a–z, 0–9). Alphabetic characters are case-sensitive. The username must be unique and cannot contain spaces or special characters. **Note** After the username is set, it cannot be changed without deleting the user.

Table 8-4 Field Descriptions for the Modify User Properties Wizard (continued)

Field	Description
User Password	Login password used to access the system. The password complexity is configurable in the **Control Panel > Security Properties** pane. By default, the user password must: • Contain at least six characters, but not more than 15 characters. • Contain at least two alphabetic characters (A–Z, a–z). Of the alphabetic characters, at least one must be uppercase and one must be lowercase. • Contain at least one numeric character (0–9). • Contain at least one special character (+ # % , . ; & !). The default special character set is TL1+UNIX. • Allow a special character as the first or last character. • Allow a numeric character as the first or last character. • Not contain the username or any circular shift of the username. An uppercase letter and its corresponding lowercase letter are considered equivalent. For example, if the username is Arthur, the password cannot contain the string arthur, rthura, thurar, hurart, urarth, or rarthu. • Differ from the old password by at least three characters. For example, if the old password is MikeBrady5!, the new password cannot be mikebrady5% because only the last character is different. However, the new password MikeBrady2!99 is acceptable because it differs from MikeBrady5! by three characters. **Note** By default, the minimum time between password changes is 20 days. The new password must differ from the previous password by three characters, and the new password is compared against the previous 10 passwords.
Confirm Password	Retype the password to confirm it.
User Privilege	User's privilege level.
Domain Name	Domain name. When the user logs into the system, he or she sees all the devices contained within this domain.
Login State	Permit (enable) or prevent (disable) the user from logging into the system.
Password Change	Permit (enable) or prevent (disable) the user from changing his or her password.
Description	User description.
Auto Disable Account	Number of days of nonuse that will prompt the account to be disabled automatically. The range is from 0 to 365 days, in 1-day increments. The Cisco default is 0 days, meaning the account will not be disabled automatically as a result of nonuse.
Require Password Change on Next Login	If checked, the user is prompted to change his or her password upon next login to the Prime Optical client. If unchecked, the user is not required to change his or her password upon next login. By default, this option is checked.
Lockout	Prime Optical automatically locks the current session after the number of minutes in the Period field. Click **Use Global Settings** to use the settings from the Security window. If you do not select Use Global Settings, click **Enable** to activate lockout for the selected user. Enter a lockout length in the Period field.
Logout	Prime Optical automatically logs the user out of the Prime Optical session after the number of minutes in the Period field. Click **Use Global Settings** to use the settings from the Security window. If you do not select Use Global Settings, click **Enable** to activate logout for the selected user. Enter a logout length in the Period field.

Table 8-4 Field Descriptions for the Modify User Properties Wizard (continued)

Field	Description
User Login Sessions	Whether to allow single or multiple user login.
Assign Objects to User Pane	
(*for Provisioner and Operator users only*)	
Select Object Type	Assign specific groups and NEs to operator and provisioner users.
Select Objects	Modify the objects that are assigned to operators and provisioners. Click **Add** and **Remove** to move objects back and forth between the Available Objects list and the Assigned Objects list.
Assign Circuit Sizes to User Pane	
(*for Provisioner users only*)	
Select Circuit Size Type	Select the circuit types that are relevant, SONET or SDH.
Select Circuit Sizes	Modify the circuit sizes that are assigned to the user. Click **Add** and **Remove** to move circuit sizes back and forth between the Available Circuit Sizes list and the Assigned Circuit Sizes list.
CTC/Craft User Properties Pane	
Username	Modify the active username for accessing CTC-based NEs or NEs that support a TL1 interface. The username must contain at least six alphanumeric characters, but not more than 20 characters.
User Password	Modify the user's login password. The user password must: • Contain at least 6 alphanumeric characters, but not more than 10. • Contain at least two alphabetic characters (A–Z, a–z). • Contain at least one numeric character (0–9). • Contain at least one special character (+, #, or %).
Confirm Password	Confirm the newly modified password by retyping it.

8.3.3.4 Deleting a Prime Optical User

Note This functionality is disabled when Prime Optical is installed as part of Prime Central.

Step 1 In the Domain Explorer window, choose **Administration > Users**.

Step 2 In the Prime Optical Users table, select the user to be deleted.

Note A user cannot be deleted from the database until that user logs out. However, an active user session can be ended. See 8.3.3.6 Ending an Active Prime Optical User Session, page 8-22.

Step 3 Choose **Edit > Delete** (or click the **Delete User** tool).

Step 4 Click **OK** to remove the user from the database.

8.3.3.5 Viewing Logged In Prime Optical Users

The Logged In Prime Optical Users table lists the Prime Optical users who are currently logged into the Prime Optical application.

Step 1 In the Domain Explorer window, choose **Administration > Users**.

Step 2 In the Prime Optical Users table, choose **Administration > Logged In Users** (or click the **Show Logged In Users** tool). The following table provides descriptions.

Table 8-5 Field Descriptions for the Logged In Users Table

Field	Description
Username	Name of the user who is currently logged in.
Logged In At	Date and time when the user logged in.
IP Address	User's IP address.
Session ID	Unique session ID number that the Prime Optical server assigns to each Prime Optical user during login.

8.3.3.6 Ending an Active Prime Optical User Session

Note If you are accessing Prime Optical through Prime Central, the Administration > Users option is disabled.

Step 1 In the Domain Explorer window, choose **Administration > Users**.

Step 2 In the Prime Optical Users table, choose **Administration > Logged In Users** (or click the **Show Logged In Users** tool).

Step 3 In the Logged In Users table, select the user whose session will be ended and choose **Administration > Log Out User** (or click the **Log Out User** tool).

Note If you are logged in as an Operator, you cannot log out a SuperUser.

Step 4 Click **Yes** at the following prompt:

```
This operation will log out the selected Prime Optical user. The process will take
approximately 1 minute and this Prime Optical client will be unusable until then. Do you
want to continue?
```

Wait while the Prime Optical server logs out the selected Prime Optical client. The Prime Optical GUI is frozen for approximately 1 minute until the request is complete.

8.3.3.7 Viewing a List of Failed Login Attempts

Step 1 In the Domain Explorer window, choose **Administration > Users**.

Step 2 In the Prime Optical Users table, choose **Administration > Failed Login Attempts** (or click the **Show Failed Login Attempts** tool). The Failed Login Attempts table opens. The following table provides descriptions.

Step 3 To unlock a locked IP address, select the IP address and choose **Administration > Unlock** (or click the **Unlock User** tool). This re-enables login attempts for the selected IP address. When an IP address is unlocked, the Login Failed Attempts value is reset to zero and the Last Login Failed Time value is set to N/A.

Table 8-6 Field Descriptions for the Failed Login Attempts Table

Field	Description
USERNAME	User name of the user who attempted to log in.
CLIENT ADDRESS	IP address of the user who attempted to log in.
TIMESTAMP	Time at which the user attempted to log into the Prime Optical client and failed.

8.3.3.8 Locked User Account

By default, Prime Optical allows users a maximum of five login attempts from the same IP address within a minute. The user account is locked after the fifth unsuccessful login attempt. The lockout duration is one minute, after which the account is automatically unlocked.

When the Prime Optical Server is shut down, it is possible to configure maximum login attempts and the time interval by modifying the settings in the throttlingContext.xml file located at the following path: PrimeOpticalServer/tomcat/webapps/SSO/WEB-INF/spring-configuration/

8.3.3.9 Changing Your User Password

Note This functionality is disabled when Prime Optical is installed as part of Prime Central.

Prime Optical users can use the Change Password dialog box to change their Prime Optical passwords. The password change applies to the Prime Optical user who is currently logged in. There is an enforced password change request when the default user logs in for the first time. If the user does not change the password, the Prime Optical session is canceled.

Note

- The password complexity is configurable in the **Control Panel > Security Properties** pane.
- It is possible to set up the user account such that the change password function is disabled. See the description of the Password Change field in 8.3.3.2 Creating a Prime Optical User, page 8-15.

Complete the following steps to change your user password:

Step 1 In the Prime Optical web client window, choose **Administration > Change Password**.

Step 2 To change the Prime Optical password:

a. In the Change Password dialog box, enter the current password in the Current Password field.

b. Enter the new password in the New Password field. For password constraints, see Table 8-7.

c. Confirm the new password.

Table 8-7 Field Descriptions for the Change Password Dialog Box

Field	Description
Password	
Current Password	Enter the old user password.
New Password	Enter the new login password. The password complexity is configurable in the **Control Panel > Security Properties** pane. By default, the new password must: • Contain at least six characters, but not more than 15 characters. • Contain at least two alphabetic characters (A–Z, a–z). Of the alphabetic characters, at least one must be uppercase and one must be lowercase. • Contain at least one numeric character (0–9). • Contain at least one special character (+ # % , . ; & !). The default special character set is TL1+UNIX. • Allow a special character as the first or last character. • Allow a numeric character as the first or last character. • Not contain the username or any circular shift of the username. An uppercase letter and its corresponding lowercase letter are considered equivalent. For example, if the username is Arthur, the password cannot contain the string arthur, rthura, thurar, hurart, urarth, or rarthu. • Differ from the old password by at least three characters. For example, if the old password is MikeBrady5!, the new password cannot be mikebrady5% because only the last character is different. However, the new password MikeBrady2!99 is acceptable because it differs from MikeBrady5! by three characters. **Note** By default, the minimum time between password changes is 20 days. The new password must differ from the previous password by 3 characters, and the new password is compared against the previous 10 passwords.
Confirm Password	Retype the password to confirm it.

8.3.3.10 Managing Security Advisory Messages

Use the Security Advisory Message Management wizard to choose a CTC-based NE from which a security advisory message can be loaded. The wizard then provides you with a list of NEs where the user can download this security message. When you click **Finish**, Prime Optical schedules a job for this action, and the security message downloaded to each selected NE is tracked as a separate task on the Job Monitor table.

Step 1 In the Domain Explorer window, choose **Administration > CTC-Based NEs > Security Advisory Management**. The Security Advisory Message Management wizard opens. The following table provides descriptions.

Step 2 Select the NE where the security advisory message exists.

Step 3 Click the **Text** tab to view the existing security advisory message on the selected NE. If no message exists, you can use this field to enter a new message.

Step 4 Click **Next**.

Step 5 Use the **Add** and **Remove** buttons to move NEs to or from the Selected NE(s) list.

Step 6 Click **Finish**.

Note You can also use the NE Explorer node view to set the security advisory message for CTC-based NEs. In the node properties pane, click the **Security** tab. In the **Legal Disclaimer** subtab, there is a default advisory message that is noncustomer-specific. Change the text if you want the disclaimer to be specific for your company. In the **Preview** subtab, you can view the advisory message before saving it. Click **Apply**.

Table 8-8 Field Descriptions for the Security Advisory Message Management Wizard

Field	Description
Select an NE to View the Security Advisory Message Pane	
Select NE	NE where the security advisory message exists. **Note** If you opened the Security Advisory Message Management wizard after selecting an NE, only that NE will appear in this list.

Table 8-8 Field Descriptions for the Security Advisory Message Management Wizard (continued)

Field	Description
Text	Security advisory message present on the selected NE. If no message exists, you can use this tab to enter a new message. You can use the following HTML commands to format the text: Begins boldface font Ends boldface font Aligns type in the center of the window Ends the center alignment <font=*n*, where *n* = point size> Changes the font to the new size Ends the font size command <p> Creates a line break _{Begins subscript } Ends subscript ^{Begins superscript } Ends superscript <u> Starts underline </u> Ends underline
Preview	View the advisory message before saving it.
Save the Security Advisory Message Pane	
Available NE(s)	Select one or more NEs in the Available NE(s) list and click **Add** to move them to the Selected NE(s) list. The advisory message is saved for the NEs in the Selected NE(s) list.
Selected NE(s)	Select one or more NEs in the Selected NE(s) list and click **Remove** to move them to the Available NE(s) list.

8.3.3.11 Setting User Preferences

Use the User Preferences dialog box to configure the Prime Optical user interface.

Step 1 In the Domain Explorer window, choose **Edit > User Preferences**. The User Preferences dialog box opens. The following table provides descriptions.

Step 2 After specifying the settings, check the **Save Current Settings** check box to preserve the current settings even after logging out. Users with the appropriate privileges can check the **Save as Default User Template** check box to save the current settings as the default for new users who are added in the future. Current users who have not altered their default settings adopt the new default settings when they log out.

Step 3 Click **OK** to save the settings. After you save the selections, all subsequent views use the saved preferences.

Table 8-9 Field Descriptions for the User Preferences Dialog Box

Field	Description
Event Notification Tab	
Show Notification Dialog For	Select whether an alert popup displays when a specific alarm or event occurs on NEs in your management domain or on the EMS. You can specify the alarm severity that will generate an alert popup, and whether to include cleared alarms. **Note** Selections that apply to NEs are allowed only if you have NEs assigned to you. Selections that apply to the EMS are allowed only if you have the appropriate user privilege.
Play Audible Notification For	Select whether an audible alert sounds when a specific alarm or event occurs on an NE or on the Prime Optical application. You can specify the alarm severity that will generate an audible alert, and whether to include cleared alarms. Check the **Continuous Alarm for Dashboard Notifications** check box to enable continuous audible notification whenever a new update occurs in the Dashboard window. Uncheck this check box to disable continuous audible notifications. **Note** Selections that apply to NEs are allowed only if you have NEs assigned to you. Selections that apply to the EMS are allowed only if you have the appropriate user privilege.
Miscellaneous Tab	
Display Log/15-Min PM Data For	Change the time period used to display time-sensitive data in 15-minute increments. **Note** This field is visible only if you have read permission for the Performance Monitor operation. **Note** If you change the time setting from a shorter time period to a longer time period (for example, from Past 4 Hours to Past 30 Days), you must click **Refresh Data** in the log window to retrieve the data, even if the Auto Refresh feature is enabled. This behavior is by design, because if there are thousands of nodes under management, it takes a long time to retrieve the data. Prime Optical does not begin retrieving the data until you click **Refresh Data** manually.
Display 1-Day PM Data For	Change the time period used to display time-sensitive data in 24-hour increments. **Note** This field is visible only if you have read permission for the Performance Monitor operation.
Table Export Encoding	Change the encoding to use when you export a table to a text file. Options are: • Default—The encoding (that is, the translation from a character to the sequence of 0s and 1s that represent it in byte format) used by default. Default encoding depends on various factors, including the locale and the region of the Operating System (OS) running on the machine. Default encoding can only write characters belonging to that specific locale and region. Default encoding has the advantage that all OS applications can correctly read the text file generated by this encoding. • UTF-8—Unicode Transformation Format-8 (UTF-8) is an octet (8-bit) lossless encoding of unicode characters. It encodes each character as a variable number of 1 to 4 octets, where the number of octets depends on the integer value assigned to the unicode character. UTF-8 is the default encoding for XML. UTF-8 is an encoding independent from OS, locale, and region; is standardized by the Unicode consortium; and can write any unicode character in 1, 2, or 3 bytes, depending on the character itself.

Table 8-9 Field Descriptions for the User Preferences Dialog Box (continued)

Field	Description
Enable Refresh Data Timer	The automatic Refresh Data feature automatically refreshes all data being displayed by Prime Optical. You receive the following prompt: `Refresh Data action suggested. This action will result in closing all windows and might take some time. Do you want to continue? {Yes | No}` In an unstable environment where NEs are synchronizing or NEs change their operational state frequently, you might receive the preceding prompt continuously. To disable the prompt, uncheck the **Enable Refresh Data Timer** check box.
Do Not Display User Profile Creation Warning Messages	Enable or disable the warning dialog box that pops up when you click **Finish** after creating or modifying a user profile. The warnings are still visible in the User Profile table.
Enable NE Aliases	When checked, it allows you to view the alias names for the following attributes: • Node ID • Link name • Circuit name The alias name can be displayed instead of the NE ID in the following windows: • Domain Explorer—Tree and Identification tab of the Network Element Properties pane • Subnetwork Explorer—Tree and Identification tab of the Network Element Properties pane • Network Map
Time Preferences Tab	
Note This functionality is disabled when Prime Optical is installed as part of Prime Central.	
Time Display	Select 12-hour format or 24-hour format for the display of time information. Options are: • 12 Hour—Displays time information in 12-hour format; for example, 01:30 PM. • 24 Hour—Displays time information in 24-hour format; for example, 13:30. • Use System Locale—Displays time information in 12-hour format or 24-hour format, depending on the default for the system locale.
Time Zone for Date	Select the time zone for the date display (*month/day/year* or *day/month/year*). Options are: • Local—Displays the date according to the time zone that is configured on the workstation where the Prime Optical client is running. • GMT—Displays the date according to the GMT time zone (*day/month/year*). • User Defined—Specify a fixed offset from GMT. The offset range is –12 to +13 hours from GMT, in one-hour increments. For offsets other than zero, specify a display string of four characters maximum.
Map Preferences Tab	
Open Network Map in New Window	Within network map views, this setting specifies whether to open subsequent frames in the same window, or open a new window for subsequent map views.
Show Off-View Icons	Within map views, this setting enables or disables the display of off-view icons. If an NE has a link defined to an NE on a different map, the off-view NE is represented by an off-view icon. The off-view icon serves as a hyperlink to the map that contains the NE at the opposite end of the link. Off-view icons are used only for links that terminate on an NE; off-view icons are not used for subnetworks or groups.

Table 8-9 Field Descriptions for the User Preferences Dialog Box (continued)

Field	Description
Minimum Icon Size	Specify a fixed and locked pixel size for icons in network maps. Choices are 8x8, 16x16, 24x24, and 32x32. Regardless of the zoom level, the map icon size does not change when it is set to a fixed size. By default, the icon size is variable based on the zoom level. The icon size setting is saved with the other map settings.
FM Preferences Tab	
Color Entire Row in Table View	Set the Alarm Browser or Alarm Log to full background color for the entire selected row. The color corresponds to the alarm status and severity.
Enable Export of Entire Table	Enable or disable the ability to export the entire contents of the Alarm Browser or the Alarm Log. It might take longer to open the Alarm Browser or Alarm Log with the export entire table feature enabled.

8.3.3.12 Enabling or Disabling the Continuous Audible Alarm

Step 1 In the Domain Explorer window, choose **Edit > User Preferences**. The User Preferences dialog box opens.

Step 2 In the Event Notification tab > Play Audible Notification For area, check the **Continuous Alarm For Dashboard Notifications** check box.

Step 3 Click **OK**.

Step 4 To disable the continuous audible alarm, choose **Fault > Stop Continuous Beep** in the Domain Explorer window.

8.3.3.13 Configuring Prime Optical Security Parameters

Use the Security Properties pane to configure Prime Optical security parameters and password complexity rules. You can also specify usernames and passwords for the ONS 15216 EDFA2, ONS 15216 EDFA3, ONS 15216 OADM, ONS 155xx, ONS 15305 CTC, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, ONS 15600 SDH, CPT 200, CPT 200 SDH, CPT 600, and CPT 600 SDH.

Note

- Passwords that are already in the system are not affected by modifications to the password complexity rules. The password complexity rules are checked when:
  - A privileged user adds a new user to the system
  - A privileged user modifies an existing user's password
  - A user changes his or her own existing password

- Regardless of the actual length of the password, the Password and Confirm Password fields display only a fixed-length string of 15 asterisks (*).

Complete the following steps to configure Prime Optical security properties:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Security Properties** and set the parameters described in the following table. Tabs shown depend on the modules that are installed.

Note If there are many tabs displayed in the properties pane, select the arrow or Show List icons to view all available tabs.

Step 3 Click **Save**.

Table 8-10 Field Descriptions for the Security Properties Pane

Field	Description
Security Tab	
Note This functionality is disabled when Prime Optical is installed as part of Prime Central.	
Password Aging Area	
Password Aging	Number of days before the password expires. The user is prompted to change the password after the specified number of days. The range is from 0 to 3650 days; the Cisco default is 30 days. A value of 0 disables this feature.
Password Expiration Early Notification	Allows you to configure an early warning period for password expiration. Enter the number of days before the warning in the Password Expiration Early Notification field. Prime Optical supports values of 0 to (password aging - 1), with a maximum of 30. For example, if the password aging is configured for 30 days, the maximum early notification value would be 29 days. A value of 0 disables this feature.
Client Inactivity Timer Settings Area	
Logout Enable	If checked, Prime Optical automatically logs the user out of the Prime Optical session after the period in the Logout Period field.
Logout Period	Number of minutes a user's Prime Optical session is inactive before Prime Optical automatically logs the user out. The range is from 1 to 1440 minutes in 1-minute increments.
Prime Optical Password Rules Tab	
Note This functionality is disabled when Prime Optical is installed as part of Prime Central.	
Password Change Rules Area	
Interval Between Password Change	Number of days a user must wait between password changes. The range is from 0 to 99 days; the Cisco default is 1 day. A value of 0 disables this feature.
Differ From Previous Password by *n* Characters	Number of characters by which the new password must differ from the previous one. The range is from 1 to 5 characters; the Cisco default is 3 characters.
Compare Against Previous *n* Passwords	Number of previously used passwords to compare against the new password. The range is from 0 to 15 passwords; the Cisco default is 5 passwords. A value of 0 disables this feature.

Table 8-10 Field Descriptions for the Security Properties Pane (continued)

Field	Description
Password Complexity Rules Area	
Minimum Password Length	Minimum password length. The range is from 2 to 10 characters; the Cisco default is 6 characters.
Maximum Password Length	Maximum password length. The range is from 10 to 15 characters; the Cisco default is 12 characters.
Number of Alphabetic Characters	Minimum number of alphabetic characters that the password must include. The range is from 0 to 2; the Cisco default is 2 alphabetic characters.
Number of Lowercase Alphabetic Characters	Minimum number of lowercase alphabetic characters that the password must include. The range is from 0 to 2; the Cisco default is 1 lowercase character.
Number of Uppercase Alphabetic Characters	Minimum number of uppercase alphabetic characters that the password must include. The range is from 0 to 2; the Cisco default is 1 uppercase character.
Number of Numeric Characters	Minimum number of numeric characters that the password must include. The range is from 0 to 2; the Cisco default is 1 numeric character.
Number of Special Characters	Minimum number of special characters that the password must include. The range is from 0 to 2; the Cisco default is 1 special character.
Special Character Set to Use	Special character set to use: • TL1—Special characters permitted are + # % • UNIX—Special characters permitted are , . ; % & ! • TL1+ UNIX—(Cisco default) Special characters permitted are , . ; % & ! + # • ASCII—Special characters permitted are @ ` ! " # $ % & ' ( ) * : + ; [{ , < \ | - =] } . > ^ ~ / ? _
Allow Special First or Last Character	If checked, a special character is allowed as the first or last character in the password. If unchecked, the first or last character in the password cannot be a special character.
Allow Numeric First or Last Character	If checked, a numeric character is allowed as the first or last character in the password. If unchecked, the first or last character in the password cannot be a number.
Allow User ID Circular Shift	If checked, the user ID or a circular shift of the ID can be used in the password. If unchecked, the user ID or a circular shift of the ID cannot be used in the password.
ONS 15216 EDFA2 Tab	
Username	Username that the Prime Optical server uses to connect to ONS 15216 EDFA2 NEs.
Password	Password to use for Prime Optical server connections to ONS 15216 EDFA2 NEs.
Confirm Password	Re-enter the password to confirm it.
ONS 15216 EDFA3 Tab	
Server - NE Connection Username	Username that the Prime Optical server uses to connect to ONS 15216 EDFA3 NEs. **Note** The ONS 15216 EDFA3 has a TL1 interface and multiple usernames can be defined for authentication. Each username can be used for only one active connection. A second connection with the same username is not allowed. The current user must log out before another user can log in with that username.
Password	Password to use for Prime Optical server connections to ONS 15216 EDFA3 NEs.
Confirm Password	Re-enter the password to confirm it.

Table 8-10 Field Descriptions for the Security Properties Pane (continued)

Field	Description
Prime Optical Server - FTP Connection Username	Username that the Prime Optical server uses to connect to FTP for software download, memory backup, and memory restore. **Caution** An FTP account must already exist on the server in order for the file transfer to work correctly.
Password	Password to use for Prime Optical server connections to FTP.
Confirm Password	Re-enter the password to confirm it.
FTP Directory	Absolute path for the FTP directory, beginning with a forward slash (/).
ONS 15216 OADM Tab	
Server - NE Connection Username	Username that the Prime Optical server uses to connect to ONS 15216 OADM NEs. **Note** The ONS 15216 OADM has a TL1 interface and multiple usernames can be defined for authentication. Each username can be used for only one active connection. A second connection with the same username is not allowed. The current user must log out before another user can log in with that username.
Password	Password to use for Prime Optical server connections to ONS 15216 OADM NEs.
Confirm Password	Re-enter the password to confirm it.
CTC-Based SDH Tab	
Username	Username that the Prime Optical server uses to connect to ONS 15305 CTC, ONS 15310 MA SDH, ONS 15454 SDH, ONS 15600 SDH, CPT 200 SDH, and CPT 600 SDH NEs. By default, NEs are configured with the username *CISCO15*. **Note** The account specified on the NE for Prime Optical to use must be a SuperUser-level account. For the ONS 15310 MA SDH and ONS 15454 SDH, this tab also contains Username fields for Prime Optical server connections to ML-series cards and for Prime Optical server connections to TL1 tunnel NEs. **Note** The default username is configured as *CISCO15* for the ML cards specified in the default Cisco IOS configuration file. The Cisco IOS configuration file is included in the Prime Optical server installation CD (misc/bareboneCLI_Security.txt). By default, the username for all connections is configured as *CISCO15*.
Password	Password to use for Prime Optical server connections. For the ONS 15454 SDH, this is also the password to use for ML-series card and TL1 tunnel NE connections. **Note** The default password is configured as CTM123+ for the ML cards specified in the default Cisco IOS configuration file.
Confirm Password	Re-enter the password to confirm it.
CTC-Based SONET Tab	

Table 8-10 Field Descriptions for the Security Properties Pane (continued)

Field	Description
Username	Username that the Prime Optical server uses to connect to ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, ONS 15600 SONET, CPT 200, and CPT 600 NEs. By default, NEs are configured with the username *CISCO15*. **Note** The account specified on the NE for Prime Optical to use must be a SuperUser-level account. For the ONS 15310 CL, ONS 15310 MA SONET, and ONS 15454 SONET, this tab also contains a Username field for Prime Optical server connections to ML-series cards. For the ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, and ONS 15454 SONET, this tab also contains a Username field for Prime Optical server connections to TL1 tunnel NEs.
Password	Password to use for Prime Optical server connections. For the ONS 15310 CL, ONS 15310 MA SONET, and ONS 15454 SONET, this tab also contains a Password field for Prime Optical server connections to ML-series cards. For the ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, and ONS 15454 SONET, this tab also contains a Password field for Prime Optical server connections to TL1 tunnel NEs.
Confirm Password	Re-enter the password to confirm it.
CTC-Based SDH and CTC-Based SONET Tabs	
Server - SNMP Connection Area	
Note After changing the field values in the Server - SNMP Connection area, mark the NEs as Out of Service and then In Service.	
SNMPv3	Check this check box to use SNMPv3. If unchecked, Prime Optical uses SNMPv1/v2.
Username	Name of the Prime Optical user who is enabled for SNMPv3 communication.
Authentication Protocol	Select the authentication protocol to use for authenticating the SNMPv3user. Values are None, MD5, or SHA.
Authentication Password	Enter the password used to authenticate the SNMPv3 user. The password must contain: • From 1 to 12 characters • At least one special character other than an apostrophe (') • At least two letters (A-Z, a-z), including at least one uppercase letter • At least one number (0-9) Regardless of the actual length of the password, the Password and Confirm Password fields display only a fixed-length string of 15 asterisks (*).
Confirm Authentication Password	Re-enter the authentication password to confirm it.
Privacy Protocol	Select the privacy protocol for the SNMPv3 user. You can choose one of the following: • NONE—No privacy protocol for the user. • DES—Use Data Encryption Standard (DES) for encryption.
Privacy Password	Enter the password used to decrypt the message payload.
Confirm Privacy Password	Re-enter the privacy password to confirm it.
CRS Tab	
Username	Username that the Prime Optical server uses to connect to CRS NE.

Table 8-10 Field Descriptions for the Security Properties Pane (continued)

Field	Description
Password	Password to use for Prime Optical server connections to CRS NE.
Confirm Password	Re-enter the password to confirm it.

8.3.3.14 Sending Messages to Other Users

Use the Notify Users dialog box to type and send a message to all Prime Optical users, or to all Prime Optical users with the same user privileges. For example, you might want to alert all users before shutting down the Prime Optical server.

The following table provides descriptions.

Step 1 In the Domain Explorer window, choose **File > Notify Users**. The Notify Users dialog box opens.

Step 2 In the Message Targets area, select the recipients of the message.

Step 3 Type the message in the Message area.

- To send the message to the specified recipients, click **Send**.
- To cancel the message and close the dialog box, click **Cancel**.
- To launch the online help for the Notify Users dialog box, click **Help**.

Table 8-11 Field Descriptions for the Notify Users Dialog Box

Field	Description
Message Targets	Select recipients for your message. This list includes the default NetworkAdmin, Operator, Provisioner, SuperUser, and SysAdmin profiles, as well any custom user profile that has been generated. You can select custom and multiple profiles by using the Shift and Control keys while clicking the profile, or click the **All Users** radio button to send your message to all users, regardless of user type.
Message	Type your message. The maximum length is 512 characters. If you enter a message that is longer than 512 characters, only the first 512 characters are sent.

8.3.3.15 Viewing User Notification Messages

The User Notification dialog box pops up on your screen when another user sends a message to a certain user profile or to all Prime Optical users, and you belong to one of those groups. The following table provides descriptions.

Table 8-12 Field Descriptions for the User Notification Dialog Box

Field	Subfield	Description
Message Received	From	Username of the user who sent you the message.
	Time	Date and time when you received the message.
Message	—	Text of the message. The maximum message length is 512 characters.

8.3.4 Managing Prime Optical User Profiles

The following sections describe how to view, add, modify, delete, and duplicate a Prime Optical user profile.

8.3.4.1 Viewing User Profiles

The Prime Optical User Profiles table displays basic information about Prime Optical user profiles. Use the menu options to manage user profiles.

Step 1 In the Domain Explorer window, choose **Administration > Users**.

Step 2 In the Prime Optical Users table, choose **Administration > User Profiles** (or click the **Launch User Profiles Table** tool). The following table provides descriptions.

Table 8-13 Field Descriptions for the Prime Optical User Profiles Table

Field	Description
User Profile Name	Name of the existing Prime Optical user profiles.
NE Assignment	NE assignment for the selected user profile. NE assignments are: • Assign all NEs—SuperUser, NetAdmin • Assign NEs—Operator, Provisioner • Assign No NEs—SysAdmin
Default Login Sessions	Number of permitted simultaneous logins assigned to the user profile: • 1—Only one user with a given profile can log into a specific Prime Optical server at a time. • 2 to 10—The specified number of users (2 to 10) with a given profile can log into a specific Prime Optical server simultaneously. • Unlimited—An unlimited number of users with a given profile can log into a specific Prime Optical server simultaneously.
User Profile Description	Description of the user profile.

8.3.4.2 Adding a Custom User Profile

Use the Create New User Profile wizard to add Prime Optical user profiles. Table 8-14 provides descriptions.

Step 1 In the Domain Explorer window, choose **Administration > Users**.

Step 2 In the Cisco Prime Optical Users table, choose **Administration > User Profiles** (or click the **Launch User Profiles Table** tool).

Step 3 In the Cisco Prime Optical User Profiles table, choose **Edit > Create** (or click the **Create a New User Profile** tool).

Step 4 In the Create New User Profile wizard, specify the following:

- User profile name
- NE assignment
- Max user sessions allowed
- Description

Step 5 Click **Next**.

Step 6 Select a user profile category from the Categories area. Operations for each category are displayed on the right side of the Categories area.

Step 7 Specify user capabilities by setting permission or privileges for one or all operations. When setting privileges for each operation, select one of the following radio buttons:

- Read Only
- Read/Write

- No Access

When setting privileges for all operations, select one of the following buttons:

- Set All Read Only
- Set All Read/Write
- Set All No Access

Note The user profile operations displayed on the right side of the Create New User Profile wizard depend on the category selected. You can select the root node to see all the operations for all categories.

Step 8 Click **Finish**.

Step 9 Click **Yes** in the message box. (The message box will not be displayed if it is disabled in the User Preferences dialog box. See 8.3.3.11 Setting User Preferences, page 8-26 for more information.)

Table 8-14 Field Descriptions for the Create New User Profile Wizard

Field	Description
User Profile Name	Enter the name of the new user profile. The profile name must contain from six to twenty alphanumeric characters (A–Z, a–z, 0–9). Alphabetic characters are case-sensitive. The profile name must be unique in Prime Optical and cannot contain spaces or special characters.
NE Assignment	The NE assignment for the new user profile. Values are: • Assign All NEs—SuperUser, NetworkAdmin • Assign NEs—Operator, Provisioner • Assign No NEs—SysAdmin
Max User Sessions Allowed	Select **1** to allow only one user with the selected user profile to log into a specific Prime Optical server. Select a number other than 1 to allow the specified number of users to log into a specific Prime Optical server simultaneously. Select **Unlimited** if you do not want to restrict the number of users with the selected profile from logging into a specific server simultaneously.

Table 8-14 Field Descriptions for the Create New User Profile Wizard (continued)

Field	Description
Description	Enter a description of the new user profile.
User Profile Privileges	Set user privileges for specific Prime Optical categories. Select a category in the left panel to display that category's available operations. Select an operation from the Operations column; then, select a user privilege for the selected operation from the radio buttons in the Privileges column. • Set All Read Only—Specifies that the user can only view information related to all the operations with Read Only privilege listed under the specified category. All other operations will be set to No Access. • Set All Read/Write—Specifies that the user can view and perform any of the operations with Read/Write privilege listed under the specified category. All other operations will be set to Read Only. • Set All No Access—Specifies that the user is not allowed to perform any of the operations with No Access privilege listed under the specified category. All other operations will be set to Read Only. The Warning column lists the dependencies between various operations. After you click **Finish** to create the new user profile, a warning dialog box lists all of the warning messages. If you check the **Don't Display User Profile Creation Warning Messages** check box, the warning dialog box does not appear for subsequent user profile creations in the current client session. If you check the **Don't Display User Profile Creation Warning Messages** check box in the User Preferences dialog box, the warning dialog box is disabled as specified for the current user or as a template for new users.

8.3.4.3 Modifying a User Profile

Use the Modify User Profile wizard to modify Prime Optical user profiles. Table 8-15 provides descriptions.

Note Users created with a certain profile cannot be changed to another profile. To change profiles, the user must be deleted, then recreated with the new profile.

Note Modifying a profile will log out all users who are logged in with that profile.

Step 1 In the Domain Explorer window, choose **Administration > Users**.

Step 2 In the Cisco Prime Optical Users table, choose **Administration > User Profiles** (or click the **Launch User Profiles Table** tool).

Step 3 In the Cisco Prime Optical User Profiles table, click the profile to modify; then, choose **Edit > View/Modify** (or click the **View/Modify User Profile Properties** tool).

Step 4 In the Modify User Profile wizard, modify the following:

- NE assignment
- Max user sessions allowed
- Description

Step 5 Click **Next**.

Step 6 Select a user profile category from the Categories area. Operations for each category are displayed on the right side of the Categories area.

Step 7 Specify user capabilities by setting permission or privileges on one or all operations. When setting privileges for each operation, select one of the following radio buttons:

- Read Only
- Read/Write
- No Access

When setting privileges for all operations, select one of the following buttons:

- Set All Read Only
- Set All Read/Write
- Set All No Access

Note The user profile operations displayed on the right side of the Modify User Profile wizard depend on the category selected. You can select the root node to see all the operations for all categories.

Step 8 Click **Finish**.

Step 9 Click **Yes** in the message box. (The message box will not be displayed if it is disabled in the User Preferences dialog box. See 8.3.3.11 Setting User Preferences, page 8-26 for more information.)

Table 8-15 Field Descriptions for the Modify User Profile Wizard

Field	Description
User Profile Name	*Display only.* Name of the user profile. The profile name must contain from six to twenty alphanumeric characters (A–Z, a–z, 0–9). Alphabetic characters are case-sensitive. The profile name must be unique in Prime Optical and cannot contain spaces or special characters.
NE Assignment	The NE assignment for the user profile. Values are: • Assign all NEs—SuperUser, NetAdmin • Assign NEs—Operator, Provisioner • Assign No NEs—SysAdmin Only Assign NEs is available for new profiles, meaning that NEs or groups must always be assigned to the new profile.
Max User Sessions Allowed	Select **1** to allow only one user with the selected user profile to log into a specific Prime Optical server. Select a number other than 1 to allow the specified number of users to log into a specific Prime Optical server simultaneously. Select **Unlimited** if you do not want to restrict the number of users with the selected profile from logging into a specific server simultaneously.

Table 8-15 Field Descriptions for the Modify User Profile Wizard (continued)

Field	Description
Description	Modify the description of the user profile.
User Profile Privileges	Modify selected user privileges for specific Prime Optical categories. Select a category in the left panel to display that category's available operations. Select an operation from the Operations column, then select a user privilege for the selected operation from the radio buttons in the Privileges column. • Set All Read Only—Specifies that the user can only view information related to all the operations with Read Only privilege listed under the specified category. All other operations will be set to No Access. • Set All Read/Write—Specifies that the user can view and perform any of the operations with Read/Write privilege listed under the specified category. All other operations will be set to Read Only. • Set All No Access—Specifies that the user is not allowed to perform any of the operations with No Access privilege listed under the specified category. All other operations will be set to Read Only. The Warning column lists the dependencies between various operations. After you click **Finish** to modify the user profile, a warning dialog box lists all of the warning messages. If you check the **Don't Display User Profile Creation Warning Messages** check box, the warning dialog box does not appear for subsequent user profile modifications in the current client session. If you check the **Don't Display User Profile Creation Warning Messages** check box in the User Preferences dialog box, the warning dialog box is disabled as specified for the current user or as a template for new users. **Note** Topology modification is not allowed for custom users.

8.3.4.4 Deleting a User Profile

Step 1 In the Domain Explorer window, choose **Administration > Users**.

Step 2 In the Cisco Prime Optical Users table, choose **Administration > User Profiles** (or click the **Launch User Profiles Table** tool).

Step 3 In the Cisco Prime Optical User Profiles table, select the profile you want to delete; then, choose **Edit > Delete** (or click the **Delete User Profile** tool).

Step 4 In the confirmation dialog box, click **OK**.

Note The default user profiles (SuperUser, SysAdmin, NetworkAdmin, Provisioner, and Operator) cannot be deleted. Custom user profiles cannot be deleted if they are assigned to any user. Delete the user with the custom user profile before deleting the user profile. See 8.3.3.4 Deleting a Prime Optical User, page 8-21.

8.3.4.5 Duplicating a User Profile

Use the Create Duplicate Profile window to duplicate an existing Prime Optical user profile.

Step 1 In the Domain Explorer window, choose **Administration > Users**.

Step 2 In the Cisco Prime Optical Users table, choose **Administration > User Profiles** (or click the **Launch User Profiles Table** tool).

Step 3 In the Cisco Prime Optical User Profiles table, select the profile you want to duplicate; then, choose **Edit > Duplicate** (or click the **Duplicate User Profile** tool).

Step 4 In the Create Duplicate Profile dialog box, enter the duplicate profile name. See the following table for name constraints.

Step 5 Click **OK**.

Table 8-16 Field Descriptions for the Create Duplicate Profile Window

Field	Description
Duplicate Profile Name	The name of the duplicate user profile must contain from six to twenty alphanumeric characters (A–Z, a–z, 0–9). Alphabetic characters are case-sensitive. The profile name must be unique in Prime Optical and cannot contain spaces or special characters.

8.4 NE Security Management

This section describes NE security, including setting authentication on an NE, setting up a security policy, using log tables, and managing NE user access.

8.4.1 Setting NE Authentication

Use the NE Authentication dialog box to select the security properties (username and password for each authentication session) for multiple NEs. For each ONS 15000 NE that supports authentication, there is a specific Security tab in the Control Panel window.

Step 1 In the Domain Explorer window, choose **Administration > CTC-Based NEs**, **ONS 15216**, **ONS 155XX > NE Authentication**. The NE Authentication dialog box opens. The following table provides descriptions. Fields shown depend on the NE that is selected.

Step 2 Specify the NEs that you will set a username and password authentication for. Click **Add** to add NEs to the Selected NEs list, or click **Remove** to remove NEs from the list.

Step 3 In the Server - NE Connection area, enter the following information:

Note The username and password that you enter must have Superuser privileges on the node to enable full Prime Optical access to the NE.

- Enable—Check the **Enable** check box to set a username and password that the Prime Optical server will use to establish a connection with the selected NEs.
- Username
- Password (and confirm password)

Step 4 In the Server - TL1 Tunnel GNE Connection area, enter the following information:

- Enable—Check the **Enable** check box to set a GNE TL1 target identifier (TID), username, and password that the Prime Optical server will use to establish a connection with the GNE and reach the selected tunnel NE (TNE).
- GNE TID
- Username
- Password (and confirm password)

Step 5 Click **Save**.

Table 8-17 Field Descriptions for the NE Authentication Dialog Box

Field	Description
Network Elements Area	
Available NEs	List of available NEs.
Selected NEs	List of selected NEs.
Server - NE Connection Area	
Enable	If checked, allows a connection between the Prime Optical server and the NE.
Username	Enter a username for the selected NEs. This field is unavailable if the Enable check box is not checked.
Password	Enter the password for the username. This field is unavailable if the Enable check box is not checked.
Confirm Password	Retype the password. This field is unavailable if the Enable check box is not checked.
Server - TL1 Tunnel GNE Connection Area	
Enable	If checked, specifies a GNE TID, username, and password that the Prime Optical server will use to log into the GNE to set up a TL1 tunnel with the selected TNEs.
GNE TID	Enter the TID of the GNE for the selected TNEs. This field is unavailable if the Enable check box is not checked.
Username	Enter a username for the GNE for the selected TNEs. This field is unavailable if the Enable check box is not checked.
Password	Enter the password for the GNE for the selected TNEs. This field is unavailable if the Enable check box is not checked.
Confirm Password	Retype the password. This field is unavailable if the Enable check box is not checked.

Note You can also set the NE authentication username and password in the **Domain Explorer > Network Element Properties** pane **> NE Authentication** tab. When changing the username or password of an NE, mark that NE as Out of Service and then In Service.

Note If the username and password fields in the NE Authentication tab are left blank, Prime Optical uses the username and password defined in the Control Panel.

8.4.2 Setting Up a Security Policy

You can set up a security policy for CTC-based NEs.

Step 1 Select a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the NE node.

Step 3 In the node properties pane of the NE Explorer window, click the **Security** tab.

Step 4 Complete the following information in the **Policy** subtab:

- In the Idle User Timeout area:
  - Retrieve—Set the idle user timeout for a CTC Retrieve user.
  - Maintenance—Set the idle user timeout for a CTC Maintenance user.
  - Provisioner—Set the idle user timeout for a CTC Provisioner user.
  - SuperUser—Set the idle user timeout for a CTC SuperUser.

  Note Idle time can be from zero to 16 hours, 39 minutes (999 minutes). To deactivate the Idle User Timeout, enter zero as the idle time. A user already logged into the node is not affected by a change to the Idle User Timeout policy.

- In the User Lockout area:
  - Manual Unlock By SuperUser—If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
  - Lockout Duration—Set the lockout duration period for locked out CTC users. This field is only enabled if the Manual Unlock by SuperUser check box is unchecked.
  - Failed Logins Allowed—Set the number of failed logins before the CTC user is automatically locked out.
- In the Other area:
  - Single Sessions Per User—If checked, each CTC user can only launch one session at a time.
  - Disable Inactive User—If checked, inactive users will be disabled automatically.
  - Inactive Duration—If Disable Inactive User is checked, specify the inactive duration. The range is from 1 to 99 days; the Cisco default is 45 days.

Step 5 Complete the following information in the **Password** subtab:

- In the Password Change area:
  - Prevent Reusing Last—Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused.

- Disable Password Flipping—If checked, users cannot change passwords for the number of days specified in the Can Change Password After field.
- Can Change Password After—Enter the number of days that must elapse before the user can change the password.
- Force Password Change After Assigned—If checked, during the first successful login, the user is forced to change the password.
- Password Difference—Enter the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1. The range is from 1 to 5 characters.

- In the Password Aging Area:
  - Enable Password Aging—Check this check box to enable password aging.
  - Aging Period—Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
  - Warning Period—Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

Step 6 Complete the following information in the **Access** subtab for all CTC-based NEs R5.0 or earlier:

- In the Access area:
  - LAN Access—Specify the type of LAN access allowed. Values are Backplane Only, No LAN Access, Front and Backplane, or Front Only.

    Note After setting the LAN access to the backplane, the Prime Optical client is unusable for 4 to 5 minutes.

  - Restore Timeout—This time period begins if No LAN Access is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
- In the Shell Access area:
  - Shell Access On—Specify shell access on Telnet or SSH.
  - Telnet Port—This is enabled if you selected the Telnet radio button. Enter the Telnet port number.
  - SSH Port—*Display only.* Indicates the SSH port number that will be used if the SSH radio button is selected.
- In the Other area:
  - PM Clearing Privilege—Select the user privilege that allows clearing PM statistics for the NE.

Step 7 Complete the following information in the **Access** subtab for all CTC-based NEs R6.0 or later:

- In the Access area:
  - LAN Access—Specify the type of LAN access allowed. Values are Backplane Only, No LAN Access, Front and Backplane, or Front Only.

Note After setting the LAN access to the backplane, the Prime Optical client is unusable for 4 to 5 minutes.

  - Restore Timeout—This time period begins if No LAN Access is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.

- In the Serial Craft Access area:
  - Enable Craft Port—Check this check box to enable the craft port.
- In the Shell Access area:
  - Access State—Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.
  - SSH Port—*Display only.* Indicates the SSH port number that will be used.
  - SFTP Port—*Display only.* Indicates the SFTP port number that will be used.
  - Telnet Port—This is enabled if you selected the **Non-secure** access state. Enter the Telnet port number that will be used.
  - Use Standard Telnet Port—Check this check box to indicate that the standard Telnet port will be used.
  - Enable Shell Password—*Display only.* Indicates whether the Shell password is enabled. You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
- In the EMS Access area:
  - Access State—Select the EMS access state from the drop-down list. You can select either Non-secure or Secure. Then, click **OK** at the following warning message:

    ```
    When you change the EMS access mode of the NE, Prime Optical resynchronizes the NE
    connections during the next health poll. If you make provisioning changes to the
    NE before the resynchronization is complete, the changes might not be saved. Wait
    for the resynchronization to complete before making any provisioning changes to
    the NE.
    ```

    Note When you change the state from Secure to Non-secure or vice versa, the NE might reboot or resynchronize to reflect the changes. During this time, if you try to reapply the other state (Secure to Non-secure or vice versa), the changes might not be saved. The operation requires time to execute successfully.

  - CORBA Listener Port—Select the port numbers for the TCC CORBA (IIOP) listener port and the TCC CORBA (SSLIOP) listener port. Select one of the following radio buttons:

    Default-Fixed—Assign a default port number.

    Standard Constant—The port number for the TCC CORBA (IIOP) listener port is 683. The port number for the TCC CORBA (SSLIOP) listener port is 684.

    Other Constant—When selected, enter the port number that will be used.
- In the TL1 Access area:
  - Access State—Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.

- In the SNMP Access area:
  - Access State—Select the SNMP access state from the drop-down. You can select either Disable or Non-secure.
- In the Other area:
  - PM Clearing Privilege—Select the user privilege that allows clearing PM statistics for the NE.

Step 8 Complete the following in the **RADIUS Server** subtab for all CTC-based NEs R6.0 or later:

- Enable RADIUS Authentication—Check this check box if you want to enable RADIUS authentication.
- Enable RADIUS Accounting—Check this check box if you want to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
- Enable the Node as the Final Authenticator When no RADIUS Server is Reachable—Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when no other RADIUS servers can be reached.
- Enable Access Challenge—Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that you are enabling access challenge in the RADIUS server that you selected.

  The following table describes the fields in the RADIUS Servers in Order of Authentication table.

  Click the **Up** and **Down** buttons to reorder the list of RADIUS servers in the table.

  See 8.4.2.1 Managing RADIUS Servers, page 8-46 for information on how to create, modify, and delete RADIUS servers. You can create a maximum of 10 RADIUS server entries.

Step 9 Complete the following in the **Legal Disclaimer** subtab:

- In the **Advisory Message** subtab, there is a default advisory message that is noncustomer-specific. Change the text if you want the disclaimer to be specific for your company.
- In the **Preview** subtab, you can view the advisory message before saving it.

Step 10 Click **Apply**.

Table 8-18 Field Descriptions for the RADIUS Servers in Order of Authentication Table

Field	Description
IP Address	IP address of the RADIUS server.
Shared Secret	Shared secrets are preshared keys that have been allocated to the communicating parties (the NE and the AAA server) prior to the start of the communication process. Transactions between the NE and the AAA server are authenticated through the use of the shared secret.
Authentication Port	Authentication port number.
Accounting Port	Accounting port number.

8.4.2.1 Managing RADIUS Servers

8.4.2.1.1 Creating a RADIUS Server

Step 1 Select a CTC-based NE R6.0 or later and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the NE node.

Step 3 In the properties pane of the NE Explorer window, click the **Security** tab > **RADIUS Server** subtab.

Step 4 Click **Create**.

Step 5 In the Create New RADIUS Server dialog box, enter the following information:

- IP address
- Shared secret
- Authentication port
- Accounting port

Step 6 Click **OK**. The new RADIUS server is added to the RADIUS Servers in Order of Authentication table. You can create a maximum of 10 RADIUS server entries.

8.4.2.1.2 Modifying a RADIUS Server

Step 1 Select a CTC-based NE R6.0 or later and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the NE node.

Step 3 In the properties pane of the NE Explorer window, click the **Security** tab **> RADIUS Server** subtab.

Step 4 From the RADIUS Servers in Order of Authentication table, select a RADIUS server to modify; then, click **Edit**.

Step 5 In the Edit RADIUS Server dialog box, modify the following information:

- IP address
- Shared secret
- Authentication port
- Accounting port

Step 6 Click **OK**. Changes to the RADIUS server appear in the RADIUS Servers in Order of Authentication table.

8.4.2.1.3 Deleting a RADIUS Server

Step 1 Select a CTC-based NE R6.0 or later and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the NE node.

Step 3 In the properties pane of the NE Explorer window, click the **Security** tab > **RADIUS Server** subtab.

Step 4 From the RADIUS Servers in Order of Authentication table, select a RADIUS server to delete; then, click **Delete**.

Step 5 Click **Yes** in the confirmation dialog box.

8.4.3 Managing NE User Access

You can view, add, modify, and delete user accounts for CTC-based ONS 15216 EDFA3 NEs.

8.4.3.1 Viewing the CTC-Based NE User Access Administration Table

The NE User Access Administration table displays information about the existing users on the NEs that are selected from the Prime Optical domain.

To view the NE User Access Administration table, choose **Administration > CTC-Based NEs > NE User Access Administration**. The following table provides descriptions.

Table 8-19 Field Descriptions for the NE User Access Administration Table

Field	Description
Alias ID	Alias name of the NE.
NE Username	Username of the NE user.
NE User Privilege (*CTC-based NEs only*)	Privilege level of the user. For CTC-based NEs, user privileges are Retrieve, Maintenance, Provisioning, and Superuser.
Lock Out	Whether the NE user is locked out of the NE.
Last Login Time	Time stamp when the NE user most recently logged in.
Failed Login Count	Number of times the NE user failed to log into the NE successfully.
Disabled	Whether the NE user's access to the NE has been disabled.
Password Change on Next Login	Whether the NE user is required to change his or her password upon the next login to the NE.
NE ID	Unique ID representing the NE.

8.4.3.2 Viewing the NE User Access Administration Table—ONS 15216 EDFA3 NEs

The NE User Access Administration table displays information about the existing users on the NEs that are selected from the Prime Optical domain.

To view the NE User Access Administration table, choose **Administration > ONS 15216 > NE User Access Administration**. The following table provides descriptions.

Table 8-20 Field Descriptions for the NE User Access Administration Table

Field	Description
NE ID	Unique ID representing the NE.
NE Username	Username of the NE user.
NE User Privilege	Privilege level of the user. User privileges are Read Only, Read/Write, and Read/Write/Administrative.
Timeout	Length of the timeout period (in minutes) based on the user privilege. When a timeout occurs, the corresponding session is terminated, because no messages were exchanged for a defined period of time. • For Read Only users, the Cisco default timeout is 60 minutes. • For Read/Write users, the Cisco default timeout is 30 minutes. • For Read/Write/Administrative users, the Cisco default timeout is 15 minutes.

8.4.3.3 Filtering NE User Access Administration Table Data

Step 1 In the NE User Access Administration table, choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog box opens.

Step 2 Specify the filter parameters described in the following table.

Step 3 After making your selections, click **OK** to run the filter.

Table 8-21 Field Descriptions for the NE User Access Administration Table Filter

Field	Description
NE ID	Move NEs back and forth between the list of available NEs and selected NEs. The filter runs on the NEs in the Selected NE ID list.
User ID	Move users back and forth between the list of available users and selected users. The filter runs on the users in the Selected User ID list.
User Privilege	Select the user privilege levels for filtering.

8.4.3.4 Adding an NE User

Use the Add NE User wizard to add new users to ONS 15216 EDFA3, or CTC-based NEs. Table 8-22 provides descriptions.

Note Only users with Read/Write/Administrative privileges can add a new user to the ONS 15216 EDFA3.

Step 1 In the Domain Explorer window, choose **Administration > CTC-Based NEs** or **ONS 15216 > NE User Access Administration**. The NE User Access Administration table opens.

Step 2 Choose **Edit > Add** (or click the **Create a New User** tool) for CTC-based or ONS 15216 EDFA3 NEs. The Add NE User wizard opens.

Step 3 In the Network Elements area, choose the NEs from the Available NEs list that the new user will have access to and click **Add**. These NEs will appear in the Selected NEs list. If you want to remove NEs that the new user has access to, select the NEs from the Selected NEs list and click **Remove**.

Step 4 Click **Next**.

Step 5 Set the new user account:

- Username
- Password (and verify password)
- Privilege (for CTC-based and ONS 15216 EDFA3 NEs)

Step 6 Click **Add**. Each new user is added in the Selected Users Profile list.

Step 7 To remove a new user from the Selected Users Profile list, select the user profile and click **Remove**.

Step 8 Click **Finish**. The result of this activity can be monitored in the Job Monitor table.

Step 9 In the confirmation dialog box, click **OK**.

Note The addition of an NE user account cannot be scheduled for an NE that is marked as Out of Service. The NE is not available in the list of NEs.

The addition of an NE user account can be scheduled for an NE that is marked as In Service and with a communication state of Unavailable. The job will remain in the Job Monitor table in Waiting status and will be executed once the NE becomes available. This job cannot be canceled while in Waiting status.

Table 8-22 Field Descriptions for the Add NE User Wizard

Field	Description
NE Selection Task	
NE Model	Selected NE model.
Network Elements	List of available and selected NEs. Select one or more NEs from the Available NEs list and click **Add** to add them to the Selected NEs list. Select one or more NEs from the Selected NEs list and click **Remove** to remove them from the Selected NEs list.
User Profile Selection Task	

Table 8-22 Field Descriptions for the Add NE User Wizard (continued)

Field	Description
Username	Username for the new user. • For CTC-based NEs, the username must conform with the username rules specified as the NE defaults. To view the username rules, launch the NE Explorer and click the **NE Defaults** tab. • For ONS 15216 EDFA3 NEs, the username must contain at least 6 but not more than 10 alphanumeric characters. ONS 15216 EDFA3 NEs support only a single TL1 session for each username.
New Password	User password. • For CTC-based NEs, the password must conform with the user password rules specified as the NE defaults. To view the user password rules, launch the NE Explorer and click the **NE Defaults** tab. • For ONS 15216 EDFA3 NEs, the password must contain at least 7 but not more than 10 ASCII characters, where at least two characters are nonalphabetic and at least one character is a special character (+, #, %). For example, *jpasswd#1* is an acceptable password. The password cannot contain the username. For example, if the username is *CISCO15*, the password cannot be *CISCO15#*. The password is case-sensitive.
Verify/Confirm Password	Re-enter the password to confirm it.
Privilege (*for CTC-based and ONS 15216 EDFA3 NEs*)	Privilege level for the new NE user. • For CTC-based NEs, privilege levels are Retrieve, Maintenance, Provisioning, and Superuser. • For ONS 15216 EDFA3 NEs, privilege levels are Read Only (R), Read/Write (RW), and Read/Write/Administrative (RWA). The timeout period is based on the user privilege. When a timeout occurs, the corresponding session is terminated, because no messages were exchanged for a defined period of time. – Read Only: The user can monitor the state of an NE, but cannot issue provisioning commands. The Cisco default timeout is 60 minutes. – Read/Write: The user can receive notifications, read information, and provision the NE. The user cannot carry out system administrative tasks. The Cisco default timeout is 30 minutes. – Read/Write/Administrative: The user can receive notifications, read information, provision the NE, carry out system administrative tasks, and perform user management. The Cisco default timeout is 15 minutes.
Selected Users Profile	List of new NE users. You can click **Remove** to remove the selected NE user.

8.4.3.5 Adding a Predefined User

Use the Add Predefined User wizard to add a predefined Prime Optical user from an NE or from the NE User Access Administration table. Table 8-23 provides descriptions.

Note The Add Predefined User wizard is not available for ONS 15216 EDFA3 NEs.

Step 1 In the Domain Explorer window, choose **Administration > CTC-Based NEs > NE User Access Administration**. The NE User Access Administration table opens.

Step 2 For CTC-based NEs, choose **Edit > Add Predefined Users**.

Step 3 In the Add Predefined User wizard, do the following:

a. Select the area from which you will choose the predefined NE user. In the Existing NE User Selection area, click one of the following:

- **From NE**—To choose predefined users of a specific NE.
- **From Prime Optical User Table**—To choose predefined users associated with the Prime Optical user in the Prime Optical User table.
- **From CTC User Profile Table**—To choose predefined users associated with the CTC user in the CTC User Profile table.

b. If you chose to select users from an NE, in the NE Selection area, choose the NE from the **Select NE to pick users from** drop-down list. If you chose to select from the Prime Optical User table, this field is unavailable.

c. If you chose to select users from an NE, specify and verify the password in the Specify User Password area. This password will be applied to all the users selected in the next window. If you chose to select from the Prime Optical User table, you can force a password to the user by checking the **Force Password** check box, then specifying and verifying the password.

d. Specify the user privilege. If you chose to select users from an NE, you can force a privilege to the user by checking the **Force Privilege** check box.

This privilege will be applied to all the users selected in the next window.

Step 4 Click **Next**.

Step 5 Select the predefined users. Use the **Add** and **Remove** buttons to add or remove users in the Selected Users list.

Step 6 Click **Next**.

Step 7 Specify the NEs that the new user will have access to. Use the **Add** and **Remove** buttons to add or remove NEs in the Selected NEs list.

Step 8 Click **Finish**. The result of this activity can be monitored in the Job Monitor table.

Step 9 In the confirmation dialog box, click **OK**.

Table 8-23 Field Descriptions for the Add Predefined User Wizard

Field	Description
Predefined User Property Selection Task	
Existing NE User Selection	Choose whether to add the new user from the selected NE, from the Prime Optical User table, or from the CTC User Profile table.
NE Selection	Select the NE from which to choose a user. **Note** This field is dimmed if you selected From Prime Optical User Table or From CTC User Profile Table in the Existing NE User Selection area.
Force Password	If enabled, forces the predefined user to use a password when logging in. **Note** This field is dimmed if you selected From NE or From CTC User Profile Table in the Existing NE User Selection area.
Password	Enter the login password that the user will use to access the system. For CTC-based NEs, the password must conform with the password rules specified as the NE defaults. To view the password rules, launch the NE Explorer and click the **NE Defaults** tab. **Note** This field is dimmed if you select From CTC User Profile Table in the Existing NE User Selection area.
Confirm Password	Confirm the user password by retyping it.
Force Privilege	If enabled, forces the predefined user to use a specific user privilege level when logging in. **Note** This field is dimmed if you select From Prime Optical User Table or From CTC User Profile Table in the Existing NE User Selection area.
Privilege	Set the appropriate user privilege level. For CTC-based NEs, privilege levels are Retrieve, Maintenance, Provisioning, and Superuser.
Predefined User Selection Task	
Available Users	Select one or more users from the list and click **Add** to add them to the Selected Users list. Only the users in the Selected Users list will be added.
Selected Users	Select one or more users from the list and click **Remove** to remove them from the Selected Users list. Only the users in the Selected Users list will be added.
NE Selection Task	
Available NEs	Select one or more NEs from the list and click **Add** to add them to the Selected NEs list. Users are added only to the NEs in the Selected NEs list.
Selected NEs	Select one or more NEs from the list and click **Remove** to remove them from the Selected NEs list. Users are added only to the NEs in the Selected NEs list.

8.4.3.6 Modifying an NE User Profile

Use the Modify NE User wizard to make changes to existing NE users. Table 8-24 provides descriptions.

Note Only users with Read/Write/Administrative privileges can modify a user's password and privilege level on the ONS 15216 EDFA3.

Step 1 In the Domain Explorer window, choose **Administration > CTC-Based NEs** or **ONS 15216 > NE User Access Administration**. The NE User Access Administration table opens.

Step 2 Select a user from the list. Choose **Edit > View/Modify** (or click the **Modify User Properties** tool) for CTC-based and ONS 15216 EDFA3 NEs.

Step 3 In the Modify NE User wizard, modify the following information (as needed). Fields shown depend on the NE selected:

- Username
- Old Password (available only when the selected user is active)
- New Password (and verify password)
- Privilege (for CTC-based and ONS 15216 EDFA3 NEs)
- Lock Out
- Disabled
- Change Password on Next Login
- Modify User on Multiple NEs check box

Note You cannot modify the Privilege, Lock Out, Disabled, and Change Password on Next Login fields if the selected user is active.

Step 4 Do one of the following:

a. If you did not check Modify User on Multiple NEs, proceed to the next step.

b. If you checked Modify User on Multiple NEs, click **Next**. Select the NEs that the modified user can or cannot access.

Step 5 Click **Finish**. The result of this activity can be monitored in the Job Monitor table.

Step 6 In the confirmation dialog box, click **OK**.

Step 7 If you are modifying the profile of a user who is currently logged in, click **OK** in the warning message. Changes to the NE user profile will take effect on the user's next login attempt.

Note

- You cannot modify an existing NE user account for an NE that is marked as Out of Service. You can select the NE's records in the NE User Access Administration table, but when you try to modify the account, you will receive an error message telling you that you cannot perform the operation.
- You can schedule modification of an existing NE user account for an NE that is marked as In Service but is unavailable. The job remains in Waiting status in the Job Monitor table and is executed when the NE becomes available. You cannot cancel the job.

Table 8-24 Field Descriptions for the Modify NE User Wizard

Field	Description
Username	For the ONS 15216 EDFA3, edit the username. **Note** For CTC-based NEs, the username is display only; it cannot be modified without deleting the user.
Old Password	Enter the old user password. This field is available only when the selected user is active.
New Password	Modify the user password. • For CTC-based NEs, the password must conform with the password rules specified as the NE defaults. To view the password rules, launch the NE Explorer and click the **NE Defaults** tab. • For ONS 15216 EDFA3 NEs, the password must contain at least 7 but not more than 10 ASCII characters, where at least two characters are nonalphabetic and at least one character is a special character (+, #, %). For example, *jpasswd#1* is an acceptable password. The password cannot contain the username. For example, if the username is *CISCO15*, the password cannot be *CISCO15#*. The password is case-sensitive.
Verify/Confirm Password	Re-enter the modified password to confirm it.
Privilege (*for CTC-based and ONS 15216 EDFA3 NEs*)	Modify the privilege level of the user. • For CTC-based NEs, privilege levels are Retrieve, Maintenance, Provisioning, and Superuser. • For ONS 15216 EDFA3 NEs, privilege levels are Read Only, Read/Write, and Read/Write/Administrative. **Note** You cannot modify this field if the selected user is active.
Timeout (*for ONS 15216 EDFA3 NEs*)	*Display only.* View the length of the timeout period (in minutes) based on the user privilege. When a timeout occurs, the corresponding session is terminated, because no messages were exchanged for a defined period of time. • For Read Only users, the Cisco default timeout is 60 minutes. • For Read/Write users, the Cisco default timeout is 30 minutes. • For Read/Write/Administrative users, the Cisco default timeout is 15 minutes.
Lock Out	Check this check box to lock out the NE user. **Note** You cannot modify this field if the selected user is active.
Disabled	Check this check box to permanently disable the user from logging back into Prime Optical. **Note** You cannot modify this field if the selected user is active.

Table 8-24 Field Descriptions for the Modify NE User Wizard (continued)

Field	Description
Change Password on Next Login	Check this check box to force the NE user to change his or her password on the next login. **Note** You cannot modify this field if the selected user is active.
Modify User on Multiple NEs	Check this check box to modify the profile for multiple NEs. The NEs are selected in the next panel.

8.4.3.7 Deleting an NE User

Step 1 In the Domain Explorer window, choose **Administration > CTC-Based NEs** or **ONS 15216 > NE User Access Administration**. The NE User Access Administration table opens.

Step 2 Select a user from the list and choose **Edit > Delete** (or click the **Delete User** tool) for CTC-based and ONS 15216 EDFA3 NEs.

Note You cannot delete a user who is currently logged in. For CTC-based NE users, you must first log out the user from the Active NE Users table. See 8.4.3.10 Ending an Active NE User Session, page 8-59. For ONS 15216 EDFA3 NE users, you must wait for the user to log out before deleting that user.

Note Only users with Read/Write/Administrative privileges can delete an ONS 15216 EDFA3 user.

Step 3 Click **Yes** in the confirmation dialog box.

Step 4 Click **OK** in the message box.

Note You cannot delete an existing NE user account for an NE that is marked as Out of Service. You can select the NE's records in the NE User Access Administration table, but when you try to delete the account, you will receive an error message telling you that you cannot perform the operation.

Note You can schedule deletion of an existing NE user account for an NE that is marked as In Service but is unavailable. The job remains in Waiting status in the Job Monitor table and is executed when the NE becomes available. You cannot cancel the job.

8.4.3.8 Viewing Active NE Users

The NE Active Users table displays information about the users who are currently logged into selected NEs in Prime Optical. Table 8-25 provides descriptions. Fields shown depend on the NE selected.

Note The ONS 15216 EDFA3 supports up to 20 user accounts with up to 11 simultaneous Telnet user connections. Each user can open only one connection at a time.

Step 1 In the Domain Explorer window, choose **Administration > CTC-Based NEs** or **ONS 15216 > NE User Access Administration**. The NE User Access Administration table opens.

Step 2 For CTC-based and ONS 15216 EDFA3 NEs, choose **Edit > NE Active Users** (or click the **Show NE Active Users** tool). The NE Active Users table opens.

Step 3 For CTC-based NEs, choose **Administration > Retrieve Last Activity Time** (or click the **Retrieve Last Activity Time** tool) to refresh the Last Activity Time field for the current list of active users, if the activity time has changed.

Table 8-25 Field Descriptions for the NE Active Users Table

Field	Description
Alias ID	Alias name of the NE.
NE Username	Name of the user.
Client IP Address (*CTC-based NEs only*)	IP address of the client workstation from which the user has logged in.
Session Type (*CTC-based NEs only*)	Type of active user session (EMS, Telnet, and so on). Prime Optical and CTC sessions are identified as "EMS." This field applies only to the following CTC-based NEs: • ONS 15310 CL R6.0 and later • ONS 15310 MA SDH • ONS 15310 MA SONET R7.0 and later • ONS 15327 R6.0 and later • ONS 15454 SDH R6.0 and later • ONS 15454 SONET R6.0 and later • ONS 15600 SONET R6.0 and later

Table 8-25 Field Descriptions for the NE Active Users Table (continued)

Field	Description
Last Activity Time (*CTC-based NEs only*)	Date and time when the last activity was performed by the active user on the NE. This field applies only to the following CTC-based NEs: • ONS 15310 CL R6.0 and later • ONS 15310 MA SDH • ONS 15310 MA SONET R7.0 and later • ONS 15327 R6.0 and later • ONS 15454 SDH R6.0 and later • ONS 15454 SONET R6.0 and later • ONS 15600 SONET R6.0 and later
Login Time (*CTC-based NEs only*)	Date and time when the active user logged into the NE. This field applies only to the following CTC-based NEs: • ONS 15310 CL R6.0 and later • ONS 15310 MA SDH • ONS 15310 MA SONET R7.0 and later • ONS 15327 R6.0 and later • ONS 15454 SDH R6.0 and later • ONS 15454 SONET R6.0 and later • ONS 15600 SONET R6.0 and later
NE ID	Unique ID number of the NE.

8.4.3.9 Filtering NE Active Users Table Data

Step 1 In the NE Active Users table, choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog box opens.

Step 2 Specify the filter parameters described in the following table.

Step 3 After making your selections, click **OK** to run the filter.

Table 8-26 Field Descriptions for the NE Active Users Table Filter

Field	Description
NE ID	Move NEs back and forth between the list of available NEs and selected NEs. The filter runs on the NEs in the Selected NE ID list.

8.4.3.10 Ending an Active NE User Session

You can use the Log Out User feature to end a user session on CTC-based NEs.

Note The Log Out User feature is not available for ONS 15216 EDFA3 NEs.

Step 1 In the Domain Explorer window, choose **Administration > CTC-Based NEs > NE User Access Administration**. The NE User Access Administration table opens.

Step 2 For CTC-based NEs, choose **Edit > NE Active Users** (or click the **Show NE Active Users** tool). The NE Active Users table opens.

Step 3 For CTC-based NEs, choose **Administration > Log Out User** (or click the **Log Out User** tool).

Step 4 Click **Yes**.

8.4.4 Managing CTC User Profiles

You can view, create, modify, and delete CTC user profiles in the Prime Optical database.

8.4.4.1 Viewing the CTC User Profiles Table

The CTC User Profiles table contains a list of predefined CTC user profiles that are available in the Prime Optical database. To view the CTC User Profiles table, choose **Administration > CTC User Profiles** in the Domain Explorer window. The following table provides descriptions.

Table 8-27 Field Descriptions for the CTC User Profiles Table

Field	Description
User ID	CTC username.
User Privilege	CTC user privilege.
Description	Description of the CTC user.

8.4.4.2 Creating a CTC User Profile

Use the Add New CTC User Profile dialog box to add new CTC user profiles to the database. The following table provides descriptions.

Step 1 In the Domain Explorer window, choose **Administration > CTC User Profiles**. The CTC User Profiles table opens.

Step 2 Choose **Edit > Create** (or click the **Create a New CTC User Profile** tool).

Step 3 In the Add New CTC User Profile dialog box, enter the following information:

- User ID
- User password (and confirm password)
- User privilege
- Description

Step 4 Click **OK**.

Table 8-28 Field Descriptions for the Add New CTC User Profile Dialog Box

Field	Description
User ID	Name of the new user profile. The profile name must contain from six to twenty alphanumeric characters (A–Z, a–z, 0–9). Alphabetic characters are case-sensitive. The user profile name cannot contain spaces or special characters. **Note** After the user ID is set, it cannot be changed without deleting the user.
User Password	User password. The new password must contain a minimum of six and a maximum of ten alphanumeric (a–z, A–Z, 0–9) and special characters (+, #,%), where at least two characters are alphabetic, at least one character is numeric, and at least one character is a special character. **Note** Regardless of the actual size of the old password, the Password field displays only a fixed-length string. The fixed-length string contains 15 asterisks (*).
Confirm Password	Retype the password to confirm it.
User Privilege	Access privilege for the new user profile. Privilege levels are Retrieve, Maintenance, Provisioning, and Superuser.
Description	Description of the new user profile.

8.4.4.3 Modifying a CTC User's Properties

Use the Modify CTC User Profile dialog box to make changes to an existing CTC user profile. The following table provides descriptions.

Step 1 In the Domain Explorer window, choose **Administration > CTC User Profiles**. The CTC User Profiles table opens.

Step 2 Choose **Edit > View/Modify** (or click the **Modify CTC User Profile Properties** tool).

Step 3 In the Modify CTC User Profile dialog box, modify the following information, as needed:

- User password (and confirm password)
- User privilege
- Description

Step 4 Click **OK**.

Table 8-29 Field Descriptions for the Modify CTC User Profile Dialog Box

Field	Description
User ID	*Display only.* Name of the user profile. The profile name must contain from six to twenty alphanumeric characters (A–Z, a–z, 0–9). Alphabetic characters are case-sensitive. The user profile name cannot contain spaces or special characters. **Note** After the username is set, it cannot be changed without deleting the user.
User Password	User password. The password must contain a minimum of six and a maximum of ten alphanumeric (a–z, A–Z, 0–9) and special characters (+, #,%), where at least two characters are alphabetic, at least one character is numeric, and at least one character is a special character. **Note** Regardless of the actual size of the old password, the Password field displays only a fixed-length string. The fixed-length string contains 15 asterisks (*).
Confirm Password	Retype the modified password to confirm it.
User Privilege	Access privilege for the user profile. Privilege levels are Retrieve, Maintenance, Provisioning, and Superuser.
Description	Description of the user profile.

8.4.4.4 Deleting a CTC User Profile

Step 1 In the Domain Explorer window, choose **Administration > CTC User Profiles**. The CTC User Profiles table opens.

Step 2 Select the CTC user profile that you want to delete and choose **Edit > Delete** (or click the **Delete CTC User Profile** tool).

Step 3 Click **OK** in the confirmation dialog box.

8.4.5 Managing Cisco IOS Users

You can view, create, modify, and delete Cisco IOS user accounts in the Prime Optical database.

8.4.5.1 Viewing the IOS Users Table

The IOS Users table shows all of the configured Cisco IOS user accounts. You can use the IOS Users table to manage user access to Layer 2 and Layer 3 Cisco IOS cards. Use this table to give users the ability to view or edit the username and password on ML cards in CTC-based NEs.

To view the table, choose **Administration > CTC-Based NEs > IOS Users Table** in the Domain Explorer window. The following table provides descriptions.

Table 8-30 Field Descriptions for the IOS Users Table

Field	Description
Alias ID	Alias of the NE.
Module Name	Name of the selected module.
Physical Location	Location of the selected module.
Username	Username that is provisioned on the Cisco IOS card.
Privilege	Privilege level of the selected user.
NE ID	ID number of the NE.

8.4.5.2 Adding an IOS User

Use the IOS User Creation wizard to add new Cisco IOS users to the domain.

Step 1 In the Domain Explorer window, choose **Administration > CTC-Based NEs > IOS Users Table**.

Step 2 In the IOS Users table, choose **Edit > Create** (or click the **Create a New User** tool). The IOS User Creation wizard opens. The following table provides descriptions.

Step 3 In the IOS Card Selection window, complete the following substeps:

a. Select the NE ID on which you want to create a new Cisco IOS user.

b. In the Available IOS Cards list, select the cards that you want the new user to be able to access. Use the **Add** button to move the cards to the Selected IOS Cards list.

c. Click **Next**.

Step 4 In the IOS User Information window, enter the following information:

- Username
- Password (and confirm password)
- User privilege

Step 5 Click **Finish**.

Note A progress animator is displayed while the new user is being added to the IOS Users table.

The new user is listed in the IOS Users table.

Table 8-31 Field Descriptions for the IOS User Creation Wizard

Field	Description
IOS Card Selection Pane	
NE ID	NE ID on which you want to create a new Cisco IOS user.
Available IOS Cards	Available Cisco IOS data cards that the user can access. Click **Add** to move the cards to the Selected IOS Cards list.
Selected IOS Cards	Selected Cisco IOS data cards that the user can access. Click **Remove** to return the cards to the Available IOS Cards list.
IOS User Information Pane	
Username	Name of the Cisco IOS user.
Password	Login password that the Cisco IOS user will use to access ML cards. **Note** Regardless of the actual size of the old password, the Password and Confirm Password fields display only a fixed-length string. The fixed-length string contains 15 asterisks (*).
Confirm Password	Retype the password to confirm it.
User Privilege	User privilege level. Values are from 0 to 15; the Cisco default is 15.

8.4.5.3 Modifying an IOS User

Use the IOS User Modification wizard to modify the password or privilege level of an existing Cisco IOS user.

Step 1 In the Domain Explorer window, choose **Administration > CTC-Based NEs > IOS Users Table**.

Step 2 In the IOS Users table, choose **Edit > Modify** (or click the **Modify User Properties** tool). The IOS User Modification wizard opens. The following table provides descriptions.

Step 3 In the IOS Card Selection window, complete the following substeps:

a. Select the NE ID on which you want to modify the Cisco IOS user password or privilege level.

b. In the Available IOS Cards list, select the cards that you want the modified user to be able to access. Use the **Add** button to move the cards to the Selected IOS Cards list.

c. Click **Next**.

Step 4 In the IOS User Information window, enter the following information:

- Password (and confirm password)
- User privilege

Step 5 Click **Finish**.

Note A progress animator is displayed while the user information is modified.

Table 8-32 Field Descriptions for the IOS User Modification Wizard

Field	Description
IOS Card Selection Pane	
NE ID	NE ID on which you want to modify the Cisco IOS user.
Available IOS Cards	Available Cisco IOS data cards that the user can access. Click **Add** to move the cards to the Selected IOS Cards list.
Selected IOS Cards	Selected Cisco IOS data cards that the user can access. Click **Remove** to return the cards to the Available IOS Cards list.
IOS User Information Pane	
Username	*Display only.* Name of the Cisco IOS user.
Password	Login password that the Cisco IOS user will use to access ML cards.
Confirm Password	Retype the password to confirm it.
User Privilege	User privilege level. Values are from 0 to 15; the Cisco default is 15.

8.4.5.4 Deleting an IOS User

Step 1 In the Domain Explorer window, choose **Administration > CTC-Based NEs > IOS Users Table**.

Step 2 In the IOS Users table, select the user to be deleted.

Step 3 Choose **Edit > Delete** (or click the **Delete User** tool).

Step 4 Click **OK** to remove the user from the database.

Note A progress animator is displayed while the delete operation is performed.

8.4.6 Managing SNMPv3—CTC-Based Release 9.6 NEs

Note SNMPv3 is not supported on ONS 15305, ONS 15305 CTC, and ONS 15327 NEs.

The following cases describe how to configure SNMPv3 on CTC-based NEs:

1. Provision a logical SNMPv3 configuration on CTC-based NEs using the SNMPv3 wizard. See 8.4.6.1 Configuring SNMPv3 Parameters, page 8-65 for information on the SNMPv3 wizard. To verify the SNMPv3 configuration, see case 2.
2. Check the configured SNMPv3 parameters using the SNMPv3 tables. See 8.4.6.2 Viewing SNMPv3 Tables, page 8-67 for instructions on how to open the SNMPv3 tables. The SNMPv3 configuration is correct if the following constraints are verified:
   - The SNMPv3 NE Users table contains the provisioned users for each NE.
   - The SNMPv3 user group is defined in the SNMPv3 NE Groups table for each NE.
   - The SNMPv3 group view is defined in the SNMPv3 NE MIB Views table for each NE.
   - If an NE entry in the SNMPv3 NE Trap Destinations table is associated with a notification filter, the filter is defined in the SNMPv3 NE Notification Filters table for each NE.

   If an NE is a proxy NE or ENE, the following additional constraints are verified:
   - The target address is the GNE IP address and the port number is 161 in the SNMPv3 NE Trap Destinations table.
   - The SNMPv3 NE Proxy Forwarder table of the GNE contains two rows: one for the GET type value and another for the SET type value. Also, the remote NE is the system ID of the ENE, and the remote user is defined in the ENE's SNMPv3 NE Users table.
   - The SNMPv3 NE Proxy Trap Forwarder table of the GNE contains a row for the ENE. Also, the tag references the proxy tags in the SNMPv3 NE Trap Destinations table, and the incoming user is defined in the ENE's SNMPv3 NE Users table.

   If the SNMPv3 tables contain invalid rows, see case 3. If you need to add rows to one or more SNMPv3 tables, see case 4.

Note For more information on SNMPv3 for CTC-based NEs, refer to the NE hardware documentation.

3. Delete rows from the SNMPv3 tables. See 8.4.6.3 Deleting SNMPv3 Users from the SNMPv3 Tables, page 8-71.
4. Provision rows in the SNMPv3 tables. The SNMPv3 wizard also allows you to add entries to one or more SNMPv3 tables. See 8.4.6.1 Configuring SNMPv3 Parameters, page 8-65 for details.

8.4.6.1 Configuring SNMPv3 Parameters

The SNMPv3 wizard allows you to configure parameters in the SNMPv3 tables. You can do one of the following:

- Add entities to one or more SNMPv3 tables. If you choose this option, do not select the Configure Proxy check box in the SNMPv3 wizard.
- Provision the entire SNMPv3 configuration. If you choose this option, select the Configure Proxy check box in the SNMPv3 wizard. The SNMPv3 wizard validates the configuration by verifying that it complies with the constraints listed in 8.4.6 Managing SNMPv3—CTC-Based Release 9.6 NEs, page 8-64. Moreover, the SNMPv3 wizard configures the SNMPv3 proxy for proxy NEs.

Complete the following steps to configure the SNMPv3 parameters:

Step 1 In the Domain Explorer, select a CTC-based NE and choose **Administration > CTC-Based NEs > SNMPv3 Configuration**.

Step 2 In the SNMPv3 wizard, complete the following substeps:

a. Enter the following view information:

- Name—Name of the MIB view.
- Subtler OID—Object identifier that designates a subtree element in the MIB hierarchy.
- Bit Mask—Bit mask that identifies the objects in the subtree.
- Type—Status of the view. Values are Included or Excluded.

b. Click **Add**. The view information appears in the Table Views area. To remove the view information, select the view information from the Table Views area and click **Delete**.

Step 3 Click **Next**.

Step 4 Enter the following group information:

- Group Name—Name of the group.
- Security Level—Security level of the group. Values are authPriv, authNoPriv, and noAuthNoPriv.
- Read View Name—The group's view-for-read access name.
- Notify View Name—The group's view-for-notifications name.
- Allow SNMP Sets—If checked, users who belong to the group can perform the SNMP SET operation on the NE.

Step 5 Click **Next**.

Step 6 Complete the following substeps:

a. Enter the following information in the User area:

- Username—SNMPv3 username.
- Group name—Name of the group to which the user belongs.

b. Enter the following information in the Authentication area:

- Protocol—Protocol used to authenticate the SNMPv3 user.
- Password—Password used to log into the Prime Optical server.
- Confirm Password—Re-enter the password to confirm it.

c. Enter the following information in the Privacy area:

- Protocol—Protocol used for encryption.
- Password—Password used to decrypt the message payload.
- Confirm Password—Re-enter the password to confirm it.

Step 7 Click **Next**.

Step 8 Enter the following notification filter information:

- Profile Name—Filter profile name.
- Subtree OID—Object identifier that designates a subtree element in the MIB hierarchy.
- Bit Mask—Bit mask that identifies the objects in the subtree.
- View Type—Filter type with respect to the subset of the MIB object that is identified by the subtree OID and bitmask fields. Values are Included and Excluded.

Step 9 Click **Next**.

Step 10 Enter the following trap destination information:

- Target Address—IP address of the EMS to which the NE forwards the SNMPv3 traps.
- UDP Port—UDP port number to which the NE forwards the SNMPv3 traps.
- Username—SNMPv3 username.
- Security Level—Security level that the SNMPv3 NE uses. Valid values are authPriv, authNoPriv, and noAuthNoPriv.
- Filter Profile—Filter profile name associated with the trap destination.
- Proxy Trap Only—If selected, the NE that acts as the SNMPv3 proxy uses the entries in the SNMPv3 NE Trap Destinations table to forward traps from other NEs to the target address. The SNMPv3 proxy NE does not send its own traps to the target address.
- Proxy Tags—A string used to identify a set of entries in the SNMPv3 NE Trap Destinations table. This is required for SNMPv3 proxy configuration.

Step 11 Do one of the following:

- If you are adding entries to the SNMPv3 tables, uncheck the **Configure Proxy** check box.
- If you choose automatic proxy configuration, check the **Configure Proxy** check box. If checked, Prime Optical identifies the SNMPv3 proxy for each selected ENE. The ENE and SNMPv3 proxy are configured to enable Prime Optical–SNMPv3 NE connectivity using the parameters you defined in steps 2, 4, 6, 8, and 10.

Step 12 Click **Finish**. A job is scheduled on all NEs on which the SNMPv3 NE configuration wizard was started. The job status is listed in the Job Monitor table (**Administration > Job Monitor**).

8.4.6.2 Viewing SNMPv3 Tables

The SNMPv3 tables are grouped according to the following table types:

- User tables:
  - 8.4.6.2.1 SNMPv3 NE Users Table, page 8-67
  - 8.4.6.2.2 SNMPv3 NE MIB Views Table, page 8-68
  - 8.4.6.2.3 SNMPv3 NE Groups Table, page 8-69
- Trap tables:
  - 8.4.6.2.4 SNMPv3 NE Trap Destinations Table, page 8-69
  - 8.4.6.2.5 SNMPv3 NE Notification Filters Table, page 8-70
- Proxy server tables:
  - 8.4.6.2.6 SNMPv3 NE Proxy Forwarder Table, page 8-70
  - 8.4.6.2.7 SNMPv3 NE Proxy Trap Forwarder Table, page 8-71
  - 8.4.6.2.8 SNMPv3 NE Remote Users Table, page 8-71

8.4.6.2.1 SNMPv3 NE Users Table

The SNMPv3 NE Users table displays information on the SNMPv3 users defined on a selected NE. To view the SNMPv3 NE Users table, choose **Administration > CTC-Based NEs > SNMPv3 Users** in the Domain Explorer window. The following table provides descriptions.

Table 8-33 Field Descriptions for the SNMPv3 NE Users Table

Field	Descriptions
NE ID	SNMPv3 NE ID.
Username	SNMPv3 username.
Group Name	Name of the group to which the user belongs.
Authentication Protocol	Protocol used to authenticate the SNMPv3 user. Valid values are MD5 or SHA.
Privacy Protocol	Protocol used for encryption.

8.4.6.2.2 SNMPv3 NE MIB Views Table

The SNMPv3 NE MIB Views table displays information on the views defined on a selected NE. A view identifies the subset of an object in the MIB. To view the SNMPv3 NE MIB Views table, choose **Administration > CTC-Based NEs > SNMPv3 MIB Views** in the Domain Explorer window. The following table provides descriptions.

Table 8-34 Field Descriptions for the SNMPv3 NE MIB Views Table

Field	Description
NE ID	SNMPv3 NE ID.
View Name	Name of the MIB view.
Subtree OID	Object identifier that designates a subtree element in the MIB hierarchy.
Mask	Bit mask that identifies the objects in the subtree.
Type	Status of the view. Valid values are Included or Excluded.

8.4.6.2.3 SNMPv3 NE Groups Table

The SNMPv3 NE Groups table displays information on the group that is provisioned on a selected NE. To view the SNMPv3 NE Groups table, choose **Administration > CTC-Based NEs > SNMPv3 Group Access** in the Domain Explorer window. The following table provides descriptions.

Table 8-35 Field Descriptions for the SNMPv3 NE Groups Table

Field	Description
NE ID	SNMPv3 NE ID.
Group Name	Name of the group.
Security Level	Security level of the group. Valid values are AuthPriv, AuthNoPriv, and NoAuthNoPriv.
Read View	Displays the group's view-for-read access name. The view name must be present in the SNMPv3 NE MIB Views table.
Allow SNMP Sets	If true, users who belong to the group can perform the SNMP SET operation on the NE.
Notify View	Displays the group's notify-for-notifications name. The view name must be present in the SNMPv3 NE MIB Views table.

8.4.6.2.4 SNMPv3 NE Trap Destinations Table

The SNMPv3 NE Trap Destinations table displays information on the trap destinations provisioned on a selected NE. To view the SNMPv3 NE Trap Destinations table, choose **Administration > CTC-Based NEs > SNMPv3 Trap Destinations** in the Domain Explorer window. The following table provides descriptions.

Table 8-36 Field Descriptions for the SNMPv3 NE Trap Destinations Table

Field	Description
NE ID	SNMPv3 NE ID.
Target Address	IP address of the EMS to which the NE forwards the SNMPv3 traps.
UDP Port	UDP port number to which the NE forwards the SNMPv3 traps.
Username	SNMPv3 username.
Security Level	Security level that the SNMPv3 NE uses. Valid values are AuthPriv, AuthNoPriv, and NoAuthNoPriv.
Filter Profile Name	Filter profile name associated with the trap destination. The filter profile name must be present in the SNMPv3 NE Notification Filters table.
Proxy Traps Only	If true, the NE that acts as the SNMPv3 proxy uses the entries in the SNMPv3 NE Trap Destinations table to forward traps from other NEs to the target address. The SNMPv3 proxy NE does not send its own traps to the target address.
Proxy Tags	A string used to identify a set of entries in this table. This field is required for SNMPv3 proxy configuration and referenced by the SNMPv3 NE Proxy Trap Forwarder table. See 8.4.6.2.7 SNMPv3 NE Proxy Trap Forwarder Table, page 8-71 for more information.

8.4.6.2.5 SNMPv3 NE Notification Filters Table

The SNMPv3 NE Notification Filters table displays information on the notification filters provisioned on a selected NE. To view the SNMPv3 NE Notification Filters table, choose **Administration > CTC-Based NEs > SNMPv3 Notification Filters** in the Domain Explorer window. The following table provides descriptions.

Table 8-37 Field Descriptions for the SNMPv3 NE Notification Filters Table

Field	Description
NE ID	SNMPv3 NE ID.
Filter Profile Name	Filter profile name that identifies the table entry.
Subtree OID	Object identifier that designates a subtree element in the MIB hierarchy.
Bit Mask	Bit mask that identifies the objects in the subtree.
Filter Type	Defines the filter type with respect to the subset of the MIB object that is identified by the subtree OID and bitmask fields. Valid values are Included and Excluded.

8.4.6.2.6 SNMPv3 NE Proxy Forwarder Table

The SNMPv3 NE Proxy Forwarder table displays information on the proxy forwarder entries. The proxy forwarder entries enable SNMPv3 proxying by selected remote NE proxies for GET and SET operations. To view the SNMPv3 NE Proxy Forwarder table, choose **Administration > CTC-Based NEs > SNMPv3 Proxy Forwarder** in the Domain Explorer window. The following table provides descriptions.

Table 8-38 Field Descriptions for the SNMPv3 NE Proxy Forwarder Table

Field	Descriptions
NE ID	SNMPv3 NE ID.
Remote NE	Remote SNMPv3 NE ID.
Context Engine ID	Engine ID of the remote NE.
Target Address	Target IP address of the SNMPv3 NE.
Local User	Local SNMPv3 username.
Remote User	Remote SNMPv3 username.
Proxy Type	Identifies the proxy action. Valid values are Read and Write.
Security Level	Security level that the SNMPv3 NE uses. Valid values are AuthPriv, AuthNoPriv, and NoAuthNoPriv.

8.4.6.2.7 SNMPv3 NE Proxy Trap Forwarder Table

The SNMPv3 NE Proxy Trap Forwarder table displays information on trap forwarder entries. The trap forwarder entries enable SNMPv3 proxying by selected remote NE proxies for the TRAP operation. To view the SNMPv3 NE Proxy Trap Forwarder table, choose **Administration > CTC-Based NEs > SNMPv3 Proxy Trap Forwarder** in the Domain Explorer window. The following table provides descriptions.

Table 8-39 Field Descriptions for the SNMPv3 NE Proxy Trap Forwarder Table

Field	Description
NE ID	SNMPv3 NE ID.
Remote NE	Remote SNMPv3 NE ID.
Context Engine ID	Engine ID of the remote NE.
Tag	A string that identifies one or more rows in the SNMPv3 NE Trap Destinations table. The Tag value references the Proxy Tags column in the SNMPv3 NE Trap Destinations table.
Incoming User	Name of the remote NE user.
Security Level	Security level that the SNMPv3 NE uses. Valid values are AuthPriv, AuthNoPriv, and NoAuthNoPriv.

8.4.6.2.8 SNMPv3 NE Remote Users Table

The SNMPv3 NE Remote Users table displays information on the SNMPv3 remote users defined on a selected NE. To view the SNMPv3 NE Remote Users table, choose **Administration > CTC-Based NEs > SNMPv3 Remote Users** in the Domain Explorer window. The following table provides descriptions.

Table 8-40 Field Descriptions for the SNMPv3 NE Remote Users Table

Field	Descriptions
NE ID	SNMPv3 NE ID.
Remote NE	Remote SNMPv3 NE ID.
Context Engine ID	Engine ID of the remote NE.
Group Name	Name of the group.
Authentication Protocol	Protocol used to authenticate the SNMPv3 user. Valid values are MD5 or SHA.
Privacy Protocol	Protocol used for encryption.

8.4.6.3 Deleting SNMPv3 Users from the SNMPv3 Tables

Step 1 In the Domain Explorer, choose **Administration > CTC-Based NEs >** *SNMPv3 table*. The table opens.

Step 2 Select the user to delete; then, choose **Edit > Delete User** (or click the **Delete User** tool). A job is scheduled on each NE involved in the delete operation. The job status is listed in the Job Monitor table (**Administration > Job Monitor**).

Step 3 If the job succeeds, the Refresh button flashes. Click the **Refresh Data** tool.

8.5 Audit Log

The Audit Log table contains information about significant events that occurred on the Prime Optical server during a specified time period. By default, the Audit Log displays information about significant events that occurred during the last four hours. You can change the default time period in the User Preferences dialog box.

The Audit Log records the following runtime-affecting operations for monitoring purposes:

- Prime Optical client logins and security violations (including successful/unsuccessful client user logins)
- Prime Optical client logouts, including:
  - User-initiated logout
  - Forced logout by an administrator
  - System-initiated logout due to user inactivity (session timeout expires)
- NE or group location changes in the Domain Explorer tree
- Domain Explorer group operations (add, delete, or modify a group)
- Changes in the Domain Explorer properties of an NE
- Write operations from a native Prime Optical NE Explorer
- Changes in the NE Software table
- NE Service, PM Service, and Prime Optical GateWay Service start or stop operations
- Prime Optical user administration (add, delete, or modify user profiles)
- Changes in:
  - UI properties
  - Security settings
  - Recovery settings
  - Database configuration
  - Error Log configuration
  - NE poller parameters
  - NE autobackup parameters
  - NE service parameters
- Job or task cancellation in the Job Monitor table
- Manual memory backup
- Memory restore
- Software download

- Software activation
- Circuit operations (add, delete, modify, or upgrade circuits)
- Link operations (add, delete, or modify links)
- OSS profile changes (TL1 or CORBA)
- VLAN operations
- Addition or deletion of a GateWay/SNMP trap destination
- Addition or deletion of a CTC binary
- BLSR/MS-SPRing operations
- L2 service operations
- Prime Optical GateWay/CORBA client logins/logouts

8.5.1 Viewing the Audit Log

To view the Audit Log, choose **Administration > Audit Log** in the Domain Explorer window. The following table provides descriptions.

Table 8-41 Field Descriptions for the Audit Log

Field	Description
Alias ID	Alias name of the NE.
Username	Name of the user performing the logged event. Events performed by the Prime Optical server are logged under the username *Internal*.
Service Name	Name of the service that generated the Audit Log entry.
Time Stamp (*time zone*)	Date and time when the event occurred on the Prime Optical server.
Category	Name of the category in which the event occurred. Events belong to one of the following categories: Prime Optical server administration, Prime Optical server connectivity, Prime Optical server security, Prime Optical server topology, Prime Optical server circuit, Prime Optical server network, NE provisioning, NE connectivity, BLSR/MS-SPRing, or subnetwork management.
Message	Description of the significant event that occurred.
Source ID	Source of the event. Events performed by the Prime Optical server show *CTM* as the source ID.

8.5.2 Filtering Audit Log Data

Step 1 In the Domain Explorer window, choose **Administration > Audit Log**.

Step 2 In the Audit Log window, choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog box opens.

Step 3 Specify the filter parameters described in the following table.

Step 4 After making your selections, click **OK** to run the filter.

Step 5 To save a filter:

a. Open the Audit Log Filter dialog box.

b. Click the **Category** or **Service** tab.

c. Check the **Save Filter** check box.

d. Click **OK**. In the Audit Log window, the Filter tool changes to red, indicating that a saved filter is present.

Note The Audit Log supports only one saved filter per user.

Step 6 To delete a saved filter, choose **File > Delete Saved Filter** in the Audit Log window. At the following prompt, click **Yes**:

```
The saved filter will be deleted. The current filter will remain applied to the table. Are
you sure you want proceed?
```

When you delete a saved filter, the Filter tool reverts to blue in the Audit Log window.

Table 8-42 Field Descriptions for the Audit Log Filter Dialog Box

Tab	Description
Time Stamp (*time zone*)	Filter Audit Log data for a specified time period, ranging from the past hour to the past 6 months. You can click the **User Specified** radio button to specify exact filter start and end times by date and hour. The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue. If you want to filter Audit Log data and the time period is not important, click **No Time Specified**.
Source ID	Move NEs back and forth between the list of available NEs and selected NEs and then run the filter.

Table 8-42 Field Descriptions for the Audit Log Filter Dialog Box (continued)

Tab	Description

Category	Filter Audit Log data by task.
	Follow these steps to save a filter:
	1. Check the **Save Filter** check box, and click **OK** on the Filter dialog box.
	2. The saved filter is added to the table.
	3. When you choose **File > Apply Saved Filter**, the table populates with the attributes saved for that filter.
	Note An "at" symbol (@) in the Filter indicates that you are viewing a saved filter.
	Follow these steps to delete a filter:
	1. Chose **File > Delete Saved Filter** (or click the **Delete Saved Filter** tool).
	The following message appears in the Delete Filter dialog box:
	`The saved filter will be deleted. The current filter will remain applied to the table. Are you sure you want proceed?`
	2. Click **Yes**.
	3. When you run two parallel Prime Optical client sessions, deleting a saved filter from one session does not reflect any changes on the other. The Apply and Delete buttons remain enabled in the second session.
	The following message appears when you click either of the buttons in the Filter dialog box of the second session:
	`The saved filter no longer exists in the system. The current user might have deleted it in a different Prime Optical client session.`
	4. Click **OK**.
	The Apply and Delete buttons are disabled. The Filter tool reverts to blue, indicating that the filter is not saved.
	Note The menu items **Apply Saved Filter** and **Delete Saved Filter** and the **Delete Saved Filter** tool are enabled only if there is a saved filter for that table.

Table 8-42 Field Descriptions for the Audit Log Filter Dialog Box (continued)

Tab	Description
Username	Move users back and forth between the list of available users and selected users and then run the filter. Events performed by the Prime Optical server are logged under the username *Internal*.

Service	Move services back and forth between the list of available services and selected services and then run the filter.
	Follow these steps to save a filter:
	1. Check the **Save Filter** check box, and click **OK** on the Filter dialog box.
	2. The saved filter is added to the table.
	3. When you choose **File > Apply Saved Filter**, the table populates with the attributes saved for that filter.
	Note An "at" symbol (@) in the Filter indicates that you are viewing a saved filter.
	Follow these steps to delete a filter:
	1. Choose **File > Delete Saved Filter** (or click the **Delete Saved Filter** tool).
	The following message appears in the Delete Filter dialog box:
	`The saved filter will be deleted. The current filter will remain applied to the table. Are you sure you want proceed?`
	2. Click **Yes**.
	3. When you run two parallel Prime Optical client sessions, deleting a saved filter from one session does not reflect any changes on the other. The Apply and Delete buttons remain enabled in the second session.
	The following message appears when you click either of the buttons in the Filter dialog box of the second session:
	`The saved filter no longer exists in the system. The current user might have deleted it in a different Prime Optical client session.`
	4. Click **OK**.
	The Apply and Delete buttons are disabled. The Filter tool reverts to blue, indicating that the filter is not saved.
	Note The menu items **Apply Saved Filter** and **Delete Saved Filter** and the **Delete Saved Filter** tool are enabled only if there is a saved filter for that table.

8.6 Northbound Gateway Security

OSS-to-Prime Optical sessions are configured by the Prime Optical GateWay EMS-to-NMS interface architectural component. See Chapter 12, "Managing Southbound and Northbound Interfaces" for more information about Prime Optical GateWay.

Managing Faults

This chapter describes the process of fault management (FM), and details the options available in Cisco Prime Optical to locate, diagnose, and report network problems.

This chapter includes the following information:

- 9.1 What Is Fault Management?, page 9-1
- 9.2 Where Can I Get Information on Affected Services and Customers?, page 9-3
- 9.3 What Fault Information Can I See?, page 9-14
- 9.4 Is the Service Working?, page 9-15
- 9.5 Where Is the Fault?, page 9-27
- 9.6 How Can I Find the Root Cause of the Fault?, page 9-32
- 9.7 Who Is Responsible for Managing the Fault?, page 9-37
- 9.8 How Can the Fault Be Fixed?, page 9-39

9.1 What Is Fault Management?

Fault management is the process of locating, diagnosing, and reporting network problems. This is important for increasing network reliability and effectiveness, and for increasing the productivity of network users. Fault management is more than just handling emergencies. It provides functions for managing problems with services and handling customer-facing service problems.

Efficient fault management can:

- Save repair costs through efficient fault detection, location, and correction
- Improve customer care through efficient trouble administration
- Improve service availability and equipment reliability through proactive maintenance and through measurement, review, and corrective action

One responsibility of fault management is to detect faults. A piece of equipment, a transmission medium, a software module, or a database is said to be in a fault state if it cannot perform its intended function and meet all of the requirements placed on that function. The onset of a fault is called a *failure event* and is usually signaled by one or more alarm reports. The termination of a fault state is called a *clear event*.

Fault management is responsible for determining, from a variety of information sources, the root cause of a fault, and for its repair. In certain cases, the root cause of a fault might be in a connecting network. In such cases, fault management is responsible for reporting the problem through appropriate channels.

Service assurance is the overall process of ensuring that the purchased level of service is delivered. The Element Management System (EMS) plays a key role in maintaining the health of both NEs and transmission facilities. This is done in conjunction with other systems, typically at the network management layer and service management layer. The EMS can be the primary repository of detailed history of NE-specific faults and events, technician action, and performance data.

The steps for successful fault management are:

1. Identify a problem by gathering data about the state of the network (polling and trap generation).
2. Restore any services that have been lost.
3. Isolate the cause, and decide if the fault should be managed.
4. Correct the fault if possible.

9.1.1 What the NE Provides

Currently deployed, intelligent NEs provide the management system with the following, which are required for effective fault management:

- Detection of the four main types of failure:
  - Equipment failure—Detected through failure detection mechanisms built into the hardware, and through routine exercises and diagnostics.
  - Software failure—Detected through failure of software checks, and through routine audits.
  - Communication failure—Detected through defects in the incoming signal or outgoing signal characteristics. Defects include line coding errors, framing bit errors, parity errors, cyclic redundancy check errors, and addressing errors. Signal characteristics include optical or electrical power, analog signal-to-noise ratio, and deviation from required voltage or wavelength.
  - Environmental failure.
- Notification of failure—NEs notify a management system when a failure occurs by generating an alarm report. The NE can also report a summary of current fault states, or replay its log of historical failures and clears.
- Notification of changes in operational state of the NE components—If a component of the NE is in a fault state, a management system should not receive further alarms, alerts, or scheduled performance data from that component.

Note Prime Optical forwards northbound information and integrates with other third-party management systems to give options that are not directly available in Prime Optical.

9.1.2 Fault Notification and Maintenance

Fault notification and maintenance can be proactive or reactive:

- Proactive notification—Where *X* contacts *Y* to query *Y* on potential problems in *Y*'s domain.
- Reactive maintenance—Where *Y* notifies *X* of a problem regarding a service delivered from *Y* to *X*.

9.1.2.1 Proactive Maintenance

Automated detection tests and surveillance software enable rapid initiation of the repair process, sometimes even before customers have noticed a problem. This is called proactive maintenance and promotes customer satisfaction.

Proactive maintenance consists of functions and processes associated with the detection, analysis, isolation, and resolution of problems by means that are independent of customer trouble reports. The problems might be faults or degradations in equipment or transmission media.

The goals of proactive maintenance are to:

- Detect and fix service quality problems before the customer calls to establish a trouble report, or at least to start the repair process before the customer calls, thereby minimizing the time, as perceived by the customer, before service is restored.
- Maintain the transport network at a high level of quality by identifying the facilities that perform relatively poorly and rehabilitating them.

9.1.2.2 Reactive Maintenance

Reactive maintenance is required when a failure occurs. This type of problem can be time-consuming and costly. It requires accurate administration of trouble reports, rapid analysis and repair of service-affecting faults, and notifications to the customer of restoration of service, all of which also promote customer satisfaction.

9.1.3 Root Cause Analysis

The *root cause* is the most basic reason for an undesirable condition or problem that, if eliminated or corrected, would have prevented the problem from occurring. The outcome of the root cause analysis is not a restatement of the most obvious symptom, but is the result of a methodical analysis of the problem situation, leading to the most basic cause.

Root cause analysis captures additional information about defects for the purpose of identifying preventive actions. Prime Optical includes advanced debugging features that capture additional information about defects.

9.2 Where Can I Get Information on Affected Services and Customers?

The first thing to do in fault management is to identify what services and which customers are affected by the fault. Prime Optical provides a number of options for viewing this information. The following table describes where to obtain information on affected services and customers.

Table 9-1 Obtaining Information on Affected Services and Customers

Where	Description	For More Information, See
Dashboard	Shows useful alarm and NE information in one easily accessible location.	1.5.1 Dashboard, page 1-9
Tooltips	Visible when you position the cursor over a managed object (domain, group, subnetwork, NE, board, link, and so on). The tooltip displays additional information about the selected object.	—
Domain Explorer	Home window; provides a logical view of the network plus alarm, connectivity, and operational status.	1.5.2 Domain Explorer, page 1-11
Subnetwork Explorer	Similar in appearance and function to the Domain Explorer. A key difference is that the Subnetwork Explorer provides a single-level grouping of NEs based on network partitions and subnetworks.	1.5.3 Subnetwork Explorer, page 1-24
Network Map	Displays a geographical layout of the network.	1.5.6 Network Map, page 1-28
Alarm Browser	Displays standing alarms and conditions in the managed domain that are assigned a severity level of critical, major, minor, or warning. It also shows cleared alarms that are not acknowledged.	9.2.1 Viewing the Alarm Browser, page 9-4
Alarm Log	Contains alarms that have transitioned from the Alarm Browser.	9.2.4 Viewing the Alarm Log, page 9-8

9.2.1 Viewing the Alarm Browser

The Alarm Browser displays standing alarms and conditions in the managed domain that are assigned a severity level of critical, major, minor, or warning. It also shows cleared alarms that are not acknowledged. The Alarm Browser and Alarm Log views provide a robust listing of all current and historical alarms and events. See 9.2.4 Viewing the Alarm Log, page 9-8 for information about the Alarm Log.

To display the Alarm Browser, select an NE, group, subnetwork, or domain node from the Domain Explorer, Subnetwork Explorer, Network Map, or NE Explorer; then, choose **Fault > Alarm Browser** (or click the **Open Alarm Browser** tool from the Dashboard).

CRS alarms for DWDM cards are managed by the Alarm Browser.

Note

- No alarms or events are generated in the Alarm Browser if Oracle shuts down.
- Refer to the appropriate NE documentation for a list of alarms supported on each NE. See 1.7.2 Related Cisco NE Documentation, page 1-50.
- Use the toolbar icons to manage the alarm display. See Appendix A, "Icons and Menus Displayed in Prime Optical" for an explanation of each toolbar icon.

The following table describes the fields in the Alarm Browser.

Table 9-2 Field Descriptions for the Alarm Browser Window

Field	Description
Alarm ID	Unique number that the system uses to identify a particular alarm.
Perceived Severity	Perceived severity of the selected alarm (critical, major, minor, or warning). The background color also indicates the severity, where: • Red = Critical • Orange = Major • Yellow = Minor • Blue = Warning • Green = Cleared **Note** For the ONS 15530 and ONS 15540, alarms that are shown in the command-line interface (CLI) as informational are shown in Prime Optical as warnings.
Acknowledged	Whether the selected alarm has been acknowledged by the user. Values are Yes and No.
Note	Any notes that were entered for the selected alarm. If you choose Fault > Show Alarm Note (or click the Show Alarm Note tool), you can see the login name of the user who entered the note and the time when the note was entered.
Alias ID	Alias name of the NE.
Probable Cause	Probable cause of the selected alarm. Some possible values include: • Not Applicable/Unknown—If no additional information is available • Mismatch of equipment and attributes (MEA) alarm—For misconfigured pluggable port modules (PPMs) • Link Layer Keep-Alive Failure—When the keepalive frame on the POS port is disabled and the port is shut down • Bad Packet Count Exceeds Threshold—When the packets through the front port have CRC errored frames • Auto-Negotiation Remote Failure Indication—When a remote Gigabit Ethernet port is shut down from a local port
Condition	Error message or condition name that is associated with the alarm or event.
Affected Object	Name of the object where the selected alarm occurred.
Module Name	Name of the module where the selected alarm occurred.
Physical Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.
Alarm Time Stamp	Date and time when the alarm occurred on the server.
NE Alarm Time Stamp	Date and time when the alarm occurred on the NE.
Service Affecting	Whether the alarm or event is service affecting (SA). Values are: • Yes—The alarm is service affecting • No—The alarm is not service affecting • N/A—No information is provided by the NE
Clear Time Stamp	Date and time when the alarm was cleared on the server.

Table 9-2 Field Descriptions for the Alarm Browser Window (continued)

Field	Description
EMS Clear Alarm Time stamp	Date and time when the alarm was cleared.
NE Clear Time Stamp	Date and time when the alarm was cleared on the NE.
Acknowledged Time Stamp	Date and time when the user acknowledged the selected alarm.
Acknowledged Username	Login name of the user who acknowledged the selected alarm.
Alarm Status	Status of the selected alarm (active or cleared).
Description	Additional information about the selected alarm. If there is no additional information, this field is blank.
Source ID	Name of the NE where the selected alarm occurred.
TL1 Direction	TL1 direction for RTRV-ALM-ALL and RTRV-COND-ALL TL1 commands and REPT^ALM/COND autonomous messages. Values are Receive or Transmit. This field is blank for non-TL1 alarms.
TL1 Location	TL1 location for RTRV-ALM-ALL and RTRV-COND-ALL TL1 commands and REPT^ALM/COND autonomous messages. Values are Near End or Far End. This field is blank for non-TL1 alarms.

9.2.2 Filtering Data in the Alarm Browser

Step 1 In the Alarm Browser window, choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog box opens.

Step 2 Specify the filter parameters described in the following table.

Step 3 After making your selections, click **OK** to run the filter.

Table 9-3 Field Descriptions for the Alarm Browser Filter Dialog Box

Tab	Description
Alarm Time (*time zone*)	Allows you to filter alarm data for a specified time period, ranging from the past hour to the past 6 months. Additionally, you can click the **User Specified** radio button to specify exact filter start and end times by date and hour. The time zone can be Greenwich Mean Time (GMT), a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue. If you want to filter alarms and the time period is not important, click **No Time Specified**. Click **From Now Onward** to set the filter time to start immediately and continue until you change filter parameters.
Source ID	Allows you to move NEs back and forth between the list of available source IDs and selected source IDs and then run the alarm filter. If you have the appropriate user permissions, you can filter Prime Optical EMS alarms by selecting Prime Optical and adding it to the Selected Source ID list. If more than 100 NEs are selected, the Source ID tab dims and all devices are included in the filter criteria you specify. **Note** Use the scroll bars at the bottom and right side of the lists to display all options in the lists.
Module Name	Allows you to specify which module types you want to include in the alarm filter. The modules displayed depend on the NE selection in the Domain Explorer tree when the Alarm Browser is opened. Use the Add and Remove buttons to filter the display to specific modules. The Alarm Browser displays alarms for modules listed under Selected Module Name. **Note** Use the scroll bars at the bottom and right side of the lists to display all options in the lists.
Affected Object	Allows you to specify which objects you want to include in the alarm filter. All objects are displayed regardless of the NE selected in the Domain Explorer tree when the Alarm Browser is opened. Use the Add and Remove buttons to filter the display to specific objects. The Alarm Browser displays alarms for objects listed under Selected Affected Object. To filter NE-specific EMS alarms, include Prime Optical in the Selected Affected Object list. Below the Available Affected Object list is a text field where you can enter characters to search quickly for available objects. The text field accepts an asterisk (*) as a wildcard character. Alarms that do not match the search criteria are not displayed. The text field below the Available Affected Object list allows you to select multiple objects and add them to the Selected Affected Object list. To do so, proceed as follows: 1. Filter the Available Affected Object list with a wildcard or a regular expression. 2. Choose **Ctrl** and select the required items from the Available Affected Object list. 3. Repeat steps 1 and 2, if required, to make additional selections. The selections you make are not visible; they are held in memory until you click the Add button. **Note** You must choose **Ctrl** before selecting objects from the Available Affected Object list. Objects selected are cleared from memory unless you press Ctrl before making your selection. 4. Click **Add**. The items you selected are now listed in the Selected Affected Object list. **Note** Use the scroll bars at the bottom and right side of the lists to display all options in the lists.

Table 9-3 Field Descriptions for the Alarm Browser Filter Dialog Box (continued)

Tab	Description
PS	Allows you to filter alarm data based on perceived severity (Critical, Major, Minor, and Warning) and alarm status (Active and Cleared). You can filter on acknowledged alarms, unacknowledged alarms, or both. You can also filter service-affecting alarms, nonservice-affecting alarms, and/or alarms where the service-affecting status is not known.
Physical Location	Allows you to filter alarm data based on the physical location of an NE or its components. To view the tab, an NE must be selected in the Domain Explorer tree. The filters that are available depend on the NE that is selected when the Alarm Browser is opened. For example, if you select a CTC-based NE, you can filter data by shelf, slot, and port.
ID	Allows you to filter alarm data based on a specific starting and ending alarm ID. Check the **Disregard All Other Filter Criteria** check box to base the filter on only the starting and ending alarm ID.
NE Alarm Time (*time zone*)	Allows you to filter alarm data for a specified time period, ranging from the past hour to the past 6 months. Additionally, you can click the **User Specified** radio button to specify exact filter start and end times by date and hour. The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box. If you want to filter alarms and the time period is not important, click **No Time Specified**. Click **From Now Onward** to set the filter time to start immediately and continue until you change filter parameters.

9.2.3 Adding Alarm Notes

Use the Alarm Note dialog box to read any comments that have been entered for the selected alarm and to enter additional comments. In the Alarm Browser window, select an alarm and choose **Fault > Show Alarm Note** (or click the **Show Alarm Note** tool). The following table provides descriptions.

Table 9-4 Field Descriptions for the Alarm Note Dialog Box

Field	Description
Note	Provides space to type comments about the selected alarm. You can enter up to 1,900 characters in the Note field. To add your comments to the previous comments, click the **Append** radio button. To overwrite the previous comments, click **Replace**. To delete the comments, click **Delete**. **Note** You can enable and disable the ability to overwrite or delete alarm notes in the **Control Panel > UI Properties** pane.
History	Comments that were entered by previous users. This field also shows the login name of the user who entered the note and the time when the note was entered.

9.2.4 Viewing the Alarm Log

The Alarm Log contains alarms that have transitioned from the Alarm Browser. Cleared alarms are transitioned when you acknowledge them or when automatic acknowledgment has been enabled (in the Control Panel > UI Properties pane). In addition, the Alarm Log shows a history of cleared and

acknowledged alarms and all transient conditions (also known as events or autonomous nonalarmed messages). Events are placed directly into the Alarm Log; they do not appear in the Alarm Browser. By default, the Alarm Log shows alarm and event information that occurred during the last 4 hours.

To save a filter, check the **Save Filter** check box, and click **OK** in the Filter dialog box. Upon selecting a saved filter, the Filter tool changes to red.

Note The Alarm Log supports only one saved filter per user.

To delete a filter, choose **File > Delete Saved Filter**. When you delete a saved filter, the Filter tool reverts to blue, indicating that the filter is not saved.

To view the Alarm Log, select a node in the Domain Explorer tree and choose **Fault > Alarm Log** (or click the **Open Alarm Log** tool). The following table provides descriptions.

Table 9-5 Field Descriptions for the Alarm Log Window

Field	Description
ID	Unique number that the system uses to identify a particular alarm or event.
Alias ID	Alias name of the NE.
Affected Object	Name of the object where the selected alarm or event occurred. For NE-specific alarms, the affected object field displays "CTM." For the non-NE specific alarms: • Maximum number of login attempts exceeded alarm—The affected object field displays the user ID associated with the alarm. • Prime Optical self-monitor alarm—The affected object field displays the threshold parameter associated with the alarm.
Module Name	Name of the module where the selected alarm or event occurred.
Physical Location	Physical location of the equipment where the selected alarm or event occurred, such as rack, subrack (shelf), slot, and port numbers.
Probable Cause	Probable cause of the selected alarm or event.
Condition	Error message or condition name that is associated with the alarm or event.
Perceived Severity	Severity of the alarm before it was cleared. Perceived Severity is listed as: • Critical (CR) • Major (MJ) • Minor (MN) • Warning (WR) • Indeterminate (IN) The background color of the column indicates the alarm status, where: • Green = Cleared alarms • Purple = Indeterminate events **Note** Indeterminate events are transient events that do not have a severity indicated by the source NE. Indeterminate events do not have a cleared condition.

Table 9-5 Field Descriptions for the Alarm Log Window (continued)

Field	Description
Service Affecting	Whether the alarm or event is service affecting. Values are: • Yes if the alarm is service affecting • No if the alarm is not service affecting • N/A if no information is provided by the NE
Time Stamp (*time zone*)	Date and time when the alarm or event occurred on the Prime Optical server.
Clear Time (*time zone*)	Date and time when the alarm was cleared on the Prime Optical server.
Duration	Amount of time required to clear an alarm (Prime Optical clear time – Prime Optical time) in *dddd:hh:mm:ss* format.
NE Time Stamp (*time zone*)	Date and time when the alarm or event occurred on the NE.
NE Clear Time (*time zone*)	Date and time when the alarm or event was cleared on the NE.
Description	Brief description of the selected alarm or event. If no description is entered, this field is blank.
Acknowledged Username	Login name of the user who acknowledged the alarm or event. **Note** If the alarm acknowledgement is set to Automatic and you can manually acknowledge an alarm, the Acknowledged Username is not overwritten when the alarm clears.
Acknowledged Time	Date and time when the alarm or event was acknowledged. **Note** If the alarm acknowledgement is set to Automatic and you can manually acknowledge an alarm, the Acknowledged Time is not overwritten when the alarm clears.
Note	Any notes that were entered for the selected alarm or event. This field also shows the login name of the user who entered the note and the time stamp when the note was entered.
Source ID	Name of the NE or EMS where the selected alarm or event occurred.
TL1 Direction	TL1 direction for RTRV-ALM-ALL and RTRV-COND-ALL TL1 commands and REPT^ALM/COND autonomous messages. Values are Receive or Transmit. This field is blank for non-TL1 alarms.
TL1 Location	TL1 location for RTRV-ALM-ALL and RTRV-COND-ALL TL1 commands and REPT^ALM/COND autonomous messages. Values are Near End or Far End. This field is blank for non-TL1 alarms.

9.2.5 Filtering Data in the Alarm Log

By default, the Alarm Log shows alarm and event information that occurred during the last 4 hours. Use the drop-down menu to the right of the time-based Filter Data tool to filter event data for various time periods.

Step 1 In the Alarm Log window, choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog box opens.

Step 2 Specify the filter parameters described in the following table.

Step 3 After making your selections, click **OK** to run the filter.

Step 4 To save a filter:

a. Open the Alarm Log Filter dialog box.

b. Click the **PS** tab.

c. Check the **Save Filter** check box.

d. Click **OK**. In the Alarm Log window, the Filter tool changes to red, indicating that a saved filter is present.

Note The Alarm Log supports only one saved filter per user.

Step 5 To delete a saved filter, choose **File > Delete Saved Filter** in the Alarm Log window. At the following prompt, click **Yes**:

```
The saved filter will be deleted. The current filter will remain applied to the table. Are
you sure you want proceed?
```

When you delete a saved filter, the Filter tool reverts to blue in the Alarm Log window.

Table 9-6 Field Descriptions for the Alarm Log Filter Dialog Box

Tab	Description
Time Stamp (*time zone*)	Allows you to filter alarm and event data for a specified time period, ranging from the past hour to the past 6 months. Additionally, you can click the **User Specified** radio button to specify exact filter start and end times by date and hour. The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue. If you want to filter alarms and events and the time period is not important, click **No Time Specified**. Click **From Now Onward** to set the filter time to start immediately and continue until you change filter parameters.
Source ID	Allows you to move NEs back and forth between the list of available source IDs and selected source IDs and then run the filter. If you have the appropriate user permission, you can filter Prime Optical EMS alarms and events by selecting Prime Optical and adding it to the Selected Source ID list. If more than 100 NEs are selected, the Source ID tab dims and all devices are included in the filter criteria you specify. **Note** Use the scroll bars at the bottom and right side of the lists to display all options in the lists.
Module Name	Allows you to specify which modules you want to include in the filter. The modules displayed depend on the NE selection in the Domain Explorer tree when the Alarm Log is opened. Use the **Add** and **Remove** buttons to filter the display to specific modules. The Alarm Log displays events for modules listed under Selected Module Name. **Note** Use the scroll bars at the bottom and right side of the lists to display all options in the lists.

Table 9-6 Field Descriptions for the Alarm Log Filter Dialog Box (continued)

Tab	Description
Affected Object	Allows you to specify which objects you want to include in the filter. The objects displayed depend on the NE selection in the Domain Explorer tree when the Alarm Log is opened. Use the **Add** and **Remove** buttons to filter the display to specific objects. The Alarm Log displays events for entities listed under Selected Affected Object. To filter NE-specific EMS alarms, select Prime Optical and add it to the Selected Affected Object list. Below the Available Affected Object list is a text field where you can enter characters to search quickly for available objects. The text field accepts an asterisk (*) as a wildcard character. Alarms that do not match the search criteria are not displayed. **Note** Use the scroll bars at the bottom and right side of the lists to display all options in the lists.

PS	Allows you to filter data based on the perceived severity (PS) of the alarm or event. Additionally, you can filter service-affecting alarms and events, nonservice-affecting alarms and events, and/or alarms and events where the service-affecting status is not known.
	
	Follow these steps to save a filter:
	
	1. Check the **Save Filter** check box, and click **OK** in the Filter dialog box.
	2. The saved filter is added to the table.
	3. When you choose **File > Apply Saved Filter**, the table populates with the attributes saved for that filter.
	
	Note An "at" symbol (@) in the Filter indicates that you are viewing a saved filter.
	
	Follow these steps to delete a filter:
	
	1. Choose **File > Delete Saved Filter** (or click the **Delete Saved Filter** tool).
	
	The following message appears in the Delete Filter dialog box:
	
	`The saved filter will be deleted. The current filter will remain applied to the table. Are you sure you want proceed?`
	
	2. Click **Yes**.
	3. When you run two parallel Prime Optical client sessions, deleting a saved filter from one session does not reflect any changes on the other. The Apply and Delete buttons remain enabled in the second session.
	
	The following message appears when you click either of the buttons in the Filter dialog box of the second session:
	
	`The saved filter no longer exists in the system. The current user might have deleted it in a different Prime Optical client session.`
	
	4. Click **OK**.
	
	The Apply and Delete buttons are disabled. The Filter tool reverts to blue, indicating that the filter is not saved.
	
	Note The menu items **Apply Saved Filter** and **Delete Saved Filter** and the **Delete Saved Filter** tool are enabled only if there is a saved filter for that table.

Physical Location	Allows you to filter data based on the physical location of an NE or its components. To view the tab, an NE must be selected in the Domain Explorer tree. The filters that are available depend on the NE selected. For example, if you select a CTC-based NE, you can filter data by shelf, slot, and port.

Table 9-6 Field Descriptions for the Alarm Log Filter Dialog Box (continued)

Tab	Description
ID	Allows you to filter data based on alarm or event ID. Enter a starting ID and an ending ID; then, run the filter to see only the alarms or events that occurred within the specified range of IDs. Check the **Disregard All The Other Filter Criteria** check box to ignore all other filter specifications. In addition, you can filter the view to only alarms, only events, or both alarms and events.
NE Alarm Time (*time zone*)	Allows you to filter alarm data for a specified time period, ranging from the past hour to the past 6 months. Additionally, you can click the **User Specified** radio button to specify exact filter start and end times by date and hour. The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box. If you want to filter alarms and the time period is not important, click **No Time Specified**. Click **From Now Onward** to set the filter time to start immediately and continue until you change filter parameters.

9.2.6 Exporting All Data in the Alarm Log or Alarm Browser

You can export the entire contents of the Alarm Browser or Alarm Log to a text file. You can export all of the data in the Alarm Browser or Alarm Log, as long as the window is not in automatic refresh mode. It might take longer to open the Alarm Browser or Alarm Log with the export entire table feature enabled.

The entire-table export writes the data to a user-specified text file and retains the user-selected table customizations. For example, if you customized the table to make a column invisible, that column does not appear in the exported file.

Step 1 Complete the following substeps to enable the export entire table feature:

a. In the Domain Explorer window, choose **Edit > User Preferences**.

b. In the User Preferences dialog box, click the **FM Preferences** tab.

c. Check the **Enable Export of the Entire Table** check box.

d. Check the **Save current settings** check box.

e. Click **OK**.

Step 2 In the Domain Explorer window, choose **Fault > Alarm Browser** or **Alarm Log**.

Step 3 In the Alarm Browser or Alarm Log window, choose **File > Export**.

Step 4 In the Export dialog box, click the **Entire table (only if Auto Refresh is disabled)** radio button.

Note This option is disabled if the window is in Auto Refresh mode.

Step 5 In the Export Data to File field, specify a location for the exported file. Click **Browse** to change the file location.

Step 6 Click **OK**. A progress bar tracks the export progress.

9.3 What Fault Information Can I See?

An alarm is represented by a notification from a managed NE that a certain condition has just occurred. These alarms usually represent error conditions on NEs. Each alarm is associated with the NE for which it provides notification, and an NE can have a number of alarms related to itself at any time.

Each NE shown in the Domain Explorer tree has a corresponding alarm icon that indicates the highest severity alarm that affects the NE. Management domain nodes and group nodes have alarm icons that reflect the highest alarm condition of the NEs contained in the domain or group.

The user-defined Domain Explorer views have “bubble-up” alarm severity propagation and drill-down capabilities to isolate fault conditions and identify service-delivery impact.

9.3.1 How Are Alarms Displayed?

You can set the Alarm Browser or Alarm Log to display full background color for the entire selected row. The color corresponds to the alarm status and severity. In the Domain Explorer window, choose **Edit > User Preferences**. The User Preferences dialog box opens. On the FM Preferences tab, check the **Color Entire Row in Table View** check box.

In the Dashboard, Map Viewer, Alarm Browser, and Domain Explorer, the color of the border surrounding a component, or the background color, indicates the operational status of the component. When status changes, the border or the background color changes as indicated in the following table.

Table 9-7 Alarm Severity Colors for the Dashboard, Map Viewer, Alarm Browser, and Domain Explorer

Color	Severity	Meaning	Description
Green	Cleared	Component is active.	The component is operating normally.
Yellow	Minor	Minor failure.	The component is down; both administrative and operational values are down. This does not necessarily indicate a fault condition; the component might be disabled.
Orange	Major	Component is down.	Administrative status is up and operational value is down.
Red	Critical	Component failed.	Physical hardware failure.
Cyan (blue-green)	Warning	Interface is dormant.	The interface cannot pass packets, but is in a pending state waiting for some external event to place it in the up state. The interface might have packets to transmit before establishing a connection to a remote system, or a remote system might be establishing a connection to the interface. When the pending event occurs, the interface changes to the up state.

9.3.1.1 Understanding How Prime Optical Displays the Affected Object Field

Prime Optical displays the Affected Object field in the Alarm Browser and Alarm Log windows in the same way as for the Interface field in PM tables. See 10.4.7 Understanding How Prime Optical Displays the Interface Field, page 10-31.

For the ONS 155xx, the Affected Object field can be:

- wavepatch—The alarm is related to the optical client side of the card.
- wave—The alarm is related to the optical connection with the OADM (filter) card.

- The actual interface object, which changes depending on the card. For example, WaveEthernetPhy for a 10 Gb card, EsconPhy for an ESCON card, and so on.

9.3.2 Suppressing Alarms

Alarm suppression is useful when the NE is under maintenance. You can also suppress alarms for a single shelf in an ONS 15454 multishelf NE.

Caution If multiple CTC or TL1 sessions are open, alarms in all other open sessions are also suppressed.

9.3.2.1 Suppressing Alarms at the Card Level—CTC-Based NEs

Step 1 In the Domain Explorer window, select a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the NE Explorer tree, click the specific card.

Step 3 In the card slot property sheet of the NE Explorer window, click the **Identification** tab.

Step 4 Check the **Suppress Alarms** check box.

Step 5 Click **Apply**.

9.3.2.2 Suppressing Alarms at the Node Level—CTC-Based NEs

Step 1 In the Domain Explorer window, select a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the node property sheet of the NE Explorer window, click the **Alarm** tab.

Step 3 Click the **Alarm Behavior** subtab.

Step 4 Check the **Suppress Alarms** check box.

Step 5 Click **Apply**.

9.4 Is the Service Working?

Network devices report symptoms of problems by generating events. An event in this context is a message indicating that a device or application in your network has discovered something of note. The network devices generate many types of events automatically. In addition, you can use thresholds to define or modify the conditions under which events are generated. A *threshold* is a trigger, set up on a continuous data stream, that is a point of interest that generates events when that point is satisfied.

The events generated need to be analyzed to determine whether they represent a fault condition or a problem in your network.

It is important to generate events when there is a problem. It is also important to limit the number of events generated to prevent an excessive load on the network. Prime Optical performs a number of self-monitoring tasks where threshold limits can be set. The threshold limits are set in the Self Monitor table. (See 10.3.12 Using the Self Monitor Table, page 10-15.) If a threshold is crossed, an EMS alarm is generated.

You can obtain information regarding how the system is performing and how long certain tasks are taking to complete by selecting **Administration > Control Panel**, then **Alarm Configuration > Threshold EMS Alarms** or **Alarm Configuration > Nonthreshold EMS Alarms**. (See 9.4.4 Setting Up and Viewing Alarm Configuration Parameters, page 9-18.) By monitoring this data, you can identify potential system problems before they become critical in the operation of the EMS. Associated with each parameter that is monitored are three alarm thresholds. The administrator can set a minor, major, and critical threshold value for each parameter. If any of these thresholds are crossed, then an alarm will be raised to provide notification of the situation.

Threshold alarms are raised when their limit exceeds the value set for critical, major, minor, or warning thresholds. For example, you can set threshold alarms for disk usage for 90%, 80%, 70%, and 60%, meaning a warning alarm is raised when the disk becomes 61% full and a critical alarm is raised when the disk becomes 91% full. The server checks these parameters at every polling interval that is set in the Poll Frequency field.

Nonthreshold alarms do not have an alarm threshold. Instead, nonthreshold alarms occur when a condition occurs, such as loss of connectivity to an NE. Use the Nonthreshold EMS Alarms tab to set the severity level (critical, major, minor, or warning) for which a nonthreshold alarm should be raised when that condition occurs.

Caution Changing the EMS alarm severities can affect the alarm status seen by listeners on the EMS's OSS interfaces.

The following sections provide information on NEs:

- 9.4.1 Locating Alarms, page 9-16
- 9.4.4 Setting Up and Viewing Alarm Configuration Parameters, page 9-18

These tasks allow you to manage the alarm profiles features:

- 9.4.5 Creating Alarm Profiles—CTC-Based NEs, page 9-22
- 9.4.6 Applying Alarm Profiles—CTC-Based NEs, page 9-23
- 9.4.7 Managing Alarm Profiles—CTC-Based NEs, page 9-24

This task allows you to mark a service as critical for process monitoring purposes:

- 9.4.9 Using the Recovery Properties Pane, page 9-27

9.4.1 Locating Alarms

The Alarm Browser has a specific selection context, which means that it displays alarm information that corresponds to the view where it was launched. If you launch the Alarm Browser from the management domain node, the browser shows all NE alarms and all EMS alarms (if you have permission to see EMS alarms). If you launch the Alarm Browser from a group or NE node, the browser shows only NE alarms for that group or NE node. If you launch the Alarm Browser from the Dashboard, the browser shows all NE alarms for the domain.

You can locate the equipment for an existing alarm from the Alarm Browser.

Step 1 In the Domain Explorer, choose **Fault > Alarm Browser** (or click the **Open Alarm Browser** tool).

Step 2 In the Alarm Browser, click an alarm condition and choose **Fault > Locate Alarm/Event** (or click the **Locate Alarm/Event Through NE Explorer** tool). The NE Explorer opens and displays the property sheet of the alarmed equipment.

Note Refer to the appropriate NE documentation for a list of alarms supported on each NE. See 1.7.2 Related Cisco NE Documentation, page 1-50.

9.4.2 Locating Affected Layer 2 Services

You can locate which Layer 2 services are affected by an existing Layer 2 service alarm.

Step 1 In the Domain Explorer, choose **Fault > Alarm Browser** (or click the **Open Alarm Browser** tool).

Step 2 In the Alarm Browser, click a Layer 2 service alarm and choose **Fault > Affected L2 Services**. The Affected L2 Services dialog box opens, listing the Layer 2 services that are affected by the selected alarm.

- To retrieve the affected Layer 2 services on the PT System, go to Step 3.
- To retrieve the affected Layer 2 services on a specific port, go to Step 4.
- To retrieve the affected Layer 2 services on a channel group, go to Step 5.

Step 3 To retrieve the affected Layer 2 services on the PT System:

a. Click the **Packet Transport System** radio button.

b. Select the service type (Carrier Ethernet, Pseudowire, or MPLS TP tunnel) from the Service Type drop-down list.

c. Select the alarm type from the Alarm Type drop-down list. See Table 13-28 on page 13-91 for the list of alarm types.

d. Click **Show**. The affected Layer 2 services on the PT System are displayed in the table.

e. (Optional) Click **Reset** to reset the Service Type and Alarm Type drop-down lists.

Step 4 To retrieve the affected Layer 2 services on a specific port:

a. Click the **Port** radio button.

b. Select the slot from the Slot drop-down list.

c. Select the port from the Port drop-down list.

d. Select the service type (Carrier Ethernet, Pseudowire, or MPLS TP tunnel) from the Service Type drop-down list.

e. Select the alarm type from the Alarm Type drop-down list. See Table 13-28 on page 13-91 for the list of alarm types.

f. Click **Show**. The affected Layer 2 services on the port you selected are displayed in the table.

g. (Optional) Click **Reset** to reset the Service Type and Alarm Type drop-down lists.

Step 5 To retrieve the affected Layer 2 services on a channel group:

a. Click the **Channel Group** radio button.

b. Select the service type (Carrier Ethernet, Pseudowire, or MPLS TP tunnel) from the Service Type drop-down list.

c. Select the alarm type from the Alarm Type drop-down list. See Table 13-28 on page 13-91 for the list of alarm types.

d. Click **Show**. The affected Layer 2 services on the channel group you selected are displayed in the table.

e. (Optional) Click **Reset** to reset the Service Type and Alarm Type drop-down lists.

Step 6 (Optional) To cross-launch the service table from the Affected L2 Services dialog box, click **Service Table** to launch the corresponding service table. For example, if you selected Pseudowire as the service type, the Pseudowire Service table opens.

Step 7 (Optional) To filter the affected Layer 2 services displayed in the table, click the **Filter** button. You can filter by:

- Service ID
- Name
- Description

Step 8 (Optional) To clear the results and run a new query, click **Clear Table**.

9.4.3 Viewing Affected Circuits

You can view the circuits affected by a given alarm.

Step 1 In the Domain Explorer, choose **Fault > Alarm Browser** (or click the **Open Alarm Browser** tool).

Step 2 Select the alarm for which to view affected circuits, and choose **Fault > Affected Circuits**.

The Circuit Table appears, displaying all the circuits affected by the selected alarm.

9.4.4 Setting Up and Viewing Alarm Configuration Parameters

Use the Alarm Configuration pane to configure and view alarm severities for system parameters.

Caution Changing the EMS alarm severities can affect the alarm status seen by users on the EMS's OSS interfaces.

Complete the following steps to set up and view alarm configuration parameters:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Alarm Configuration** to open the Alarm Configuration pane. Table 9-8 provides descriptions.

Step 3 In the Nonthreshold EMS Alarms tab, you can select the severity level that will be assigned to the nonthreshold alarm parameter.

Note Nonthreshold alarms do not have an alarm threshold. These types of alarms occur when an error condition occurs, such as loss of connectivity to an NE. Use the Nonthreshold EMS Alarms tab to set the severity level for which a nonthreshold alarm should be raised when that condition occurs.

Step 4 After making your selections, click **Save**.

Note

- If an alarm is outstanding when you disable it, the system clears the alarm.
- If an alarm has been manually cleared in the Alarm Browser and a clear alarm is sent, the request will still be processed but it will not have any impact on the alarm.
- To recover from an alarm condition, see Appendix G, "Troubleshooting" for information.
- All alarms on an NE are cleared when the NE is marked as Out of Service.

Table 9-8 Field Descriptions for the Alarm Configuration Pane

Field	Description
Threshold EMS Alarms Tab	
Poll Frequency	Threshold alarms are raised when their limit exceeds the value set for critical, major, minor, or warning thresholds. For example, you can set threshold alarms for disk usage for 90%, 80%, 70%, and 60%, meaning a warning alarm is raised when the disk becomes 61% full and a critical alarm is raised when the disk becomes 91% full. The server checks these parameters at every polling interval that is set in the Poll Frequency field. The Poll Frequency value affects only the following parameters: • CPU Usage • Memory Usage RAM • Memory Usage SWAP • Disk Usage

Table 9-8 Field Descriptions for the Alarm Configuration Pane (continued)

Field	Description
Parameter Name	• Base Circuit Creation Time (seconds)—Time it takes to create a base circuit. • CPU Usage (%)—Percentage of CPU time used for executing user, system, and I/O tasks. • Circuit Creation Time Per Hop (seconds)—Time it takes for Prime Optical to create an end-to-end circuit. • Config Resynch Time (seconds)—Time it takes for Prime Optical to collect alarm and inventory information from the NE. • Disk Usage (%)—Percentage of disk space used in a particular partition. Prime Optical database and partitions are monitored separately. • Memory Usage RAM (%)—Percentage of RAM memory used for all system processes. • Memory Usage SWAP (%)—Percentage of SWAP memory used for all system processes. • NE Synch Time (seconds)—Time it takes to synchronize the Prime Optical server with the NEs. • Prune Time 15 min PM (seconds)—Time it takes to prune 15-minute PM data. • Prune Time 1 day PM (seconds)—Time it takes to prune 1-day PM data. • Prune Time Audit Log (seconds)—Time it takes to prune Audit Log data. • Prune Time Audit Trail Log (seconds)—Time it takes to prune Audit Trail Log data. • Prune Time Error Log (seconds)—Time it takes to prune Error Log data. • Prune Time FM (seconds)—Time it takes to prune FM data. • Prune Time Job Monitor (seconds)—Time it takes to prune job monitor data. • Prune Time Purge NE (seconds)—Time it takes to prune NE purge data. • Prune Time Server Monitor (seconds)—Time it takes to prune server monitor data.
Enable	Whether or not the corresponding parameter in the Parameter Name column is enabled (checked) or disabled (unchecked). When checked, it enables monitoring for the selected parameter. If an EMS threshold alarm is outstanding when you disable monitoring, Prime Optical clears the alarm.
Critical	Amount of time, in minutes, that must elapse before triggering a critical alarm.
Major	Amount of time, in minutes, that must elapse before triggering a major alarm.
Minor	Amount of time, in minutes, that must elapse before triggering a minor alarm.

Table 9-8 Field Descriptions for the Alarm Configuration Pane (continued)

Field	Description
Nonthreshold EMS Alarms Tab	
Parameter Name	• A critical process is hanging; server will be shut down in 5 minutes. • A process is hanging or terminated. • Alarm resync unsuccessful—The alarm resynchronization could not be completed on the node. • Communication through secondary IP address. • Config resync unsuccessful—Prime Optical could not synchronize with the node. • Failed authentication by NE—This is a major alarm. An incorrect username or password was provided for login. This alarm applies to CTC-based NEs and is cleared when you provide the correct username or password and mark the NE as Out of Service, then as In Service. • Loss of communication—This is a critical alarm. Prime Optical cannot communicate with the node, possibly because the node was disconnected from the network. This alarm applies to all NEs and is cleared when Prime Optical regains connectivity to the NE. • Maximum login attempts exceeded—Prime Optical raises this alarm when you try to connect to the Prime Optical server several times with the wrong username and password. • Memory auto or manual backup failure—This is a minor alarm. Memory backup on the node failed. This alarm applies to CTC-based NEs and is cleared when a subsequent memory backup succeeds. • NE out of Sync—Prime Optical raises this EMS alarm when the health poll of an NE fails because the server is no longer registered on the node to receive event notifications. This alarm is cleared once the initial poll is executed successfully. • PM fail EMS alarm—This is a warning alarm. Prime Optical cannot retrieve performance statistics from the node even though robust PM data collection is enabled and the node has PM buckets that were not retrieved. This alarm applies to CTC-based NEs and is cleared when a subsequent PM collection cycle succeeds. If PM collection is unsuccessful after subsequent retries, the FAIL alarm is cleared and the PM lost EMS alarm is generated. • PM lost EMS alarm—This is a major alarm. Prime Optical cannot retrieve performance statistics from the node when robust PM data collection is not enabled or when robust PM data collection is enabled but the node has overwritten the PM buckets that were not retrieved. This alarm applies to CTC-based NEs and is cleared when the user clears it manually from the Alarm Browser. • PoS port shut down; L2 topology in wrapped state—This alarm is generated when one or more PoS ports related to an L2 topology are shut down. This alarm is cleared when all the PoS ports related to the topology are enabled. • Template manager event. • Unable to change database password—This alarm is generated after a failed attempt to change the database password in the Control Panel > Database Properties pane.
Enable	Whether or not the corresponding parameter in the Parameter Name column is enabled (checked) or disabled (unchecked). When checked, it enables monitoring for the selected parameter. If an EMS nonthreshold alarm is outstanding when you disable monitoring, Prime Optical clears the alarm.
Severity	Click the appropriate cell and select the alarm severity level from the available options (Critical, Major, Minor, or Warning) for each of the parameters listed in the Parameter Name column. **Note** If an EMS alarm is outstanding when you change its severity level, the outstanding alarm's severity level remains the same and the new severity level takes effect the next time the alarm is raised.

9.4.5 Creating Alarm Profiles—CTC-Based NEs

Use the Create Alarm Profile dialog box to create new alarm profiles for CTC-based NEs.

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the node properties sheet, click the **Alarm** tab.

Step 3 In the Profile subtab, click the **Create** button. The Create Alarm Profile dialog box opens. The following table provides descriptions.

Step 4 After making your selections, click **OK**.

Table 9-9 Field Descriptions for the Create Alarm Profile Dialog Box

Field	Description
Enter the Profile Name	Enter the name of the new alarm profile.
Condition	Condition of the alarm.
Severity	Select a severity for the new alarm from the list. Alarm severities include: • Not Reported (NR)—A raise or clear of the condition is not sent to clients, but is tracked on the NE. You can retrieve a complete list of all raised conditions, including Not Reported as well as Not Alarmed, Critical, Major, and Minor, by using the RTRV COND TL1 command, or its equivalent. • Not Alarmed (NA)—A raise or clear of the condition is sent to clients as a nonalarmed TL1 message (REPT EVT). The message has no severity and no service affecting flag. • Minor (MN)—The alarm is a minor alarm. • Major (MJ)—The alarm is a major alarm. • Critical (CR)—The alarm is a critical, traffic-affecting alarm. **Note** For critical, major, and minor alarms, a raise or clear of the condition is sent to clients as an alarmed message (REPT ALM). This message includes a service affecting flag, which is On or Off. If a normally service affecting condition is raised in a nonservice affecting situation (for example, the nontraffic-bearing side of a protect pair), the condition is sent as minor even if the profile says major or critical. • UNSET—The value of this alarm corresponds to the value of the default alarm profile on the node. UNSET is useful when transferring alarm profiles between different versions of software. • Inherited—The alarm behaves according to its parent object: – If you set an alarm as Inherited on a port, it uses the card profile. – If you set an alarm as Inherited on a card, it uses the node profile. – If you sent an alarm as Inherited on a node, it uses the default profile.

9.4.6 Applying Alarm Profiles—CTC-Based NEs

The alarm profiles feature allows you to change default alarm severities by creating unique alarm profiles for individual CTC-based NEs. A profile can be applied to any node on the network. Alarm profiles must be stored on a node before they can be applied to a node, card, or port.

The two reserved profiles include the Default profile, which sets severities to standard Telcordia GR-253 settings, and the Inherited profile, which sets all alarm severities to inherited. If an alarm has an Inherited profile, it inherits (copies) its severity from the same alarm at the next level. For example, a card with an Inherited alarm profile copies the severities used by the node that contains the card. The Inherited profile is not available at the node level.

In the card view, the Alarm Behavior subtab displays the alarm profiles of the selected card. In the node view, the Alarm Behavior subtab displays the alarm profiles for the node. Alarms form a hierarchy. A node-level alarm profile applies to all cards in the node, except those that have their own profiles. A card-level alarm profile applies to all ports on the card, except those that have their own profiles.

At the node level, apply profile changes on a card-by-card basis or set a profile for the entire node. At the card level, apply profile changes on a port-by-port basis or set the profiles for all ports on that card simultaneously.

Step 1 In the Domain Explorer window, click a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the node properties sheet, click the **Alarm** tab > **Alarm Behavior** subtab. In the card properties sheet, click the **Alarm Behavior** tab.

Step 3 Click **Update** to view the latest Alarm Profile list.

Step 4 To apply an alarm profile at the card view, click the appropriate row in the Alarm Profile column for the port desired. To apply an alarm at the node view, click the appropriate row in the Profile column for the card desired.

Step 5 Choose the appropriate alarm profile from the drop-down list.

Step 6 Repeat these steps for each port that is being assigned a profile.

Step 7 Click **Apply**.

Note

- In the Alarm Behavior tab > Alarm Profile drop-down list, you can select any profile and click **Force to all ports** to apply this profile to all ports. But when the profile is saved, the Alarm Profile value returns to Inherited. This is expected behavior, because the drop-down list does not represent a value on the NE. After setting the alarm profile value on the ports, the Alarm Profile field returns to the first selectable value in the drop-down list.
- The alarm profile is not applied for ONS 15600 SONET or ONS 15600 SDH NEs if the profile was edited outside of the Alarm Profiles Management wizard.

9.4.7 Managing Alarm Profiles—CTC-Based NEs

Use the Alarm Profiles Management wizard to download an alarm profile from either an NE or from a local file.

Note This feature is available for CTC-based NEs with software release 3.4 or later.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Alarm Profiles Management**. The Alarm Profiles Management wizard opens. The following table provides descriptions.

Step 2 Select an available profile from the NE by clicking the **From NE** radio button or from a file by clicking the **From File** radio button.

Step 3 Complete one of the following options:

- If you clicked the **From NE** radio button, select the NE and alarm profile from the lists.
- If you clicked the **From File** radio button, specify the file from a local drive by clicking the **Local** radio button, or from a server by clicking the **Server** radio button.

Step 4 Click **Next**.

Step 5 Edit the alarm severity for each alarm condition by clicking a row in the Alarm Severity column.

Step 6 Click **Next**.

Step 7 Enter the profile name and save the new alarm profile to the NE by clicking the **Save to NE(s)** radio button, or to a file by clicking the **Save to File** radio button.

Step 8 Complete one of the following options:

- If you clicked Save to NE(s), select the NE(s) on which to apply the new alarm profile. Check the **Apply to Selected NE(s)** check box if you want to set the alarm profile as the current profile.

  Note If you clicked the **From File** radio button in Step 2, the Available NE(s) list includes all the NEs that Prime Optical currently manages.

- If you clicked Save to File, you can either save the file locally by clicking the **Local** radio button and specifying the directory path, or save it to a server by clicking the **Server** radio button and specifying the server name.

Step 9 Click **Finish**.

Prime Optical schedules a job for this action. The alarm profile is downloaded to each selected NE and set, if so selected. This is tracked as a separate task in the Job Monitor table.

Table 9-10 Field Descriptions for the Alarm Profiles Management Wizard

Field	Description
Select a Profile	
From NE	Choose **From NE** if the alarm profile is on an NE. If you select From NE, the From File options are not accessible.

Table 9-10 Field Descriptions for the Alarm Profiles Management Wizard (continued)

Field	Description
Select NE	Select the NE where the alarm profile exists.
Select Profile	Select an alarm profile from the list.
From File	Choose **From File** if the alarm profile file is on your PC or a server. If you select From File, the From NE options are not accessible.
Local	Choose **Local** if the alarm profile file is on your PC. Enter the path for the file, or click **Browse** to search for it.
Server	Choose **Server** if the alarm profile file is located on a server. Use the drop-down list to select a server.
Edit the Profile	
Alarm Condition	List of alarm conditions for the selected alarm profile.
Alarm Severity	Click the field to select a new alarm severity for the alarm condition. Severities are: • Not Reported (NR)—A raise or clear of the condition is not sent to clients, but is tracked on the NE. You can retrieve a complete list of all raised conditions, including Not Reported as well as Not Alarmed, Critical, Major, and Minor, by using the RTRV COND TL1 command, or its equivalent. • Not Alarmed (NA)—A raise or clear of the condition is sent to clients as a nonalarmed TL1 message (REPT EVT). The message has no severity and no service affecting flag. • Minor (MN)—The alarm is a minor alarm. • Major (MJ)—The alarm is a major alarm. • Critical (CR)—The alarm is a critical, traffic-affecting alarm. **Note** For critical, major, and minor alarms, a raise or clear of the condition is sent to clients as an alarmed message (REPT ALM). This message includes a service affecting flag, which is On or Off. If a normally service affecting condition is raised in a nonservice affecting situation (for example, the nontraffic-bearing side of a protect pair), the condition is sent as minor even if the profile says major or critical. • Unset—The value of this alarm corresponds to the value of the default alarm profile on the node. Unset is useful when transferring alarm profiles between different versions of software. • Inherited—The alarm behaves according to its parent object: – If you set an alarm as Inherited on a port, it uses the card profile. – If you set an alarm as Inherited on a card, it uses the node profile. – If you sent an alarm as Inherited on a node, it uses the default profile.
Save the Profile	
Profile Name	Name of the selected alarm profile.
Save to NE(s)	To save the alarm profile to one or more NEs, choose **Save to NE(s)**. If you choose Save to NE(s), the Save to File options are not accessible.
Available NE(s)	Select one or more NEs in the Available NE(s) list and click **Add** to move them to the Selected NE(s) list. The contents of the Available NE(s) list depends on the following conditions: • If you selected a profile from a file, the Available NE(s) list includes all the NEs that Prime Optical currently manages.
Selected NE(s)	Select one or more NEs in the Selected NE(s) list and click **Remove** to move them to the Available NE(s) list.

Table 9-10 Field Descriptions for the Alarm Profiles Management Wizard (continued)

Field	Description
Apply to Selected NE(s)	When checked, applies the alarm profile as the node-level alarm profile.
Overwrite the Profile	If a profile of the same name already exists, check this check box to overwrite the profile with the new profile.
Save to File	To save the defaults to a file on your PC or a server, choose **Save to File**. If you choose Save to File, the Save to NE(s) options are not accessible.
Local	Choose **Local** to save the file on your PC. Enter the path for the file, or click **Browse** to search for it.
Server	Choose **Server** to save the file on a server. Enter a server path in the field.

9.4.8 Managing Custom Alarm Types—CTC-Based NEs

You can add up to 50 custom environmental alarms on the following nodes and cards:

- AIC and AIC-I cards on ONS 15454 SONET and ONS 15454 SDH NEs
- CTX-CL600 cards on ONS 15310 CL NEs
- ONS 15600 SONET NEs
- ONS 15600 SDH NEs
- ONS 15310 MA SONET NEs
- ONS 15310 MA SDH NEs
- CRS-1/3 NEs

Custom environmental alarms are reported in the Condition column in the Alarm Log and Alarm Browser windows.

Step 1 In the Domain Explorer window, click one of the CTC-based NEs in the preceding list and choose **Configuration > NE Explorer**.

Step 2 Do one of the following:

- In the node properties sheet, click the **Alarm Extenders** tab > **User-Defined Alarms** subtab.
- In the AIC, AIC-I, or CTX-CL600 card properties sheet, click the **Alarm Extenders** tab > **User-Defined Alarms** subtab.

Step 3 In the Alarm Types area, click **Add**. The Add Alarm Type dialog box opens.

Step 4 In the New Alarm Type field, enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).

Step 5 Click **OK**. The new custom alarm appears in the Alarm Types area.

Step 6 To delete a custom alarm type, select the alarm in the Alarm Types area and click **Delete**. Click **OK** in the confirmation dialog box.

9.4.9 Using the Recovery Properties Pane

You can use the Recovery Properties pane in the Control Panel window to mark a service as critical for process monitoring purposes. If a critical process stops running or fails to poll monitoring services for a long time, the server shuts down and the client generates an alarm.

You can also use the Recovery Properties pane to list the servers that clients will log into if access to the primary server is disrupted.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Recovery Properties** to open the Recovery Properties pane. The following table provides descriptions.

Step 3 Complete the following substeps to set a process as critical:

a. Click the **Process Monitoring** tab.

b. Check the **Critical** check box beside each service to indicate that the service is critical.

c. Click **Save**.

Field Descriptions for the Recovery Properties Pane

Field	Description
Process Monitoring Tab	
Service Name	Displays the process monitoring service name.
Critical	If checked, the selected service is designated as critical for process monitoring. **Note** CORBA ImR, Oracle Service, and Service Manager are permanently critical. You cannot uncheck the Critical check boxes for these services. The Prime Optical server may take up to 30 minutes to shut down when a critical process stops running or does not respond to poll monitoring.

9.5 Where Is the Fault?

You need to be able to quickly troubleshoot problems in the network, identify when network capacity is being reached, and provide information to management on the number and types of devices in use. If the network goes down, one of the first things you will need to know is what devices are running on the network. You will want to know the names, addresses, and interfaces associated with each device in order to begin troubleshooting the problem. The more information you have in one central place about all of the devices, the easier it is to locate the necessary information, resolve problems quickly, and provide detailed information to interested parties.

9.5.1 Sources of Information

Fault management receives and processes information from the following sources:

- Autonomous reports of failures from NEs
- Trouble reports from customers and peer systems
- Results of diagnostics, exercises, and audits from NEs
- Impairment indications from performance management
- Network configuration data from configuration management

Prime Optical constantly updates the alarm status of the network based on the alarm and event notifications sent by the monitored NEs and generated by the EMS itself. It performs alarm synchronization with the NE each time the connection to the NE is established or re-established and the NE is in service.

9.5.2 Identifying and Monitoring Alarms

To identify and monitor alarms on groups of NEs:

Step 1 In the Domain Explorer tree, select the management domain node or a group node. If it shows a critical, major, minor, or warning alarm icon, it means that one or more NEs within the management domain or group are experiencing an alarm.

Step 2 Select the management domain node or group node and choose **Fault > Alarm Browser** (or right-click the node and choose **Alarm Browser** in the popup menu). This opens the Alarm Browser window, which shows all the NEs in the management domain or group that are experiencing an alarm.

To identify and monitor alarms on a specific NE:

Step 1 Select an in-service NE in the Domain Explorer tree that shows an alarm icon.

Step 2 Choose **Fault > Alarm Browser** (or right-click the NE and choose **Alarm Browser** in the popup menu).

Step 3 For ONS 15216 and CTC-based NEs, you can also choose **Configuration > NE Explorer** to view alarms on the NE or on specific modules. The Module View tab displays a graphic of the module that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms also display when you move the mouse pointer over the graphic.)

9.5.3 Using Visual and Audible Alarm Notifications

Step 1 In the Domain Explorer window, choose **Edit > User Preferences**. The User Preferences dialog box opens.

Step 2 In the Event Notification tab, in the Show Notification Dialog For area, select whether or not an alert popup opens when a specific alarm or informational event occurs on NEs in the management domain or in the application.

The Event Notification dialog box opens whenever a new alarm or event occurs. According to your User Preferences selection, you will receive popup notification about alarms by severity and information on events from the NE or from Prime Optical. The Event Notification popup remains open until one of the following occurs:

- You click OK to close the dialog box.
- It is replaced by an Event Notification dialog box with a higher severity.
- You click Disable on the popup window itself to disable additional popups.

The following table describes the fields in the Event Notification dialog box.

Step 3 In the Play Audible Notification For area, select whether or not an audible alert is sounded when a specific alarm or informational event occurs on the NE or in the application. You can also select whether or not a continuous audible alert is sounded when there is an update in the Dashboard. Check the **Continuous Alarm for Dashboard Notifications** check box.

Note To stop the continuous audible alert, choose **Fault > Stop Continuous Beep** in the Domain Explorer.

Step 4 Check the **Save current settings** check box and click **OK**.

Table 9-11 Field Descriptions for the Event Notification Dialog Box

Field	Description
Source	Name of the source where the alarm or event originated.
Time	Date and time that you received the Event Notification popup.
Category	Category of alarm or event. Alarm categories include Critical, Major, Minor, or Cleared. Event categories include NE event (if the event occurred on an NE) or EMS event (if the event occurred on Prime Optical).
Probable Cause	Probable cause of the alarm or event.
Affected Object	Object that is affected by the alarm or event.
Description	Description of the alarm or event.
Service Affecting	Whether the alarm or event affects service.

9.5.4 Sources of Events

There are two sources of events: EMS-generated alarms and OSS (SNMP, CORBA GateWay, TL1). See Chapter 12, “Managing Southbound and Northbound Interfaces” for information about OSS events.

9.5.4.1 EMS-Generated Alarms

In addition to reporting NE-generated alarms, the EMS monitors and reports alarms and events on the EMS itself; for example, loss of connectivity to NE, and so on.

The EMS monitors and reports the NE-specific alarms and events (see Table 9-12) and non-NE-specific alarms and events (see Table 9-13).

Note NE-specific alarms and events can be viewed and accessed by users who are assigned to the particular NE.

Table 9-12 NE-Specific Alarms and Events

NE-Specific Alarms and Events	Description
Loss of communication to an NE	When the system detects loss of connectivity to an NE, an EMS alarm is generated in the Alarm Browser. This EMS alarm is cleared when the system re-establishes connectivity to the NE or when the NE is marked as Out of Service.
Automatic or manual memory backup failure	If an automatic or manual memory backup job fails, an EMS alarm is generated in the Alarm Browser. An individual EMS alarm is generated for each memory backup failure that occurs. All instances of the backup-related EMS alarms are cleared (for that particular NE) when the memory backup succeeds or when the NE is marked as Out of Service.
Prime Optical-to-NE authentication failure	If the system attempts to log into an NE and fails, an alarm is generated. This alarm indicates that the username and password are no longer valid.
Failed PM data retrieval	For CTC-based NEs, an alarm is generated for every PM data retrieval failure. PM 15-minute retrieval fail alarms are generated if the system has not retrieved 15-minute PM data after the number of times to retrieve PM data has been reached. These alarms can be cleared manually or cleared automatically if a PM lost alarm is generated or if PM data is retrieved (PM collection should be set to 15 Min Robust).
Lost PM data	For CTC-based NEs, an alarm is generated for all PM lost data. A lost PM alarm is generated when: • The EMS cannot collect PM data for 15 minutes or 1 day and the NE's PM collection is set to either 15 Min or 1 Day. • The EMS cannot collect 15-minute PM data after 8 hours or 1-day PM data after 2 days and the NE's PM collection is set to 15 Min Robust or 1 Day Robust. If there are outstanding PM retrieval fail alarms, these alarms are cleared and the PM lost alarm is generated. These alarms can be cleared manually.

Table 9-13 Non-NE-Specific Alarms and Events

Non-NE-Specific Alarms and Events	Description
Maximum number of login attempts exceeded	By default, users have a maximum of five login attempts. The user account is locked after the fifth unsuccessful login attempt and an EMS alarm is generated in the Alarm Browser. The alarm is cleared once the user account is unlocked or the account is deleted.
System self-monitor alarm	Threshold parameters such as CPU usage, memory usage, disk usage, circuit creation time, and resynchronization time are collected and evaluated to monitor the server performance. An alarm is generated if any of these parameters cross their threshold values with their corresponding severity level. The alarms are cleared only after the corresponding parameter value falls below the minor threshold. Subsequent threshold crossings for the same parameter do not generate additional alarms. Only the severity level is changed to indicate the current severity level for the specific parameter. **Note** Alarms associated with circuit creation, configuration resynchronization, NE synchronization, and PM data collection indicate that the load on the system is high. Reduce the load on the system before proceeding. Alarms associated with pruning times also indicate that the load on the system is high. Reschedule pruning at a time when the system has less activity.

9.5.5 Enabling Fault Synchronization—CTC-Based NEs

Fault synchronization allows the system to collect the alarm history of an NE that has been marked as Out of Service for some time and is marked as In Service again. Alarm history is displayed in the Alarm Browser.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel** and expand **NE Service**.

Step 2 Choose **CTC-Based SONET NEs** or **CTC-Based SDH NEs**.

Step 3 In the Robust Fault Synchronization area, check the appropriate check box:

- Enable ONS 15310 CL
- Enable ONS 15310 MA
- Enable ONS 15310 MA SDH
- Enable ONS 15327
- Enable ONS 15454
- Enable ONS 15600
- Enable ONS 15454 SDH
- Enable ONS 15600 SDH
- Enable CPT 200
- Enable CPT 600

Step 4 Click **Save**.

9.6 How Can I Find the Root Cause of the Fault?

Root cause analysis captures additional information about defects for the purpose of identifying preventive actions.

In some cases, the alarm report or set of alarm reports generated by a fault are sufficient to indicate the root cause. But often, the information in the alarm messages must be supplemented or confirmed by information from customer trouble reports, diagnostics and exercises of equipment, audits of software and databases, and testing of circuits. Tests of equipment are called *diagnostics*, which are designed to identify the root cause of a fault; *exercises*, which isolate a unit or subsystem and verify that it can perform its intended function; and *audits*, which verify the integrity of software.

The EMS should correlate events and determine the faults that exist in the network. To correlate events means to look for relationships between them.

9.6.1 Viewing the Error Log

The Error Log shows Prime Optical server error information that is useful for debugging purposes. In most cases, the Error Log is requested by service personnel for debugging a problem on the Prime Optical server. The Error Log captures abnormal and significant events based on severity level.

As the default, the Error Log displays information about significant events that occurred during the last four hours. You can change the default time period in the User Preferences dialog box.

To open the Error Log, choose **Administration > Error Log** in the Domain Explorer. The following table describes the fields in the Error Log.

Table 9-14 Field Descriptions for the Error Log

Column Name	Description
Time Stamp	Date and time when the error occurred on the Prime Optical server.
Module	Name of the module where the error occurred.
Severity	Severity level of the error: • Critical, Major, Minor, or Informational—When set to any of these severity levels, all messages corresponding to critical, major, and minor severity levels are logged to the database and all informational messages are stored in the log file. • Debug or Trace—When set to debug or trace, all informational and higher messages are logged to the database. All debug and trace messages are logged to the log files.
Submodule	Name of the submodule where the error occurred.
Filename	Name of the file where the error occurred. Cisco technical support engineers use this information for troubleshooting.
Line	Exact line where the error occurred. Cisco technical support engineers use this information for troubleshooting.
Message	Text of the error message.

By default, all messages are logged to the following files in the /opt/CiscoTransportManagerServer/log directory:

- CTMServerError.log
- CTMerror.log
- ONS15216NEService-*number-time-stamp*.log
- ONS15305NEService-*number-time-stamp*.log
- ONS1530xPMService-*number-time-stamp*.log
- ONS15454NEService-*number-time-stamp*.log
- ONS15454SDHNEService-*number-time-stamp*.log
- ONS15454SDHPMService-*number-time-stamp*.log
- ONS15454PMService-*number-time-stamp*.log
- ONS155xxNEService-*number-time-stamp*.log
- ONS155xxPMService-*number-time-stamp*.log
- ONS15600SDHPMService-*number-time-stamp*.log
- ONS15600PMService-*number-time-stamp*.log
- UnmanagedNEService-*number-time-stamp*.log
- SMService-0-*time-stamp*.log
- SnmpTrapService-2-*time-stamp*.log
- CORBAGWService-1-*time-stamp*.log

By default, all Syslog Service messages are logged to the SyslogService.log file in the /opt/CiscoTransportManagerServer/log directory.

Note The default directory /opt/CiscoTransportManagerServer might have been changed during installation of the Prime Optical server.

9.6.2 Filtering Data in the Error Log

Step 1 In the Error Log, choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog box opens.

Step 2 Specify the filter parameters described in the following table.

Step 3 After making your selections, click **OK** to run the filter.

Table 9-15 Field Descriptions for the Error Log Filter Dialog Box

Tab	Description
Time Stamp (*time zone*)	Allows you to filter Error Log data for a specified time period, ranging from the past hour to the past 6 months. Click the **User Specified** radio button to specify exact filter start and end times by date and hour. The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue. If you want to filter Error Log data and the time period is not important, click **No Time Specified**.
Modules	Allows you to filter Error Log data by Prime Optical module.
Submodules	Allows you to select Prime Optical server submodules to filter Error Log data.
Severity	Allows you to filter Error Log data based on severity level: Critical, major, minor, and informational.

9.6.3 Managing the NE Audit Trail—CTC-Based NEs

The Audit Trail table is a security tool used to investigate unauthorized activities after they occur so that proper remedial action can be taken. It displays audit trail information for CTC-based NEs.

Audit trail entries might be missing from the Audit Trail table because of the following reasons:

- There is heavy provisioning activity on the NE that the local audit trail log on the NE might wrap between polling intervals, and records will be missed for collection.
- The server is down or communications to the NE are unavailable for an extended period. There is a greater likelihood that the log on the NE will wrap before the system can collect the records.

Note

- The audit trail collection interval can be set in the applicable NE Service pane in the Control Panel. See 9.6.3.4 Changing the Audit Trail Collection Interval, page 9-36.
- To collect the latest and most reliable audit trail information for a specific NE, the time must be synchronized with the SNTP server. Do not manually set the clock on CTC-based NEs.

9.6.3.1 Viewing the Audit Trail Table

To view the Audit Trail table, choose **Administration > CTC-Based NEs > Audit Trail Table**. The following table provides descriptions.

Table 9-16 Field Descriptions for the Audit Trail Table

Field	Description
Alias ID	Alias name of the NE.
Sequence Number	NE-generated record ID.
NE Username	NE user ID.
Time Stamp	Date and time.
Description of Operation	Description of the audit trail operation.
Status of Operation on NE	Status of the audit trail operation. Statuses are Passed, Failed, and Aborted.
NE ID	ID of the selected NE.

9.6.3.2 Filtering Data in the Audit Trail Table

Step 1 In the Audit Trail table, choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog box opens.

Step 2 Specify the filter parameters described in the following table.

Step 3 After making your selections, click **OK** to run the filter.

Table 9-17 Field Descriptions for the Audit Trail Table Filter Dialog Box

Tab	Description
Time Stamp (*time zone*)	Allows you to filter audit trail data for a specified time period, ranging from the past hour to the past 6 months. Additionally, you can click the **User Specified** radio button to specify exact filter start and end times by date and hour. The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue. Click **No Time Specified** if you want to filter audit trail data and the time period is not important.
NE ID	Allows you to move NEs back and forth between the list of available NEs and selected NEs. The filter runs on the NEs in the Selected NE ID list.
Username	Allows you to move users back and forth between the list of available users and selected users. The filter runs on the users in the Selected Users list.
Sequence Number	Allows you to enter a starting and ending sequence number for filtering. Check the **Disregard All Other Filter Criteria** check box to base the filter on only the starting and ending sequence number. **Note** If the sequence number reaches 59999, Prime Optical collects audit records starting with 1 in the next collection interval.
Operation Status	Select an operation status for filtering. Operation statuses are Passed, Failed, and Aborted.

9.6.3.3 Enabling or Disabling Audit Trail Collection

Step 1 In the Domain Explorer tree, select a CTC-Based NE.

Step 2 In the Network Element Properties pane > Status tab > Audit Trail State field, choose **Enabled** or **Disabled** from the drop-down list.

Note By default, the Audit Trail State field is set to Disabled.

Step 3 Click **Save**.

9.6.3.4 Changing the Audit Trail Collection Interval

Step 1 In the Domain Explorer, choose **Administration > Control Panel**.

Step 2 In the Control Panel, expand **NE Service** and choose **CTC-Based SONET NEs** or **CTC-Based SDH NEs**.

Step 3 In the Status tab > Audit Trail Collection Interval field, enter the collection interval time. The default is 30 minutes.

Step 4 Click **Save**.

9.6.4 Setting Debug Options

In Prime Optical, the debug option gives you information to investigate, diagnose, and fix a problem.

Specifying debug options allows you to choose parameters to display in the Debug Log.

Step 1 In the Domain Explorer, choose **File > Debug Options**.

Step 2 Specify the debug options. The following table provides descriptions.

Step 3 After making your selections, click **Apply**.

Table 9-18 Field Descriptions for the Debug Options Dialog Box

Field	Description
Modules	
Available, Selected	Select modules that will display debug messages. Use the **Add** and **Remove** buttons to move modules to the Selected list or remove modules from the list.

Table 9-18 Field Descriptions for the Debug Options Dialog Box (continued)

Field	Description
Debug Level	
Fatal	Instructs the Debug Log to display messages with a severity level of at least Fatal.
Warning	Instructs the Debug Log to display messages with a severity level of at least Warning.
Info	Instructs the Debug Log to display messages with a severity level of at least Info.
Debug	Instructs the Debug Log to display messages with a severity level of at least Debug. **Caution** Prime Optical performance will degrade if the Debug option is left on. All operations will slow down, and you might lose alarm and event notifications. Use Debug only when troubleshooting with a Cisco customer support engineer.
Trace	Instructs the Debug Log to display messages with a severity level of Trace. **Caution** Prime Optical performance will degrade if the Trace option is left on. All operations will slow down, and you might lose alarm and event notifications. Use Trace only when troubleshooting with a Cisco customer support engineer.
Display Options	
File	Check the **File** check box to write the Debug Log to a specific file. You can click **Browse** to browse for a local client directory for the Debug Log. After you specify the filename, the log is stored in *filename*0.log, and then in *filename*1.log when *filename*0.log reaches its maximum size. By default, the Debug Log is saved at C:\Cisco\TransportManagerClient*version-number*\debug\CTMC-debug0.log or /opt/CiscoTransportManagerClient*version-number*/debug/CTMC-debug0.log. The dialog box shows the filename without the number 0 or 1, which is appended by default by the Java debugging APIs. **Note** *version-number* is replaced by the version number of the installed Prime Optical client.
Max File Size	Enter the maximum file size for the Debug Log, in bytes.
Console	Check the **Console** check box to write the Debug Log to the console.

9.7 Who Is Responsible for Managing the Fault?

To manage faults effectively, you must know who is taking responsibility for managing each case. Prime Optical offers the following options:

- 9.7.1 Acknowledging and Unacknowledging Alarms, page 9-38
- 9.7.2 Configuring Alarm Acknowledgement and Alarm Notes, page 9-38

9.7.1 Acknowledging and Unacknowledging Alarms

The alarm acknowledgement feature acknowledges selected alarms or all alarms with a single click.

Step 1 In the Domain Explorer window, select an NE and choose **Fault > Alarm Browser**. This opens the Alarm Browser window for the selected NE.

The Alarm Browser window lists critical, major, minor, and warning alarms that have not been cleared or cleared alarms that have not been acknowledged.

Step 2 Select the alarms to be acknowledged and choose **Fault > Acknowledge Alarms** (or click the **Acknowledge Selected Alarm(s)** tool). Click **Yes** in the confirmation dialog box. Click the **Refresh Data** tool to see the changes. A check mark icon provides a visual indication of acknowledged alarms.

Step 3 Click the **Acknowledge Selected Alarm(s)** tool again to unacknowledge the selected alarms. Click **Yes** in the confirmation dialog box. Click **Refresh Data** to see the changes. The check mark is removed, indicating that the alarm has been unacknowledged.

Note Alarm unacknowledgement is disabled by default. Make sure to enable the alarm unacknowledgement feature in the Control Panel before unacknowledging an alarm. See 9.7.2 Configuring Alarm Acknowledgement and Alarm Notes, page 9-38 for more information.

Step 4 To acknowledge all alarms in the view, choose **Fault > Acknowledge All Alarms** (or click the **Acknowledge All Alarms** tool). Click **Yes** in the confirmation dialog box.

9.7.2 Configuring Alarm Acknowledgement and Alarm Notes

Use the UI Properties pane to configure alarm acknowledgment and enable or disable the alarm note feature.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel** and click **UI Properties**.

Step 2 In the Fault Management area, select either Manual or Automatic for alarm acknowledgement.

- If you choose **Manual**, alarms must be acknowledged manually. Cleared alarms move from the Alarm Browser to the Alarm Log once they are acknowledged.
- If you choose **Automatic**, the server automatically acknowledges alarms when they are cleared and moves them from the Alarm Browser to the Alarm Log.

Note Active alarms are not automatically acknowledged.

If the alarms are initially set to Manual Alarm Acknowledgement, and then you switch to Automatic Alarm Acknowledgement, all the alarms in the Alarm Browser will be cleared and acknowledged automatically. This might take a while, depending on the number of alarms in the database that have not been acknowledged manually.

You can still acknowledge alarms manually even if Automatic Alarm Acknowledgment is set.

Step 3 Use the Overwrite Alarm Notes option to enable or disable the ability to overwrite alarm notes created by another user.

Step 4 Choose either Enable or Disable for alarm unacknowledgement.

- If you choose **Enable**, you can unacknowledge alarms in the Alarm Browser.
- If you choose **Disable**, alarms cannot be unacknowledged in the Alarm Browser.

Step 5 Click **Save**.

9.8 How Can the Fault Be Fixed?

After receiving an alarm, the EMS or the user must take some sort of action on each of the faults. This can include logging the fault, delivering it to an appropriate tracking application, alerting key personnel to a critical fault, or implementing a repair.

9.8.1 Clearing a Security Violation Alarm—ONS 15305 R3.0, ONS 15327, ONS 15454 SONET, ONS 15454 SDH

Step 1 In the Domain Explorer tree, select an ONS 15305 R3.0, ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the NE Explorer window, choose **Fault > Clear Security Violation Alarm**. A message appears if there are no security violations or intrusion alarms on the NE or if the operation has been accepted.

Step 3 Click **OK** in the message box.

9.8.2 Performing a System Reset—ONS 15600 SONET and ONS 15600 SDH

Step 1 In the Domain Explorer tree, select the ONS 15600 SONET or ONS 15600 SDH NE for which to view the configuration.

Step 2 Choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 3 In the NE Explorer, choose **File > System Reset**.

9.8.3 Exporting Alarms and Events to a Text File

Use the Event Export Manager to export alarms and events to a text file as they occur. In addition, you can use the Event Export Manager to set various export parameters to refine the export. See 1.6.8 Exporting Alarms and Events, page 1-42.

9.8.4 Configuring Server Logging Properties Using a Remote Debugger

You can configure logging properties in the Cisco Prime Optical Server using a remote debugger. The remote debugger is a debug and diagnostic tool.

Note You must login as a "root" or "optusr" unix user to configure logging properties.

Every Cisco Prime Optical Server's process is in the listening state on a TCP port. It is possible to connect to the Java processes debug port using the **telnet** command.

Note Connections are accepted only from the loopback interface (localhost). Attempts to connect from other workstations are rejected.

To configure a server's logging properties, do the following:

Step 1 Enter the following commands to obtain the TCP port where a process is in the listening state:

```
- cd /temp_CTM
_ ls *.rd
```

Note Every process has an "rd" file containing the port number.

Step 2 Enter the following command to display the port number of SMService:

```
- cat SMService.rd
```

Step 3 Enter the following command in the workstation where the Prime Optical server is running, to connect to the SMService:

```
telnet localhost <rd port>
```

The remote debugger shell displays an interactive menu with monitoring and diagnostic commands that allow you to set the logging properties.

For example, the following commands allow you to set the log levels:

- **loggers**
- **ListLogModules**
- **SetModuleLevel SMService DEBUG**

You can set the log levels to ERROR, WARN, INFO, or DEBUG.

9.8.5 Configuring Server Logging Properties Using the Properties File

The /opt/CiscoTransportManagerServer/cfg/debug directory contains a "properties" file for every Prime Optical server process.You can also configure logging properties using the Properties file.

Note You must login as a "root" or "optusr" unix user to configure logging properties.

You can modify the level of an existing "logger" or add a specific logger.

For example, to set the level to DEBUG, open the log4j-SMService.properties file and modify the log4j.logger.com.cisco attribute as follows:

```
log4j.logger.com.cisco=DEBUG
```

Note Once the properties file is modified, the modified logging properties take effect after a minute.

Managing Performance

This chapter includes the following information:

- 10.1 What Is Performance Management?, page 10-1
- 10.2 What Performance Data Is Available?, page 10-2
- 10.3 How Is Performance Data Collected?, page 10-3
- 10.4 How Do I Query, View, Filter, and Graph PM Data?, page 10-17

Note Appendix E, "Performance Data" contains field descriptions for each PM table.

10.1 What Is Performance Management?

Performance management (PM) in a network is the configuration and measurement of network traffic for the purpose of providing a consistent and predictable level of service. PM involves monitoring the network activity and adjusting the design or the configuration of the network to improve its performance and traffic handling. PM provides network and system performance reporting for determining acute and chronic problems, service level reporting, and performance optimization.

Measuring performance can identify:

- Normal baseline network performance, which can then be compared to abnormal network behavior
- Current or potential utilization problems
- Slow response time
- Application, server, and network availability
- Optimum data transfer times

Performance data is useful for capacity reporting when drafting budgets or considering network redesigns. It can be used to identify congestion and trouble areas in the network that need to be relieved, either through additional equipment or through network reconfiguration. It can also be used to identify devices that are being underutilized or have available chassis slots.

Performance measurement includes:

- Performance monitoring—The collection of performance-related data from network devices. This data is useful for fine-tuning the performance of the device and for monitoring potentially service-affecting problems.

- Performance reporting—The presentation of the collected data, which can then be used to analyze faults, growth, and capacity of the network.

You can set thresholds on the reported performance data. These thresholds generate events that can be used in performance and fault management.

The PM process is as follows:

1. Gather network data and statistics
2. Analyze network performance and identify critical issues
3. Optimize network performance
4. Plan customer capacity
5. Plan network capacity

10.2 What Performance Data Is Available?

The following areas of performance are useful for measurement:

- Availability—The amount of time for which a network system or application is available to the user. From a network perspective, availability is the reliability of the individual components in the network. Accurately measuring availability of a distributed network is difficult and not very practical.
- Response time—The time required for traffic to travel between two points, typically measured for a round trip; the time it takes a packet to reach its destination and for a response to return to the sender. Response time is the best measure of how users perceive the network's performance.
- Accuracy—The amount of interface traffic that does not result in error. Accuracy can be expressed in terms of a percentage that compares the success rate to the total packet rate over a period of time. A decreased accuracy rate should be used to trigger a closer investigation of the network.
- Utilization—Measures the use of a particular resource over time. Utilization is usually expressed as a percentage of a resource's maximum operational capacity. It can be used to identify congestion or potential congestion throughout the network, as well as underutilized resources. Sudden jumps in resource utilization can indicate a fault condition.

Cisco Prime Optical provides the following wizards to query PM data:

- PM Query by NE Model (for non-CTC-based NE models only)
- PM Query by Category

Note PM data collection is not available for the ONS 15216.

Note Make sure that the NE and the Prime Optical server are synchronized. The NE generates PM statistics at 15-minute or 1-day intervals. The server collects 1-day PM data at 00:00 Greenwich Mean Time (GMT), regardless of the NE time or its time zone.

Note When configuring PM data collection, enable it for an NE on only one Prime Optical server. CTC-based NEs do not support simultaneous sessions on HTTP for bulk PM data collection. If you enable PM data collection on multiple Prime Optical servers, one of the servers might time out with the following error

messages:

```
Server Error: 503 Service Unavailable
Operating System Error Nr:3997698: S_objLib_OBJ_UNAVAILABLE
Too many concurrent PM downloads
```

Note An alarm is generated for every piece of lost PM data for CTC-based NEs. A PM lost alarm (15 minutes or 1 day) is generated when Prime Optical cannot collect PM data for 15 minutes or for 1 day when the NE's PM data collection is set to either 15 Min Robust or 1 Day Robust. If there are outstanding PM Retrieval Fail alarms, these alarms are cleared and the PM lost alarm is generated.

10.3 How Is Performance Data Collected?

Performance data collection is the process of collecting performance-related data from network devices and storing them in a database or data file. This information can then be used for locating, diagnosing, and correcting network problems to increase network reliability and effectiveness, and to ensure that fault management can be more than just handling emergencies. The data can also be used to increase the productivity of network users. There are two methods of collecting performance data:

- Active polling—Involves actively obtaining specific management data from network devices. The collected data is then stored in a database and used later for reporting. The advantage of active polling is that as long as a managed device is accessible, data is collected and stored at regular intervals. A disadvantage is that collecting large amounts of data can impact the performance of the managed device or the network. Also, reports might take a long time to generate.
- Event reporting—A managed device or agent generates a trap or event that is received and logged. This method requires that events be generated based only on thresholds, and the EMS assumes that the lack of an event indicates that the item being measured is performing within acceptable ranges. The advantage here is that the potential impact to the network is lessened. The disadvantages of event reporting are that traps are unreliable and you might not be able to determine the start or stop of an event. It can also be difficult to determine the duration and frequency of an event.

This section includes the following information:

- 10.3.1 Viewing Performance Monitoring for an NE, page 10-4
- 10.3.2 Enabling Performance Monitoring, page 10-4
- 10.3.3 Understanding the PM Service Pane, page 10-4
- 10.3.4 Understanding the Individual PM Service Panes, page 10-5
- 10.3.5 Activating or Deactivating Performance Monitoring, page 10-12
- 10.3.6 Enabling or Disabling PM Data Collection on an Individual NE, page 10-12
- 10.3.7 Enabling or Disabling PM Data Collection by PM Category for CTC-Based NEs, page 10-13
- 10.3.8 Enabling PM Data Collection for the ONS 15530 and ONS 15540, page 10-14
- 10.3.9 Enabling or Disabling PM Retrieval Fail Alarms for CTC-Based NEs, page 10-14
- 10.3.10 Specifying the PM Data Display, page 10-15
- 10.3.11 Viewing the Robust PM Collection Queue, page 10-15
- 10.3.12 Using the Self Monitor Table, page 10-15
- 10.3.13 Filtering the Self Monitor Table, page 10-16

10.3.1 Viewing Performance Monitoring for an NE

To view PM data for an NE, you must first collect the data. To collect the PM data, you need to activate the PM service for your NE and then enable PM collection on that NE. The PM service can be activated either before or after the PM collection is enabled on the NE(s). The PM data is not available until both operations are completed and the first PM collection occurs.

10.3.2 Enabling Performance Monitoring

Performance monitoring is optional, but you must enable it if you want to monitor threshold alarms and performance parameters.

Performance monitoring can be enabled on NEs by using the device CLI. For information about using the CLI, see the relevant hardware documentation.

Note PM data collection is resource intensive in terms of CPU, disk space, and DCN utilization, so you should exercise proper planning and resource monitoring for PM data collection.

10.3.3 Understanding the PM Service Pane

Use the PM Service pane (**Administration > Control Panel**) to activate or deactivate global PM data collection and change NE PM data collection parameters. When you click **Save** to save your change, the change takes effect immediately.

Table 10-1 Field Descriptions for the PM Service Pane

Field	Description
PM Data Storage	PM data storage status. If set to Normal, all performance data collected is displayed in the PM data tables. If set to Optimized, performance data with all zero values and performance data with all invalid flags are not displayed and are not stored in the database.
Robust PM Collection Queue	Number of 15-minute and 1-day outstanding robust PM registers. Click **Clear Robust PM Queue** to clear the queue.
PM 15-Min Retrieval Fail Alarm	Enable or disable a retrieval fail alarm for 15-minute PM data. Check the **Enable** check box; then, enter the number of seconds between each retry, and enter the number of retries to attempt before the alarm is generated.

Table 10-1 Field Descriptions for the PM Service Pane (continued)

Field	Description
PM 1-Day Retrieval Fail Alarm	Enable or disable a retrieval fail alarm for 1-day PM data. Check the **Enable** check box; then, enter the number of minutes between each retry, and enter the number of retries to attempt before the alarm is generated.
Real-Time PM Performance Parameters	When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. The data it returns is stored entirely in transient memory. Use the following fields to limit the scope of the real-time PM session: • Maximum number of concurrent real-time PM sessions—Specify the maximum number of concurrent real-time PM sessions allowed per client. The range is from 1 to 5 sessions; the Cisco default is 5. • Maximum number of polled real-time PM objects—Specify the maximum number of objects that can be polled in a single real-time PM session. The range is from 1 to 100 objects; the Cisco default is 100. • Maximum number of rows held in cache—Specify the maximum number of rows that can be held in the real-time memory buffer per session. When this limit is reached, the oldest rows are removed from the buffer to make room for new rows. The range is from 100 to 5000 rows; the Cisco default is 1000. **Note** Depending on the PM table launch selection criteria, the number of rows displayed might be less than the maximum number of rows specified.

10.3.4 Understanding the Individual PM Service Panes

The PM Service properties pane (**Administration > Control Panel > PM Service**) displays information about the status of performance monitoring for the selected NE. You can also stop or start an individual PM service instance. The individual PM service panes are broken down by NE:

- ONS 15305
- ONS 15310 CL/ONS 15310 MA/ONS 15327/ONS 15454/CPT 600/CPT 200
- ONS 15310 MA SDH/ONS 15454 SDH/CPT 600 SDH/CPT 200 SDH
- ONS 155xx
- ONS 15600
- ONS 15600 SDH

10.3.4.1 ONS 15305

The ONS 15305 PM Service pane displays ONS 15305 NE PM service information. Table 10-2 provides the descriptions.

Table 10-2 Field Descriptions for the ONS 15305 PM Service Pane

Field	Description
Status Tab	
Service Status	Current status of the service: Active or Not Active.
Service Action	Stops or starts a process. Notice that the Service Action button toggles between Activate and Deactivate, and that the Service Status field changes accordingly.
Threshold	Number of NEs that will be serviced by one instance of the PM service.
Debug Tab	
Overall Logging	Click the **Enable** radio button to enable overall debugging and to select debug modules for the PM service. Click the **Disable** radio button to disable overall debugging.
Debug Modules	If overall logging is enabled, lists the modules that can be used for debugging. Select a module from the Available list; then, click the **Add** button to add the module to the Selected list. Use the **Remove** button to return the module to the Available list. Debug logging will be performed on the modules in the Selected list.
PM Service Instance	
Start Service Instance, Stop Service Instance	Allows you to stop or start an individual PM service instance. If you click **Start Service Instance**, the service status changes to *Running*. If you click **Stop Service Instance**, the status changes to *Stopped*.
Dump Cache	Click the **Dump Cache** button to export the PM service cache to the log file related to the selected PM service instance.
Debug Table	Click the **Debug Table** button to open the Prime Optical NE Module Level Debug Table window, which displays the debug state of the selected NEs and lists the modules for which debugging is active.
Overall Logging for the Instance	Click the **Disable** button to disable overall logging for the PM service instance.
Managed NEs	The list of managed NEs shows which NEs are currently being managed by the selected service instance. If you stop the specified service instance, the NEs in the list are no longer managed.

10.3.4.2 ONS 15310 CL/ONS 15310 MA/ONS 15327/ONS 15454/CPT 600/CPT 200

The ONS 15310 CL/ONS 15310 MA/ONS 15327/ONS 15454/CPT 600/CPT 200 PM Service pane displays PM service information for the ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, CPT 200, and CPT 600 NEs. The following table provides descriptions.

Table 10-3 Field Descriptions for the ONS 15310 CL/ONS 15310 MA/ONS 15327/ONS 15454 PM/CPT 600/CPT 200 Service Pane

Field	Description
PM Collection Parameters Tab	
DS1 PM Collection	Enable or disable DS1 PM data collection.
DS3 PM Collection	Enable or disable DS3 PM data collection.
Physical/Section/Line PM Collection	Enable or disable physical, section, and line PM data collection on OC-N cards.
STS PM Collection	Enable or disable SONET STS Path PM data collection.
VT PM Collection	Enable or disable SONET VT Path PM data collection.

Table 10-3 Field Descriptions for the ONS 15310 CL/ONS 15310 MA/ONS 15327/ONS 15454 PM/CPT 600/CPT 200 Service Pane (continued)

Field	Description
Data PM Collection	Enable or disable data (Ethernet, POS, SAN, 8B10B) PM data collection.
Physical/OTN PM Collection	Enable or disable physical, OTN G.709 Section, OTN G.709 Path, and OTN FEC PM data collection on DWDM cards.
SNMP PM Collection	Enable or disable CoS PM data collection.
E1 PM Collection	Enable or disable E1 PM data collection.
Status Tab	
Service Status	Current status of the service: Active or Not Active.
Service Action	Stops or starts a process. Notice that the Service Action button toggles between Activate and Deactivate, and that the Service Status field changes accordingly.
Threshold	Number of NEs that will be serviced by one instance of the PM service. **Note** Starting with CTM R9.2, one instance of the PM service can handle up to 2000 NEs.
BLSR-Ring Switch Interval	Allows you to set the BLSR switch interval, in seconds. The Cisco default is 60 seconds.
TL1 Tunnel Connection Timeout	Allows you to set the time it takes to set up a TL1 tunnel connection between the Prime Optical server and the tunneled NE (TNE). When a new NE is added using the Add NE wizard, you can connect to the new NE using a TL1 tunnel. The Prime Optical server establishes a TCP/IP connection to a non-Cisco GNE (NGNE), and the NGNE establishes an OSI connection to the TNE. If the Prime Optical server cannot set up the TL1 tunnel connection before the specified TL1 tunnel connection timeout, the Add NE operation fails and the TNE connection state becomes unavailable.
Audit Trail Collection Interval	Allows you to set the audit trail collection interval, in minutes.
L2 Service Resync Delay	Allows you to configure the delay after which Prime Optical performs a Cisco IOS configuration synchronization on ML cards to keep the NE and the Prime Optical Data Provisioning Service synchronized. This operation synchronizes the L2 topology. Full Cisco IOS configuration synchronization is performed automatically by Prime Optical to keep the NE and the Prime Optical Data Provisioning Service synchronized. Full configuration resynchronization might be delayed depending on Prime Optical server usage. For the Prime Optical server deployed as a monitoring server, the recommended value for the delay parameter is 2 minutes (120 seconds). For the Prime Optical server deployed as a provisioning server, the recommended value for the delay parameter is 10 minutes (600 seconds).
ENEs List Poll Interval	Time interval in which all CTC-based GNEs in Prime Optical need to refresh their list of ENEs. The list of ENEs for each GNE is obtained and compared with the existing ENE list. If there are any changes to the ENE list, topology changes are carried out so that the Domain Explorer will reflect the current topology with correct GNE and ENE icons.
Debug Tab	
Overall Logging	Click the **Enable** radio button to enable overall debugging and to select debug modules for the PM service. Click the **Disable** radio button to disable overall debugging.
Debug Modules	If overall logging is enabled, lists the modules that can be used for debugging. Select a module from the Available list; then, click the **Add** button to add the module to the Selected list. Use the **Remove** button to return the module to the Available list. Debug logging will be performed on the modules in the Selected list.

Table 10-3 Field Descriptions for the ONS 15310 CL/ONS 15310 MA/ONS 15327/ONS 15454 PM/CPT 600/CPT 200 Service Pane (continued)

Field	Description
PM Service Instance	
Start Service Instance, Stop Service Instance	Allows you to stop or start an individual PM service instance. If you click **Start Service Instance**, the service status changes to *Running*. If you click **Stop Service Instance**, the status changes to *Stopped*. The list of managed NEs shows which NEs are currently being managed by the selected service instance. If you stop the specified service instance, the NEs in the list are no longer managed.
Dump Cache	Click the **Dump Cache** button to export the PM service cache to the log file related to the selected PM service instance.
Debug Table	Click the **Debug Table** button to open the Prime Optical NE Module Level Debug Table window, which displays the debug state of the selected NEs and lists the modules for which debugging is active.
Overall Logging for the Instance	Click the **Disable** button to disable overall logging for the PM service instance.
Managed NEs	The list of managed NEs shows which NEs are currently being managed by the selected service instance. If you stop the specified service instance, the NEs in the list are no longer managed.

10.3.4.3 ONS 15310 MA SDH/ONS 15454 SDH/CPT 600 SDH/CPT 200 SDH

The ONS 15310 MA SDH/ONS 15454 SDH PM/CPT 600 SDH/CPT 200 SDH Service pane displays PM service information for the ONS 15310 MA SDH, ONS 15454 SDH, CPT 200 SDH, and CPT 600 SDH NEs. The following table provides descriptions.

Table 10-4 Field Descriptions for the ONS 15310 MA SDH/ONS 15454 SDH/CPT 600 SDH/CPT 200 SDH PM Service Pane

Field	Description
PM Collection Parameters Tab	
E1 PM Collection	Enable or disable E1 PM data collection.
E3 PM Collection	Enable or disable E3 PM data collection.
E4 PM Collection	Enable or disable E4 PM data collection.
DS3I PM Collection	Enable or disable DS3I PM data collection.
High Order PM Collection	Enable or disable high order PM data collection.
Low Order PM Collection	Enable or disable low order (VC-3, VC-11, and VC-12) PM data collection.
Data PM Collection	Enable or disable data (Ethernet, POS, SAN, and 8B10B) PM data collection.
Physical/Section PM Collection	Enable or disable physical or section (regenerator section [RS] and multiplex section [MS]) PM data collection on STM-N cards.
Physical/OTN PM Collection	Enable or disable physical, OTN G.709 Section, OTN G.709 Path, and OTN FEC PM data collection on DWDM cards.
SNMP PM Collection	Enable or disable CoS PM data collection.
DS1 PM Collection	Enable or disable DS1 PM data collection.
DS3 PM Collection	Enable or disable DS3 PM data collection.

Table 10-4 Field Descriptions for the ONS 15310 MA SDH/ONS 15454 SDH/CPT 600 SDH/CPT 200 SDH PM Service Pane (continued)

Field	Description
Status Tab	
Service Status	Current status of the service: Active or Not Active.
Service Action	Stops or starts a process. Notice that the Service Action button toggles between Activate and Deactivate, and that the Service Status field changes accordingly.
Threshold	Number of NEs that will be serviced by one instance of the PM service. **Note** Starting from CTM R9.2, one instance of the PM service can handle up to 2000 NEs.
Debug Tab	
Overall Logging	Click the **Enable** radio button to enable overall debugging and to select debug modules for the PM service. Click the **Disable** radio button to disable overall debugging.
Debug Modules	If overall logging is enabled, lists the modules that can be used for debugging. Select a module from the Available list; then, click the **Add** button to add the module to the Selected list. Use the **Remove** button to return the module to the Available list. Debug logging will be performed on the modules in the Selected list.
PM Service Instance	
Start Service Instance, Stop Service Instance	Allows you to stop or start an individual PM service instance. If you click **Start Service Instance**, the service status changes to *Running*. If you click **Stop Service Instance**, the status changes to *Stopped*.
Dump Cache	Click the **Dump Cache** button to export the PM service cache to the log file related to the selected PM service instance.
Debug Table	Click the **Debug Table** button to open the Prime Optical NE Module Level Debug Table window, which displays the debug state of the selected NEs and lists the modules for which debugging is active.
Overall Logging for the Instance	Click the **Disable** button to disable overall logging for the PM service instance.
Managed NEs	The list of managed NEs shows which NEs are currently being managed by the selected service instance. If you stop the specified service instance, the NEs in the list are no longer managed.

10.3.4.4 ONS 155xx

The ONS 155xx PM Service pane displays PM service information for the ONS 155xx NE. The following table provides descriptions.

Table 10-5 Field Descriptions for the ONS 155xx PM Service Pane

Field	Description
Status Tab	
Service Status	Current status of the service: Active or Not Active.
Service Action	Stops or starts a process. Notice that the Service Action button toggles between Activate and Deactivate, and that the Service Status field changes accordingly.
Threshold	Number of NEs that will be serviced by one instance of the PM service.
Debug Tab	

Table 10-5 Field Descriptions for the ONS 155xx PM Service Pane (continued)

Field	Description
Overall Logging	Click the **Enable** radio button to enable overall debugging and to select debug modules for the PM service. Click the **Disable** radio button to disable overall debugging.
Debug Modules	If overall logging is enabled, lists the modules that can be used for debugging. Select a module from the Available list; then, click the **Add** button to add the module to the Selected list. Use the **Remove** button to return the module to the Available list. Debug logging will be performed on the modules in the Selected list.
PM Service Instance	
Start Service Instance, Stop Service Instance	Allows you to stop or start an individual PM service instance. If you click **Start Service Instance**, the service status changes to *Running*. If you click **Stop Service Instance**, the status changes to *Stopped*.
Dump Cache	Click the **Dump Cache** button to export the PM service cache to the log file related to the selected PM service instance.
Debug Table	Click the **Debug Table** button to open the Prime Optical NE Module Level Debug Table window, which displays the debug state of the selected NEs and lists the modules for which debugging is active.
Overall Logging for the Instance	Click the **Disable** button to disable overall logging for the PM service instance.
Managed NEs	The list of managed NEs shows which NEs are currently being managed by the selected service instance. If you stop the specified service instance, the NEs in the list are no longer managed.

10.3.4.5 ONS 15600

The ONS 15600 PM Service pane displays PM service information for the ONS 15600 SONET NEs. The following table provides descriptions.

Table 10-6 Field Descriptions for the ONS 15600 PM Service Pane

Field	Description
PM Collection Parameters Tab	
Physical/Section/Line PM Collection	Enable or disable physical, section, and line PM data collection.
STS PM Collection	Enable or disable SONET STS Path PM data collection.
Data PM Collection	Enable or disable data (Ethernet and POS) PM data collection.
Status Tab	
Service Status	Current status of the service: Active or Not Active.
Service Action	Stops or starts a process. Notice that the Service Action button toggles between Activate and Deactivate, and that the Service Status field changes accordingly.
Threshold	Number of NEs that will be serviced by one instance of the PM service.
Debug Tab	
Overall Logging	Click the **Enable** radio button to enable overall debugging and to select debug modules for the PM service. Click the **Disable** radio button to disable overall debugging.

Table 10-6 Field Descriptions for the ONS 15600 PM Service Pane (continued)

Field	Description
Debug Modules	If overall logging is enabled, lists the modules that can be used for debugging. Select a module from the Available list; then, click the **Add** button to add the module to the Selected list. Use the **Remove** button to return the module to the Available list. Debug logging will be performed on the modules in the Selected list.
PM Service Instance	
Start Service Instance, Stop Service Instance	Allows you to stop or start an individual PM service instance. If you click **Start Service Instance**, the service status changes to *Running*. If you click **Stop Service Instance**, the status changes to *Stopped*. The list of managed NEs shows which NEs are currently being managed by the selected service instance. If you stop the specified service instance, the NEs in the list are no longer managed.

10.3.4.6 ONS 15600 SDH

The ONS 15600 SDH PM Service pane displays PM service information for the ONS 15600 SDH NEs. The following table provides descriptions.

Table 10-7 Field Descriptions for the ONS 15600 SDH PM Service Pane

Field	Description
PM Collection Parameters Tab	
Physical/RS/MS PM Collection	Enable or disable physical, RS, and MS PM data collection.
High Order PM Collection	Enable or disable high-order PM data collection.
Data PM Collection	Enable or disable data PM data collection.
Status Tab	
Service Status	Current status of the service: Active or Not Active.
Service Action	Stops or starts a process. Notice that the Service Action button toggles between Activate and Deactivate, and that the Service Status field changes accordingly.
Threshold	Number of NEs that will be serviced by one instance of the PM service.
Debug Tab	
Overall Logging	Click the **Enable** radio button to enable overall debugging and to select debug modules for the PM service. Click the **Disable** radio button to disable overall debugging.
Debug Modules	If overall logging is enabled, lists the modules that can be used for debugging. Select a module from the Available list; then, click the **Add** button to add the module to the Selected list. Use the **Remove** button to return the module to the Available list. Debug logging will be performed on the modules in the Selected list.
PM Service Instance	
Start Service Instance, Stop Service Instance	Allows you to stop or start an individual PM service instance. If you click **Start Service Instance**, the service status changes to *Running*. If you click **Stop Service Instance**, the status changes to *Stopped*. The list of managed NEs shows which NEs are currently being managed by the selected service instance. If you stop the specified service instance, the NEs in the list are no longer managed.

10.3.5 Activating or Deactivating Performance Monitoring

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, expand **PM Service**.

Step 3 Select an NE type.

Step 4 All the NEs monitored by the server stop collecting PM data if you click the **Deactivate** button in the PM Configuration tab or Status tab > Service Action field. (Notice that the service status toggles to *Not Active*.) Click **Activate** to resume PM data collection.

Note If you need to activate or deactivate the PM Service again, go to the Service Monitor table (**Administration > Service Monitor** in the Domain Explorer) to verify that the service has stopped or started before clicking the Activate or Deactivate button again.

Step 5 Ensure that the PM Service has started. In the Domain Explorer, choose **Administration > Service Monitor**. The Service Monitor table should include an entry for the relevant PM Service.

Note If the PM Service is active and the NE time is changed so that the difference between the Prime Optical server time and the NE time is 30 minutes, the existing PM buckets (for the time stamps corresponding to the next collection interval on the NE, after the time change) collected by Prime Optical are marked as In Maintenance. Prime Optical collects PM buckets again for the same time stamps.

10.3.6 Enabling or Disabling PM Data Collection on an Individual NE

Note See 2.6.1 Selectable Collection of PM Data Parameters, page 2-12 for information on setting PM data collection.

Step 1 In the Domain Explorer or Subnetwork Explorer tree, select the NE node for which to stop or start PM data collection. The Network Element Properties pane opens.

Step 2 In the Status tab > PM Collection area, set the PM data collection state. Options vary by NE type:

- 15 Min—Check this box to enable collection of PM data every 15 minutes. Uncheck to disable PM data collection.
- 1 Day—Check this box to enable collection of PM data every 24 hours. Uncheck to disable PM data collection.
- 15 Min Robust—Check this box to enable collection of PM data every 15 minutes and attempt to fill in gaps in PM data collection should they occur.
- 1 Day Robust—Check this box to enable collection of PM data every 24 hours and attempt to fill in gaps in PM data collection should they occur.

Caution If robust PM data collection is enabled, do not set PM data storage to Optimized.

Note
- You cannot collect robust PM data until at least one 15-minute or one 1-day interval has been collected in normal operation.
- Robust PM data collection applies only to CTC-based NEs and to the ONS 15305, ONS 15530, and ONS 15540. Robust PM data collection is not supported for the ONS 15216.

Step 3 Click **Save** to save changes to the database.

Step 4 In the confirmation dialog box, click **Yes**. The changes take effect immediately.

Note The maximum number of ONS 15305 NEs that can have PM data collection enabled is 10 for a small network, 30 for a medium network, and 50 for a large or high-end network.

10.3.7 Enabling or Disabling PM Data Collection by PM Category for CTC-Based NEs

Note See 2.6.1 Selectable Collection of PM Data Parameters, page 2-12 for information on setting PM data collection.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, expand **PM Service**.

Step 3 Complete one of the following options:
- For the ONS 15305 R3.0, choose **ONS 15305**.
- For the ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, or ONS 15454 SONET, choose **ONS 15310 CL/ONS 15310 MA/ONS 15327/ONS 15454**.
- For the ONS 15310 MA SDH or ONS 15454 SDH, choose **ONS 15310 MA SDH/ONS 15454 SDH**.
- For the ONS 15600 SONET, choose **ONS 15600**.
- For the ONS 15600 SDH, choose **ONS 15600 SDH**.

Step 4 Click the **PM Collection Parameters** tab, and enable or disable the various PM parameters. The following tables describe each parameter in detail:
- For the ONS 15305 R3.0, see Table 10-2.
- For the ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, and ONS 15454 SONET, see Table 10-3.
- For the ONS 15310 MA SDH and ONS 15454 SDH, see Table 10-4.

- For the ONS 15600 SONET, see Table 10-6.
- For the ONS 15600 SDH, see Table 10-7.

Step 5 After making your selections, click **Save**.

10.3.8 Enabling PM Data Collection for the ONS 15530 and ONS 15540

Before viewing performance data for an ONS 15530 or ONS 15540, enable performance monitoring on the NE in the Domain Explorer or by using the CLI.

Caution If robust PM data collection is enabled, do not set PM data storage to Optimized.

- To enable PM in the Domain Explorer, select an ONS 155xx NE in the Domain Explorer tree; then, set the PM data collection in the Network Element Properties pane to 15 Min, 1 Day, 15 Min Robust, or 1 Day Robust.
- To enable PM through the CLI, log into the NE and enter the **monitor enable** command. For more information, refer to the relevant hardware documentation.

10.3.9 Enabling or Disabling PM Retrieval Fail Alarms for CTC-Based NEs

Enabling the PM retrieval fail alarm allows Prime Optical to monitor failed collection of PM data when PM collection is set to either 15 Min Robust or 1 Day Robust. It lets you set the number of times for Prime Optical to collect PM data before declaring PM data retrieval failure.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **PM Service**. The PM Service pane opens.

Step 3 To enable 15-minute PM retrieval fail alarms, click **Enable** in the PM 15-min Retrieval Fail Alarm area; then, specify the following:

- Seconds between Retries—Wait time between attempts to retrieve PM data. The range is from 5 to 15 seconds; the Cisco default is 5 seconds.
- Number of Retries—Number of times to retrieve PM data. The range is from 1 to 6 retries; the Cisco default is 6 retries.

Step 4 To enable 1-day PM retrieval fail alarms, click **Enable** in the PM 1-day Retrieval Fail Alarm area; then, specify the following:

- Minutes between Retries—Wait time between attempts to retrieve PM data. The range is from 15 to 60 minutes; the Cisco default is 15 minutes.
- Number of Retries—Number of times to retrieve PM data. The range is from 1 to 6 retries; the Cisco default is 6 retries.

Step 5 Click **Save**.

10.3.10 Specifying the PM Data Display

For CTC-based and ONS 155xx NEs, the display of PM data is affected by the PM Data Storage setting in the Control Panel. To specify whether to display PM data in normal or optimized mode for CTC-based and ONS 155xx NEs:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **PM Service**. The PM Service pane opens.

Step 3 In the PM Data Storage area, specify the PM data storage from the drop-down list:

- Normal—All performance data is collected and displayed in the PM data tables.
- Optimized—Performance data with all zero values and performance data with all invalid flags are not displayed and are not stored in the database.

Caution If robust PM data collection is enabled, do not set PM data storage to Optimized.

Step 4 Click **Save**.

10.3.11 Viewing the Robust PM Collection Queue

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **PM Service**. The PM Service pane opens.

Step 3 In the Robust PM Collection Queue area are the following display-only fields:

- Number of 15-Min Registers Outstanding—Number of performance data collections carried out every 15 minutes that are not yet scheduled for collection.
- Number of 1-Day Registers Outstanding—Number of performance data collections carried out every 24 hours that are not yet scheduled for collection.

Step 4 (Optional) Click **Clear Robust PM Queue** to clear the queue. Then, click **Save**.

10.3.12 Using the Self Monitor Table

When Prime Optical comes close to or exceeds the limits of its performance, it might result in a reduction in the response time of the system. In this case, error messages are displayed to tell you to restore normal operation. The Self Monitor table allows you to monitor parameters that help in determining when Prime Optical is close to the limit of its performance.

The Self Monitor table displays information about Prime Optical threshold parameters. These parameters are collected and evaluated based on the NE model types. Self-monitoring can be used for CPU usage, memory usage, and disk usage. You can filter the Self Monitor table on the collection time, the model type, and the parameter name.

To view the Self Monitor table, choose **Administration > Self Monitor** in the Domain Explorer. The following table provides descriptions.

Table 10-8 Field Descriptions for the Self Monitor Table

Column Name	Description
Alias ID	Alias name of the NE.
Parameter Name	Name of the parameter. See the Alarm Configuration pane in the Control Panel for a list of monitored parameters.
Model Type	NE model type. When NE model types are not applicable, “System” is displayed as the model type.
Collection Time (*time zone*)	Time when Prime Optical collected the parameter data.
Value	Total number of seconds to retrieve the information for the name of the parameter.
NE ID	Name of the selected NE. If you open the Self Monitor table without selecting an NE, the NE ID is *CTM*.

10.3.13 Filtering the Self Monitor Table

Step 1 In the Domain Explorer window, choose **Administration > Self Monitor**.

Step 2 In the Self Monitor table, choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog box opens.

Step 3 Specify the filter parameters described in the following table.

Step 4 After making your selections, click **OK**.

Table 10-9 Field Descriptions for the Self Monitor Table Filter Dialog Box

Tab	Description
Collection Time (*time zone*)	You can filter data for a specified time period, ranging from the past hour to the past 180 days. Additionally, you can click the **User Specified** radio button to specify exact filter start and end times by date and hour. The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue. If you want to filter data and the time period is not important, click **No Time Specified**.
Model Type	You can move NE model types back and forth between the list of available model types and selected model types. The filter runs on the model types in the Selected Model Type list.
Parameter Name	You can move parameters back and forth between the list of available parameter names and selected parameter names. The filter runs on the parameters in the Selected Parameter Names list.

10.4 How Do I Query, View, Filter, and Graph PM Data?

This section describes the tools you use to query, view, filter, and graph the data displayed in PM tables.

10.4.1 Using the PM Table Query

The PM table query opens when you select an NE, group, or domain node in the Domain Explorer and choose **Performance > PM Query by Category** or **PM Query by NE Model**.

- Use the PM Query by Category wizard to filter PM data based on the PM category.
- Use the PM Query by NE Model wizard to filter PM data by NE model.

10.4.1.1 Using the PM Query by Category Wizard

Use the PM Query by Category wizard to view PM data by PM category.

Note The PM Query by Category wizard is not supported for the ONS 155xx.

Note The CPT 200 and CPT 600 NEs support only the Ethernet, SONET, OTN, and Optical categories.

Step 1 In the Domain Explorer tree, select the management domain, group, or NE node for which to view historical performance data, and choose **Performance > PM Query by Category**. Table 10-10 provides descriptions. Fields shown depend on the PM category selected.

Step 2 In the Category area, select the category and type from the drop-down lists.

Step 3 Select the PM data collection interval (15 Minute, 1 Day, or Real-Time).

Note The Real-Time option is disabled if you select a management domain or group node. The Real-Time option is enabled only if you select a single NE in the Domain Explorer tree.

Step 4 (Optional) Click **Next**.

Note Depending on the NE type selected, some of the following screens might not appear. If a screen does not appear, skip the step and move on to the next one.

Step 5 In the Near End/Far End Selection screen, select whether to filter for near- or far-end PM data; then, click **Next**.

Step 6 In the Module Category screen, select the module category from the list; then, click **Next**.

Step 7 In the RPR Type Selection screen, select the type of RPR 802.17 data to display; then, click **Next**.

Step 8 In the Physical Location screen, depending on the NE type, select the rack, subrack (shelf), slot, subslot, and port from the list; then, click **Next**.

Step 9 In the Module Type Selection screen, add or remove module types from the lists; then, click **Next**.

Note For real-time PM data collection, the Module Type Selection screen lists only the module that corresponds to the slot selected in the Physical Location screen.

Historical data might have been collected on a module that is no longer present at the selected physical location. Therefore, for historical PM data collection, the modules are not filtered by physical location.

Step 10 Click **Finish**. The PM table opens. See Appendix E, "Performance Data" for field descriptions for each PM table.

Table 10-10 Field Descriptions for the PM Query by Category Wizard

Field	Description
Category Selection Screen	
Category	Select a PM category from the list. Available categories vary by selected NE.
Type	Select a PM query type for the NE. PM types vary by selected category.
15 Minute	Filters for PM data received in the last 15 minutes. 15-minute PM data can be queried for a range of time from the past hour to the past 30 days.
1 Day	Filters for PM data received in the last day. 1-day PM data can be queried for a range of time from the past 7 days to the past 180 days.
Real-Time (*CTC-based NEs*)	Launches a real-time PM report, which allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. You can view and modify the polling interval for the real-time PM reporting session. You can end a real-time PM session at any time and export the data. **Note** You can also launch a real-time PM session from a selected row in a PM table. This is useful if you want to query on a single physical location (for example, Slot 1, Port 1).
User Specified	Specify exact filter start and end times by date and hour. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue.
Near End/Far End Selection Screen	
Near End	Filters for near-end PM data.
Far End	Filters for far-end PM data.
Module Category Screen	
Module Category	Select a module category from the list. Available categories vary by selected NE. This screen appears only if you select Ethernet as both the category and type in the Category Selection screen.
RPR Type Selection Screen	

Table 10-10 Field Descriptions for the PM Query by Category Wizard (continued)

Field	Description
RPR Type Selection	Filters RPR 802.17 PM data by MIB group: • Span Stats In • Span Stats Out • Client Stats In • Client Stats Out • Error Stats
Physical Location Screen	
Physical Location	Filters PM data by slot, subslot, or port. Use the lists to select the slot, subslot, or port for which you want to display PM data. If you select a CTC-based NE, you can filter fault and performance data by shelf, slot, and port.
Module Type Selection Screen	
Available Modules	List of modules that are available for PM filtering. Select a module and click **Add** to move it to the Selected Modules list.
Selected Modules	List of modules that are selected for PM filtering. Select a module and click **Remove** to remove it from filtering consideration.

The following table shows which PM tables are available for each category.

Table 10-11 PM Tables by Category

Category	PM Tables
SONET	SONET Section PM table
	SONET Line PM table
	SONET STS Path PM table
	SONET VT1.5 Path PM table
	SONET VT2 Path PM table
SDH	SDH Regenerator Section PM table
	SDH Multiplex Section PM table
	SDH Higher Order Virtual Container PM table
	SDH Lower Order VC3 PM table
	SDH Lower Order VC12 PM table
	SDH Lower Order VC11 PM table
DSn	DS1 PM table
	DS3 PM table
	DS3I PM table

Table 10-11 PM Tables by Category (continued)

Category	PM Tables
DWDM	B1 Counters PM table
	FEC Counters PM table
	B1 and FEC Counters PM table
	Ethernet Parameters PM table
Edge SDH	Edge SDH Regeneration Section PM table
	Edge SDH Multiplex Section PM table
	Edge SDH Higher Order VC4 PM table
	Edge SDH Lower Order PM table
Edge Statistics	Edge Statistics DCC PM table
	Edge Statistics LAN PM table
	Edge Statistics WAN PM table
En	E1 PM table
	E3 PM table
Ethernet	Ethernet PM table
	Ethernet POS PM table
	Ethernet CoS PM table
	Ethernet GFP PM table
	Ethernet LEX PM table
IP SLA	IP SLA PM table
OTN	OTN G.709 Section PM table
	OTN G.709 Path PM table
	OTN FEC PM table
Optical	Optical Physical PM table
SAN	SAN PM table
8B10B	8B10B PM table
RPR	RPR 802.17 PM table

10.4.1.2 PM Query by NE Model Wizard

Use the PM Query by NE Model wizard to view PM data by non-CTC-based NE model.

Step 1 Make sure that performance monitoring is enabled on the NE. See 10.3.5 Activating or Deactivating Performance Monitoring, page 10-12.

Step 2 In the Domain Explorer tree, select the management domain, group, or NE node for which to view historical performance data and choose **Performance > PM Query by NE Model**. Table 10-12 provides descriptions. Fields depend on the type of NE and PM selected.

Step 3 In the NE Model area, select the NE model and NE type from the drop-down lists.

Note You can only select non-CTC-based NEs.

Step 4 Select the PM data collection interval (15 Minute, 1 Day, or Real-Time).

Note The Real-Time option is disabled if you select a management domain or group node. The Real-Time option is enabled only if you select a single NE in the Domain Explorer tree.

Step 5 (Optional) Click **Next**.

Note Depending on the NE type selected, some of the following screens might not appear. If a screen does not appear, skip the step and move on to the next one.

Step 6 In the Near End/Far End Selection screen, select whether to filter for near- or far-end PM data; then, click **Next**.

Step 7 In the Module Category screen, select the module category from the list; then, click **Next**.

Step 8 In the RPR Type Selection screen, select the type of RPR 802.17 data to display; then, click **Next**.

Step 9 In the Physical Location screen, depending on the NE type, select the rack, subrack (shelf), slot, subslot, and port from the list; then, click **Next**.

Step 10 In the Module Type Selection screen, add or remove module types from the lists; then, click **Next**.

Note For real-time PM data collection, the Module Type Selection screen lists only the module that corresponds to the slot selected in the Physical Location screen.

Historical data might have been collected on a module that is no longer present at the selected physical location. Therefore, for historical PM data collection, the modules are not filtered by physical location.

Step 11 Click **Finish**. The PM table opens. See Appendix E, "Performance Data" for field descriptions for each PM table.

Table 10-12 Field Descriptions for the PM Query by NE Model Wizard

Field	Description
NE Model Selection Screen	
NE Model	Select a non-CTC-based NE model from the list.
Type	Select a PM query type for the NE. The PM types vary by selected NE model.
15 Minute	Filters for PM data received in the last 15 minutes. 15-minute PM data can be queried for a range of time from the past hour to the past 30 days.
1 Day	Filters for PM data received in the last day. 1-day PM data can be queried for a range of time from the past 7 days to the past 180 days.

Table 10-12 Field Descriptions for the PM Query by NE Model Wizard (continued)

Field	Description
User Specified	Specify exact filter start and end times by date and hour. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue.
Near End/Far End Selection Screen	
Near End	Filters for near-end PM data.
Far End	Filters for far-end PM data.
RPR Type Selection Screen	
RPR Type Selection	Filters RPR 802.17 PM data by MIB group: • Span Stats In • Span Stats Out • Client Stats In • Client Stats Out • Error Stats
Physical Location Screen	
Slot	Filters PM data by slot.
Port	Filters PM data by port.
Shelf	Filters PM data by shelf.
Subslot (*ONS 15530 and ONS 15540 only*)	Filters PM data by subslot.
Module Type Selection Screen	
Available Modules	List of modules that are available for PM filtering. Select a module and click **Add** to move it to the Selected Module list.
Selected Modules	List of modules that are selected for PM filtering. Select a module and click **Remove** to remove it from filtering consideration.
Real-Time PM Attribute Selection Screen	
Interface Name (also Card, Physical Location, and so on)	Select the type of entity to monitor from this list. The label changes depending on the type of PM selected.
Available PM Attributes	List of real-time attributes that are available for PM filtering. Select an attribute and click **Add** to move it to the Selected PM Attributes list.
Selected PM Attributes	List of real-time attributes that are selected for PM filtering. Select an attribute and click **Remove** to remove it from filtering consideration.

The following table shows which PM tables are available for each NE.

Table 10-13 PM Tables by NE Type

NE	Available PM Tables
ONS 15216	—
ONS 15305	— **Note** See Table 10-11, "PM Tables by Category."
ONS 15310 CL	Physical PM table
	SONET Section PM table
	SONET Line PM table
	SONET STS Path PM table
	SONET VT1.5 Path PM table
	DS3 PM table
	DS1 PM table
	POS PM table
	CoS PM table
	Ethernet PM table
	GFP PM table
ONS 15310 MA SONET	Physical PM table
	SONET Section PM table
	SONET Line PM table
	SONET STS Path PM table
	SONET VT1.5 Path PM table
	DS1 PM table
	DS3 PM table
	CoS PM table
	POS PM table
	Ethernet PM table
	GFP PM table

Table 10-13 PM Tables by NE Type (continued)

NE	Available PM Tables
ONS 15310 MA SDH	Physical PM table
	DS3 PM table
	CoS PM table
	POS PM table
	Ethernet PM table
	GFP PM table
	Lower Order VC12 PM table
	Lower Order VC3 PM table
	SDH E1 PM table
	SDH E3 PM table
	SDH RS PM table
	SDH MS PM table
	SDH HO PM table
ONS 15530	SONET Section PM table
	Line PM table
	CDL PM table
	Physical PM table
	FC Port Errors PM table
	Ether History PM table

10.4.2 Configuring PM Collection Settings

Use the PM Collection Settings wizard to configure PM collection settings by NE type.

Step 1 Make sure that performance monitoring is enabled on the NE. See 10.3.5 Activating or Deactivating Performance Monitoring, page 10-12.

Step 2 In the Domain Explorer tree, select the management domain, group, or NE node for which to configure PM collection settings and choose **Performance > PM Collection Settings**. The following table provides descriptions. Fields depend on the type of NE selected.

Step 3 In the NE Selection screen, complete the following substeps:

a. In the NE Model area, select the NE model for PM collection settings from the drop-down list.

b. In the Network Elements area, click the **Add** and **Remove** buttons to move NEs of the selected type to the Selected NEs list. (Use the **Remove** button to remove NEs from the list.) By default, the Selected NEs list contains all of the NEs of the selected type in the Domain Explorer or Subnetwork Explorer when the wizard was launched.

c. Click **Next**.

Step 4 Depending on the NEs selected in the previous step, select the PM data collection intervals in one of the following screens:

- PM Collection Selection (15 Min, 1 Day)—NEs that support 15-minute, 15-minute robust, 1-day, and 1-day robust PM collection (CTC-based NEs, ONS 15310, and ONS 15305).
- PM Collection Selection (15 Min Only)—NEs that support only 15-minute PM collection (ONS 155xx).

Step 5 Click **Finish**.

The PM data collection settings are applied to all of the NEs in the Selected NEs list.

Table 10-14 Field Descriptions for the PM Collection Settings Wizard

Field	Description
NE Selection Screen	
NE Model	Select the NE type for which you want to configure PM collection settings. The type you select determines the NEs that are displayed in the Network Elements area.
Network Elements	Use the **Add** and **Remove** buttons to move the NEs for which you want to configure PM collection settings to the Selected NEs list, or to remove NEs from the list.
PM Collection Selection (15 Min, 1 Day) Screen	
15 Min	If checked, 15-minute PM data collection is configured for the NEs you selected in the NE Selection screen.
1 Day	If checked, 1-day PM data collection is configured for the NEs you selected in the NE Selection screen.
15 Min Robust	(Available only if 15 Min is checked) If checked, 15-minute robust PM data collection is configured for the NEs you selected in the NE Selection screen.
1 Day Robust	(Available only if 1 Day is checked) If checked, 1-day robust PM data collection is configured for the NEs you selected in the NE Selection screen.
PM Collection Selection (15 Min Only) Screen	
15 Min	If checked, 15-minute PM data collection is configured for the NEs you selected in the NE Selection screen.

10.4.3 Launching the PM Table for Layer 3 Links from the Network Map

Step 1 In the Domain Explorer or Subnetwork Explorer tree, click a node and choose **File > Network Map** (or click the **Open Network Map** tool).

Step 2 Right-click a Layer 3 link in the Network Map and choose **Link PM Data** from the right-click menu.

10.4.4 Managing Real-Time PM Data

Prime Optical supports the ability to launch a real-time PM report from the PM Query wizard or from a single row in a PM table. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. You can view and modify the polling interval for the real-time PM reporting session.

Note Real-time PM reporting applies only to CTC-based NEs.

The following real-time PM selection options are available:

- Polling—When selected, Prime Optical periodically polls the selected PM parameter(s) on the selected NE. The polling intervals are 10 to 900 seconds—For CTC-based NEs

  Note You can specify the real-time polling interval in the Real-Time Polling dialog box. See 10.4.4.1 Changing the Real-Time Polling Interval, page 10-27.

- Refresh—Allows you to start polling of real-time attributes if real-time polling is disabled in the Real-Time Polling dialog box.
- Baseline—When selected, the most recently collected data set is saved into a buffer. All new values are recalculated as they arrive based on the saved baseline values.

  Note Not all values can be saved as a baseline. For example, null and string values cannot be saved as baseline values.

- Clear Baseline—Sets the baseline values to zero.
- Clear—Clears the current real-time PM buffer of all values.

Each 15-minute or 1-day PM table has a corresponding real-time PM table. However, not all of the fields in the historical PM tables are shown in the real-time PM tables. The first fields in real-time PM tables are:

- Alias ID—Alias name of the selected NE.
- Module Name—Module for which PM data is displayed.
- Physical Location—Slot and port number for which PM data is displayed.
- Interface—Interface name of the selected NE.
- Time Stamp—Time when the performance statistics were collected.
- Maintenance—Whether the NE was under maintenance when the performance data was collected.

The remaining fields are the actual real-time attributes being polled.

When a real-time PM session is running, it polls CTC-based NEs for *x* number of attributes every 10 to 900 seconds. The data it returns is stored entirely in transient memory. You can use the PM Service properties pane in the Control Panel window to limit the scope of the real-time PM session. See 10.3.3 Understanding the PM Service Pane, page 10-4.

- To launch a real-time PM report from the PM Query wizard, see 10.4.1.1 Using the PM Query by Category Wizard, page 10-17 or 10.4.1.2 PM Query by NE Model Wizard, page 10-20. In the NE Model Selection screen, click the **Real-Time** radio button.

- To launch a real-time PM report from a single row in a PM table, select a row and choose **View > Launch Real-Time Performance Session** (or click the **Launch Real-Time Performance Session** tool).
- To clear the real-time PM counters on the NE, choose **View > Clear PM Counters on NE** (or click the **Clear PM Counters on NE** tool).

Note Use the toolbar icons to manage the real-time display. See Appendix A, "Icons and Menus Displayed in Prime Optical" for an explanation of the icons.

10.4.4.1 Changing the Real-Time Polling Interval

By default, the real-time PM session polls the attributes every 10 seconds for CTC-based NEs. You can configure the polling interval from 10 to 900 seconds.

Step 1 Launch a real-time PM table.

Step 2 Choose **View > Specify Real-Time Polling Interval** (or click the **Specify the Real-Time Polling Interval** tool). The Real-Time Polling dialog box opens.

Step 3 In the Specify Real-Time Polling Interval field, enter a number from 10 to 900 seconds.

Step 4 Complete one of the following options:

- To save the change, click **Apply**.
- To save the most recently collected data set into a buffer, click **Baseline**. All new values are recalculated as they arrive based on the saved baseline values.
- To set the baseline values to zero, click **Clear Baseline**. This disables the baseline set.
- To discard changes and close the dialog box, click **Cancel**.

10.4.4.2 Enabling or Disabling Real-Time Polling

Step 1 Launch a real-time PM table.

Step 2 Choose **View > Specify Real-Time Polling Interval** (or click the **Specify the Real-Time Polling Interval** tool).

Step 3 To disable real-time polling, uncheck the **Enable Real-Time Polling** check box. To enable real-time polling, leave this check box checked. When automatic polling is enabled, you do not need to manually refresh the real-time PM table.

Step 4 Click **Apply**.

10.4.5 Filtering PM Data

Use the Filter dialog box (**File > Filter**) to filter data according to criteria that you select, and then display the results in a table. The following table provides descriptions.

Note The Filter dialog box is not available for real-time PM data.

Table 10-15 Field Descriptions for the PM Table Filter

Tab	Description
Time Stamp (also *Time Period*)	Filters PM data for a specified time period, ranging from the past hour to the past 6 months. Additionally, you can click the **User Specified** radio button to specify exact filter start and end times by date and hour. The time zone used can be GMT, an offset from GMT, or local time, depending on what you specified in the User Preferences dialog box. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue. If you want to filter events and the time period is not important, click **No Time Specified**.
NE ID (also *Network Elements*)	Filters PM data by NE. PM data will display for NEs in the Selected list. Use the **Add** and **Remove** buttons to select the NEs for which you want to display PM data.
Module Name (also *Managed Entities*; not available for all NEs)	Filters PM data by module. PM data will display for modules in the Selected list. Use the **Add** and **Remove** buttons to select the modules for which you want to display PM data.
Physical Location	Filters PM data by rack, subrack (shelf), slot, subslot, card, or port. (Options depend on the type of NE selected.) Use the drop-down lists to select the entity for which you want to display PM data.

10.4.6 Using PM Data Graphs

PM tables contain a Plot tab that allows you to plot historical or real-time PM data in a graphical view that is stored in the Prime Optical database. You can plot a maximum of three PM parameters at a time per graph. You can select a line or bar graph type and you can display multiple traces on the same set of axes for comparison. Prime Optical automatically scales the graph's Y-axis to best show the values of the measured parameters. You can launch a graph of PM data for the following data types:

- One PM parameter on one board
- Multiple PM parameters on one board

Note Parameters must have similarly scaled ranges, such as errored seconds and severely errored seconds. For example, you cannot plot bit errored rate and errored seconds on the same graph. Instead, these parameters are plotted on separate graphs.

- One PM parameter on multiple boards

Note Boards must all support the selected PM parameter.

Complete the following steps to use PM data graphs:

Step 1 View PM data by PM category (see 10.4.1.1 Using the PM Query by Category Wizard, page 10-17) or non-CTC-based NE Model (see 10.4.1.2 PM Query by NE Model Wizard, page 10-20).

Step 2 From the PM table, select the row of the NE, port, or slot for which you want to view the PM data on a graph.

Step 3 Choose **View > Plot** (or click the **Plot** tool).

Note To plot the graph, you must choose **View > Plot** or click the **Plot** tool. If you simply click the Plot tab (without choosing **View > Plot** or clicking the **Plot** tool), the graph is not filled out.

In the **Plot** tab, the graph is displayed. The graph can plot a maximum of three PM parameters. The graph's status bar displays the selection context in the following format:

```
<NE_ID>:<Module>:<Physical_location>:<Interface>:<Time_stamp [Time_zone]>
```

Note *Physical-location* includes shelf, slot, and port information; for example, Shelf: 1, Slot: 14, Port: 0.

Step 4 Use the plot-specific toolbar buttons to manage the graphical display. Choose **View > Zoom In**, **Zoom Out**, or **Fit in Window** to adjust the zoom level. You can also click the **Zoom In**, **Zoom Out**, or **Fit in Window** tools.

Note If Prime Optical cannot complete samples retrieval in a certain time frame (for example, due to a temporary loss of communication), the PM graph interpolation will be traced from the last sample that was retrieved before the malfunction occurred to the first sample that was retrieved after normal behavior was restored.

10.4.6.1 Configuring a Graph

Use the Graph Parameters Selection dialog box to modify the parameters that are plotted in a graph.

Step 1 From the PM table, select the row for which you want to view the PM data on a graph.

Step 2 Choose **View > Graph Configure** (or click the **Configure Graphing Parameters** tool). The Graph Parameters Selection dialog box opens.

Step 3 For historical PM graphs, select the start and end times in the Time Panel area. Select the date, hour, and minute from the corresponding drop-down lists.

Note Real-time PM graphs do not have a Time Panel area, because a time range does not apply to real-time data.

Step 4 In the Parameter Selection area, select the parameters from the Available Parameters list that you want to plot in the graph. You can generate a maximum of three graphs and each graph can plot a maximum of three parameters.

Step 5 Click the **Add** button that corresponds to the graph where the parameter will be plotted. Selected parameters are listed in the Selected Parameters: Graph *number* list.

Step 6 To remove parameters from the Selected Parameters: Graph *number* list, select parameters and click **Remove**.

Step 7 Click **OK**. The graph is displayed in the Plot tab. The status bar displays the module name, physical location, interface, date range, and time stamp range.

Step 8 You can adjust the zoom level for each graph. Click a graph and choose **View > Zoom In**, **Zoom Out**, or **Fit in Window**. You can also click the **Zoom In**, **Zoom Out**, or **Fit in Window** tools.

Step 9 You can normalize or restore the Y axes values in historical PM graphs. Choose **View > Normalize Y Axes** or **Restore Y Axes** (or click the **Normalize Y Axes** or **Restore Y Axes** tools). The Normalize option allows you to normalize axes values and compare data of the same type (for example, receive versus transmit packets). The Restore option restores axes values to the previous graph visualization.

Note The Normalize and Restore options do not apply to real-time PM graphs.

10.4.6.2 Printing a Graph

Step 1 After viewing PM data on a graph or configuring a graph, choose **File > Print Graph** (or click the **Print Graph** tool). The Print dialog box opens.

Step 2 Select your printer and configure the page setup options, as necessary.

Step 3 Click **OK**.

Note PM graphs might not print completely on some printers with the default page setup settings. In this case, you need to change the printer setup. To do this, click **Properties** in the Print dialog box. Click **Advanced**. Change the scaling to a value that prints the complete graph; for example, 10% or 20%. Click **OK**.

10.4.7 Understanding How Prime Optical Displays the Interface Field

Prime Optical displays the Interface field in PM tables as follows:

- ONS 15305

  Prime Optical representation:

  Interface-type#*Interface-type-number*AUG4-*AUG4-number*/AUG1-*AUG1-number*/TUG3-*TUG3-number*/TUG2-*TUG2-number*/TU12-*TU12-number*

  where:

  - *Interface-type* is the affected interface object
  - *Interface-type-number* is the interface number
  - *AUG4-number* is the AUG4 number (applies to VC-4, VC3, and VC12)
  - *AUG1-number* is the AUG1 number (applies to VC-4, VC3, and VC12)
  - *TUG3-number* is the TUG3 number (applies only to VC3 and VC12 interfaces)
  - *TUG2-number* is the TUG2 number (applies only to VC12 interfaces)
  - *TU12-number* is the TU2 number (applies only to VC12 interfaces)

- SDH

  Prime Optical representation:

  Interface-type#*VC4-number*/VC3-*VC3-number*/TUG2-*TUG2-number*/VC12-*VC12-number*

  where:

  - *Interface-type* is the affected interface object (for example, VC4, VC4-2c, VC3, VC12, and so on)
  - *VC4-number* is the VC4 number in that interface (applies only to VC4, VC3, and VC12 interfaces)
  - *VC3-number* is the VC3 number in that VC4 (applies only to VC3 interfaces)
  - *TUG2-number* is the TUG2 number in that VC3 (applies only to VC12 interfaces)
  - *VC12-number* is the VC12 number in that TUG2 (applies only to VC12 interfaces)

  For example, for alarms on a VC12 interface with VC4-number = 1, VC3-number = 2, TUG2-number = 1, and VC12-number = 2, Prime Optical displays VC12 #1/VC3-2/TUG2-1/VC12-2, where the first field is the affected interface and VC4 number (#*VC4-number*). This example indicates that the alarm is on the VC12 interface with the VC4 number equal to 1 (VC12 #1).

- SONET

  Prime Optical representation:

  Interface-type#*STS-number*/*VT-group-number*-*VT-number-in-group*

  where:

  - *Interface-type* is the affected interface object (for example, STS1, STS3c, VT-1, and so on)
  - *STS-number* is the STS number on that interface (applies only to STS and VT interfaces)
  - *VT-group-number* is the VT group number for that STS number (applies only to VT interfaces)
  - *VT-number-in-group* is the VT number in that VT group (applies only to VT interfaces)

  For example:

- For a VT path-level alarm with STS-number = 1, VT-group-number = 2, and VT-number-in-group = 1, Prime Optical displays VT-1 #1/2-1, where the first field is the affected interface and STS number (#*STS-number*). This example indicates that the alarm is a VT path-level alarm with STS-number = 1 (VT-1 #1).
- For an STS path-level alarm with STS-number = 1, Prime Optical displays STS3c #1, where the first field is the affected interface and STS number (#*STS-number*). This example indicates that the alarm is an STS path-level alarm with STS-number = 1 (STS3c #1).

Managing Inventory

This chapter describes how to manage inventory using Cisco Prime Optical. It contains the following sections:

- 11.1 Overview, page 11-1
- 11.2 Domain NE Table, page 11-2
- 11.3 Equipment Inventory Table, page 11-11

11.1 Overview

Managing inventory involves maintaining a record of all of the network element (NE) resources installed in the network to support the provisioning of services. It should include collecting information about locations, quantities of equipment, model numbers, serial numbers, versions, installation dates, and so on.

Inventory management is one of the fundamental network management functions. When forecasting service growth or even attempting to provision a new service, it is necessary to know the current network inventory. Can the existing inventory support the forecast growth or new service requests, or must additional equipment be ordered and installed onsite? Can your hardware support a new software release? You will need to check the type and revision of hardware to determine the answer. Has a recall been issued by the vendor for a certain hardware revision of a board? Are you affected? You will need to check the inventory again.

Prime Optical allows you to add NEs, and it autodiscovers the details about the NE itself and the contained physical inventory. Prime Optical remains automatically synchronized with changes relating to inventory that might occur in the network. All inventory information is stored in the Prime Optical database and is available at any time.

Inventory management includes the discovery of the NEs from the EMS, and ongoing synchronization with the NEs. It also includes the ability to provide the inventory to a higher-level NMS through a northbound interface.

Prime Optical can quickly capture, display, and store an inventory of the NEs on your network. It allows you to view information about the NEs, installed software, and software licenses. Prime Optical also lets you edit the inventory information for the NEs in your network.

For passive NEs, you can add inventory information manually. You can also add inventory information for unmanaged NEs or for NEs from other vendors.

Prime Optical allows you to export inventory reports to a flat text file with a user-specified delimiter character. This file can be imported easily into a spreadsheet application for further analysis.

Note Japanese characters are supported for inventory reports. When generating a report from the Domain NE table, choose **File > HTML Report** for a report that includes Japanese characters.

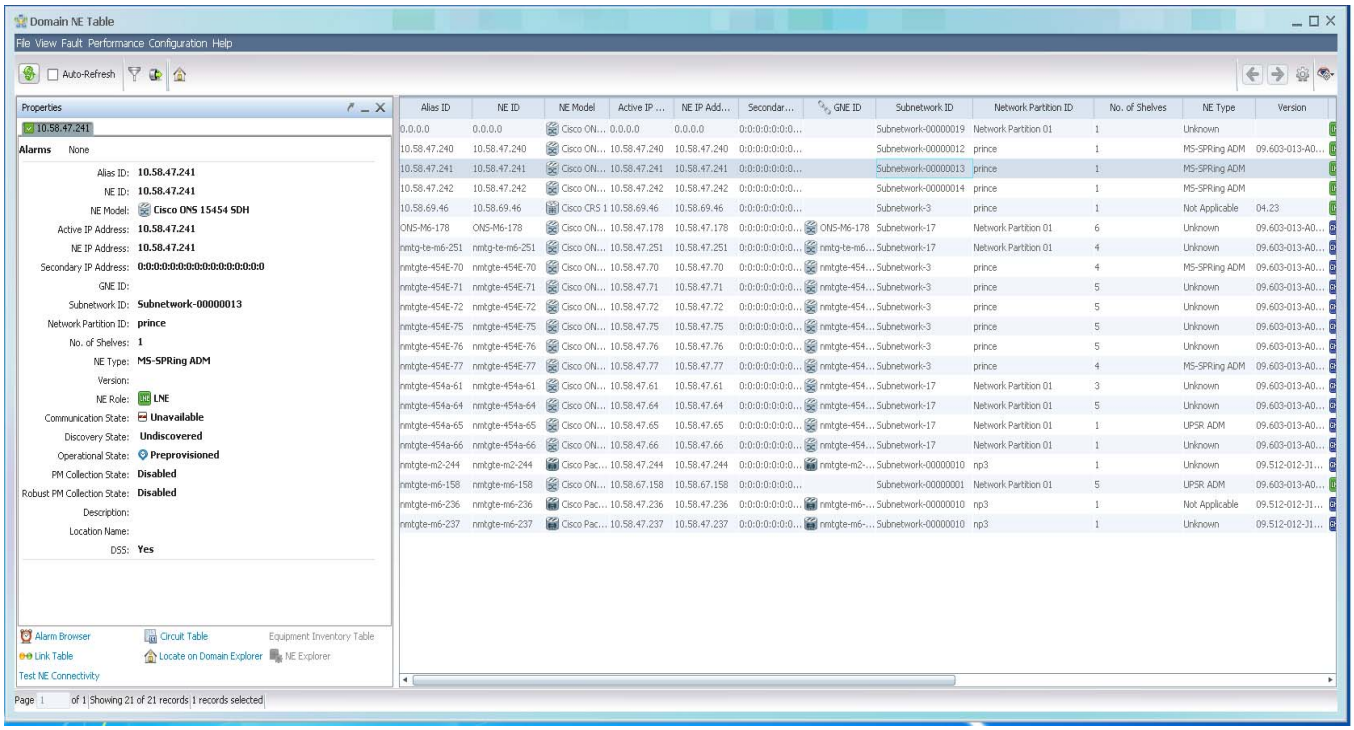
Prime Optical provides two levels of inventory reports:

- A complete list of all the NEs that belong to a specific group or to the entire domain. See 11.2 Domain NE Table, page 11-2.
- A detailed list of cards and modules installed on the NEs. See 11.3 Equipment Inventory Table, page 11-11.

11.2 Domain NE Table

The Domain NE table displays an inventory of all the NEs in the selected Prime Optical domain, group, or subnetwork. Based on your selection criteria, the Domain NE table tells you which NEs are in or out of service, available or unavailable, and so on. The following figure shows an example of the Domain NE table.

Figure 11-1 Domain NE Table



Note See Appendix A, "Icons and Menus Displayed in Prime Optical" for details of all the icons displayed in the window.

You can test NE connectivity, locate an NE on the Domain Explorer, and launch the Alarm Browser from the Domain NE Table. You can also launch the NE Explorer, Equipment Inventory Table, Circuit Report, and Link Table from the **Configuration** menu in the Domain NE Table.

You can also change the state of an NE by selecting the NE and then choosing **Configuration > Change State**. The following options are available:

- Mark In Service
- Mark Out of Service
- Mark Under Maintenance

Note All of the above features can also be launched by right-clicking an NE in the Domain NE table and selecting the appropriate option from the popup menu that appears.

11.2.1 Viewing the Domain NE Table

Select a node in the Domain Explorer or Subnetwork Explorer tree and choose **File > Domain NE Table**. The following table provides descriptions.

Table 11-1 Field Descriptions for the Domain NE Table

Field	Description
Alias ID	Alias name of the NE.
NE ID	Name of the selected NE.
NE Model	Selected NE model: • Cisco ONS 15216 • Cisco ONS 15305 • Cisco ONS 15310 CL • Cisco ONS 15310 MA or Cisco ONS 15310 MA SDH • Cisco ONS 15327 • Cisco ONS 15454 or Cisco ONS 15454 SDH • Cisco ONS 15530 • Cisco ONS 15540 • Cisco ONS 15600 or Cisco ONS 15600 SDH
Active IP Address	IP address of the GNE, in IPv4 or IPv6 format.
NE IP Address	IP address of the NE, in IPv4 or IPv6 format. Prime Optical tries to connect to the NE using an IPv4 address. If the IPv4 address is unreachable, Prime Optical tries to connect to the NE using its IPv6 address, if configured and reachable. **Note** If the node is a gateway network element (GNE) or a LAN-connected network element (LNE), the NE IP address is the same as the active IP address.
Secondary IP Address	Secondary IP address of the NE. If the IPv6 address is unreachable, Prime Optical tries to connect to the NE using its IPv4 address. **Note** If IPv6 is not configured on the NE, the IP address 0:0:0:0:0:0:0:0 is shown.
GNE ID	ID for the GNE on the selected NE's ring.
Subnetwork ID	Name of the subnetwork associated with the selected NE.
Network Partition ID	Name of the network partition to which this NE is associated.

Table 11-1 Field Descriptions for the Domain NE Table (continued)

Field	Description
No. of Shelves	Number of shelves supported by the NE.
NE Type	Type of NE.
Version	NE software version that is running.
NE Role	Role of the selected NE.
Communication State	Connectivity state between Prime Optical and the selected NE: Available, Unavailable, and Initialization Failed.
Discovery State	Discovery state of the selected NE: Initializing or Synch Configuration.
Operational State	Current operational state of the system: In Service, Under Maintenance, or Out of Service.
PM Collection State (*not applicable to ONS 15216*)	Whether performance monitoring collection is enabled or disabled. You can configure the PM collection state in the Domain Explorer > Network Element Properties pane > Status tab.
Robust PM Collection State (*not applicable to all NEs*)	Whether robust PM collection is enabled or disabled. You can configure the robust PM collection state in the Domain Explorer > Network Element Properties pane > Status tab. **Note** You cannot collect robust PM data until at least one 15-minute or one 1-day interval has been collected in normal operation. **Note** Robust PM data collection applies only to CTC-based NEs and to the ONS 15305, ONS 15530, and ONS 15540. Robust PM collection is not supported for the ONS 15216. **Note** You can collect up to 8 hours of 15-minute robust PM data for CTC-based NEs. **Note** You can collect up to the previous day's 1-day robust PM data for CTC-based NEs. **Note** For the ONS 15530 and ONS 15540 ESPx, you can collect up to 24 hours (96 previous missed intervals) of 15-minute robust PM data and up to the previous day's 1-day robust PM data. **Note** For the ONS 15540 ESP, you can collect up to 24 hours (96 previous missed intervals) of 15-minute robust PM data.
Description	Information that a user might have entered to describe the selected NE.
Location Name	Geographic location of the NE.
DSS	Indicates whether or not the selected CTC-based SONET or CTC-based SDH NE serves as a designated SOCKS server (DSS). If so, the NE manages connectivity among other NEs through firewalls. Values for the DSS column are Yes, No, and Not Applicable.

Tip The Dashboard window displays an NE counter icon. This counter lists the total number of NEs in the domain. Click the counter to open the Domain NE table.

11.2.2 Filtering the Domain NE Table

Step 1 Select a node in the Domain Explorer or Subnetwork Explorer tree.

Step 2 Choose **File > Domain NE Table**. The Domain NE table opens. (See Figure 11-1.)

Step 3 Choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog box opens.

Step 4 Specify the filter criteria to display the results in the Domain NE table. The following table describes the fields in the filter.

Step 5 Click **OK**. The filtered data is displayed in the Domain NE table.

Table 11-2 Field Descriptions for the Domain NE Table Filter

Field	Description
NE ID Tab	
Available NE ID/Selected NE ID	List of available NE IDs. Click **Add** and **Remove** to move NE IDs to and from the Selected NE ID list. **Note** Use the scroll bars at the bottom and right side of the Available NE ID list and the Selected NE ID list to display all options in the lists.
Inventory Tab	
Communication State	Filters NEs according to their communication state (Available, Unavailable, and Initialization Failed).
Operational State	Filters NEs according to their operational state (In Service, Out of Service, Preprovisioned, or Under Maintenance).
PM Collection State	Filters NEs according to their PM collection state (Enabled; 5,10,15 Min Collection; 1 Day Collection; Disabled).
Robust PM Collection State	Filters NEs according to their robust PM data collection state (Enabled, 15 Min Collection, 1 Day Collection, Disabled).
GNE	Filters domain inventory data based on GNE IDs. You can select <ALL> to filter all GNE IDs or you can choose a particular GNE ID from the drop-down list.
NP ID Tab	
Available Network Partitions/Selected Network Partitions	Filters domain inventory data based on network partition. Click **Add** and **Remove** to move network partitions to and from the Selected Network Partitions list. **Note** Use the scroll bars at the bottom and right side of the Available Network Partitions list and the Selected Network Partitions list to display all options in the lists.

11.2.3 Viewing NE Properties from the Domain NE Table

To view NE properties from the Domain NE Table, do the following:

Step 1 From the **Toggle Frames Visibility** drop-down list, select **Properties**. A dockable Properties window displays the following NE properties:

- Alias ID
- NE ID
- NE Model
- Active IP Address
- NE IP Address
- Secondary IP Address
- GNE ID
- Subnetwork ID
- Network Partition ID
- No. of Shelves
- NE Type
- Version
- NE Role
- Communication State
- Discovery State
- Operational State
- PM Collection State (not applicable to ONS 15216)
- Robust PM Collection State (not applicable to all NEs)
- Description
- Location Name
- DSS

The following links are also available at the bottom of the Properties window:

- Alarm Browser—Launches the Alarm Browser for the selected NE.
- Circuit Report—Launches the Circuit Report for the selected NE.
- Equipment Inventory Table—Launches the Equipment Inventory Table for the selected NE.
- Link Table—Launches the Link Table for the selected NE.
- Locate on Domain Explorer—Locates the selected NE on the Domain Explorer.
- NE Explorer—Launches the NE Explorer for the selected NE.
- Test NE Connectivity—Tests connectivity to the selected NE using the community string configured in the Prime Optical client.

11.2.4 Viewing the ENE Devices Table

Use the ENE Devices table to view subtending end network elements (ENEs) that are supported by a given GNE. The GNE-ENE relationship is calculated on a theoretical projection, which does not necessarily equate to a real network situation.

Step 1 Select a GNE node in the Domain Explorer or Subnetwork Explorer tree.

Step 2 Choose **File > ENE Devices**. The ENE Devices table opens.

The fields in the ENE Devices table are identical to the fields in the Domain NE table (see Table 11-1), except that the ENE Devices table shows only those ENEs that are associated with the selected GNE.

11.2.5 Viewing the TNE Devices Table

Use the TNE Devices table to view information about each tunnel NE (TNE) that Prime Optical manages. The Edit menu options allow you to open, close, or modify an individual TL1 tunnel.

Step 1 Select any node in the Domain Explorer or Subnetwork Explorer tree.

Step 2 Choose **File > TNE Devices**. The TNE Devices (Tunnel) table opens. The following table provides descriptions.

Step 3 (Optional) To open, close, or modify a TL1 tunnel, select an individual TNE in the table and choose any of the following menu options:

- **Edit > Open Tunnel**—Opens a TL1 tunnel on the selected TNE. See 11.2.7 Opening a TL1 Tunnel, page 11-8.
- **Edit > Close Tunnel**—Closes the TL1 tunnel on the selected TNE. See 11.2.8 Closing a TL1 Tunnel, page 11-9.
- **Edit > Modify Tunnel**—Allows you to modify the settings of the selected TNE. See 11.2.9 Modifying a TL1 Tunnel, page 11-10.

Table 11-3 Field Descriptions for the TNE Devices Table

Field	Description
TNE ID	ID of the selected tunnel NE.
Alias ID	Alias of the selected tunnel NE.
GNE IP Address	IP address of the non-Cisco GNE.
TL1 Port Number	Port number used by the non-Cisco GNE to support the TL1 tunnel.
Encoding Type	Type of encoding used by the selected tunnel NE. Values are LV + Base64 Payload, LV + Binary Payload, or Raw.
Tunnel Status	Status of the selected TL1 tunnel.

11.2.6 Filtering the TNE Devices Table

Step 1 Select any node in the Domain Explorer or Subnetwork Explorer tree.

Step 2 Choose **File > TNE Devices**. The TNE Devices (Tunnel) table opens.

Step 3 Choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog box opens.

Step 4 Specify the filter criteria to display the results in the TNE Devices (Tunnel) table. The following table describes the fields in the filter.

Step 5 Click **OK**. The filtered data is displayed in the TNE Devices (Tunnel) table.

Table 11-4 Field Descriptions for the TNE Devices Table Filter

Field	Description
TNE ID Tab	
Available Network Partitions/Selected Network Partitions	Filters TL1 tunnel data based on network partition. Click **Add** and **Remove** to move network partitions to and from the Selected Network Partitions list.
GNE IP Address Tab	
Available Network Partitions/Selected Network Partitions	Filters GNE IP address data based on network partition. Click **Add** and **Remove** to move network partitions to and from the Selected Network Partitions list.
Tunnel Status Tab	
Connection Type	Filters TL1 tunnel data based on the status of the tunnel connection. Check any of the following check boxes: • Open—Filters on open TL1 tunnels. • Close—Filters on closed TL1 tunnels. • Initial—Filters on TL1 tunnels that are initializing.

11.2.7 Opening a TL1 Tunnel

Use the Open TL1 Tunnel dialog box to open a TL1 tunnel on the selected TNE.

Step 1 Select any node in the Domain Explorer or Subnetwork Explorer tree.

Step 2 Choose **File > TNE Devices**. The TNE Devices (Tunnel) table opens.

Step 3 In the TNE Devices table, select an individual TNE and choose **Edit > Open Tunnel** (or click the **Open Tunnel** tool). The Open TL1 Tunnel dialog box opens. The following table provides descriptions.

Note The Open Tunnel menu option and tool are dimmed if the TNE Devices table is empty.

Step 4 After making your selections, click **Finish**. The Job Monitor table (**Administration > Job Monitor**) reports the result of the operation.

Table 11-5 Field Descriptions for the Open TL1 Tunnel Dialog Box

Field	Description
TNE ID	*Display only.* ID of the selected tunnel NE.
Alias ID	*Display only.* Alias of the selected tunnel NE.
GNE IP Address	*Display only.* IP address of the non-Cisco GNE.
Port	*Display only.* Port number used by the non-Cisco GNE to support the TL1 tunnel.
TL1 Encoding	*Display only.* Type of encoding used by the selected tunnel NE. Values are LV + Base64 Payload, LV + Binary Payload, or Raw.
Job Comments	Enter comments about the TL1 tunnel, if needed.
Time (*time zone*)	Set a time to open the TL1 tunnel. Click **Now** to open the tunnel immediately, or click **At Time** and specify when to open the tunnel, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

11.2.8 Closing a TL1 Tunnel

Use the Close TL1 Tunnel dialog box to close the TL1 tunnel on the selected TNE.

Step 1 Select any node in the Domain Explorer or Subnetwork Explorer tree.

Step 2 Choose **File > TNE Devices**. The TNE Devices (Tunnel) table opens.

Step 3 In the TNE Devices table, select an individual TNE and choose **Edit > Close Tunnel** (or click the **Close Tunnel** tool). The Close TL1 Tunnel dialog box opens. The following table provides descriptions.

Step 4 After making your selections, click **Finish**. A warning message is displayed, alerting you that closing a tunnel will result in loss of connectivity to the selected TNE and all of its ENEs.

The Job Monitor table (**Administration > Job Monitor**) reports the result of the operation.

Table 11-6 Field Descriptions for the Close TL1 Tunnel Dialog Box

Field	Description
TNE ID	*Display only.* ID of the selected tunnel NE.
Alias ID	*Display only.* Alias of the selected tunnel NE.
GNE IP Address	*Display only.* IP address of the non-Cisco GNE.
Port	*Display only.* Port number used by the non-Cisco GNE to support the TL1 tunnel.

Table 11-6 Field Descriptions for the Close TL1 Tunnel Dialog Box (continued)

Field	Description
TL1 Encoding	*Display only.* Type of encoding used by the selected tunnel NE. Values are LV + Base64 Payload, LV + Binary Payload, or Raw.
Job Comments	Enter comments about the TL1 tunnel closure, if needed.
Time (*time zone*)	Set a time for the TL1 tunnel closure. Click **Now** to close the tunnel immediately, or click **At Time** and specify when to close the tunnel, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

11.2.9 Modifying a TL1 Tunnel

Use the Modify TL1 Tunnel dialog box to modify the settings of an individual TNE.

Step 1 Select any node in the Domain Explorer or Subnetwork Explorer tree.

Step 2 Choose **File > TNE Devices**. The TNE Devices (Tunnel) table opens.

Step 3 In the TNE Devices table, select an individual TNE and choose **Edit > Modify Tunnel** (or click the **Modify Tunnel** tool). The Modify TL1 Tunnel dialog box opens. The following table provides descriptions.

Step 4 After modifying the selections, click **Finish**. The Job Monitor table (**Administration > Job Monitor**) reports the result of the operation.

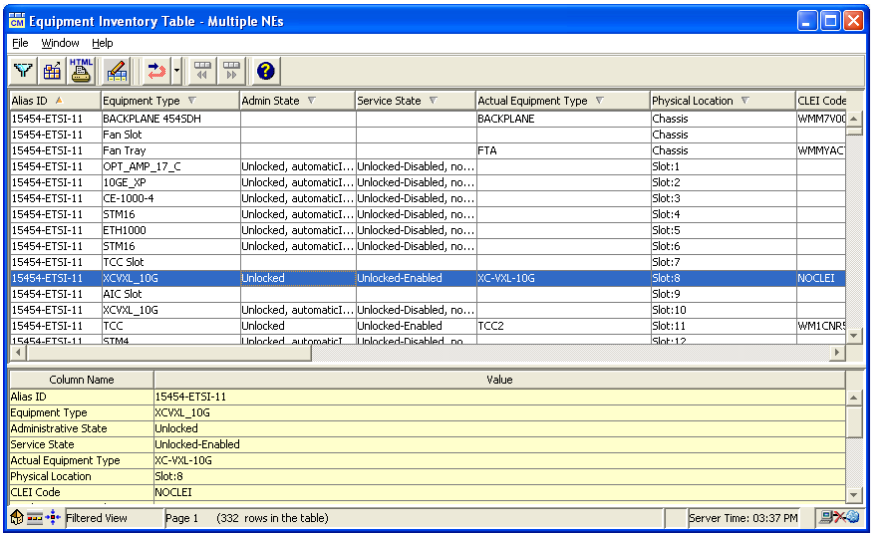
Table 11-7 Field Descriptions for the Modify TL1 Tunnel Dialog Box

Field	Description
TNE ID	*Display only.* ID of the selected tunnel NE.
Alias ID	*Display only.* Alias of the selected tunnel NE.
GNE IP Address	Modify the IP address of the non-Cisco GNE.
Port	Modify the port number used by the non-Cisco GNE to support the TL1 tunnel.
TL1 Encoding	Modify the type of encoding used by the selected tunnel NE. Values are LV + Base64 Payload, LV + Binary Payload, or Raw.
Job Comments	Enter comments about the TL1 tunnel modification, if needed.
Time (*time zone*)	Set a time for the tunnel modification. Click **Now** to begin modification immediately, or click **At Time** and specify when to begin modification, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

11.3 Equipment Inventory Table

The Equipment Inventory table displays a complete inventory of the components of the selected NE or of the NEs in a group or subnetwork. The following figure shows an example of the Equipment Inventory table.

Figure 11-2 Equipment Inventory Table



Note See Appendix A, "Icons and Menus Displayed in Prime Optical" for details of all the icons displayed in the window.

11.3.1 Viewing an Equipment Inventory Table

Step 1 In the Domain Explorer or Subnetwork Explorer tree, select the NE, group, or subnetwork for which you want to view inventory data, and choose **Configuration**.

Step 2 From the Configuration menu, select the NE model and choose **Equipment Inventory Table**. The Equipment Inventory table for the selected NE model opens.

The following sections provide information about the individual Equipment Inventory tables:

- 11.3.1.1 ONS 15216 Equipment Inventory Table, page 11-12
- 11.3.1.2 ONS 15305 Equipment Inventory Table, page 11-12
- 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13
- 11.3.1.4 ONS 155xx Equipment Inventory Table, page 11-17

Note The Equipment Inventory table is not available for unmanaged NEs.

11.3.1.1 ONS 15216 Equipment Inventory Table

The ONS 15216 Equipment Inventory table displays a complete list of the ONS 15216 system inventory. The following table provides descriptions.

Table 11-8 Field Descriptions for the ONS 15216 Equipment Inventory Table

Field	Description
Alias ID	Alias name of the NE.
Equipment Type	NE model type.
Physical Location	Location where the NE is installed.
Wavelength(s)	Number of wavelengths for this NE.
CLEI Code	CLEI code for the device. CLEI code is an industry-standard code that precisely defines a component.
Product Name	Name of the product.
Serial Number	Serial number of the device.
NE ID	Name of the selected NE.

11.3.1.2 ONS 15305 Equipment Inventory Table

The ONS 15305 Equipment Inventory table displays a complete list of the ONS 15305 system inventory. The following table provides descriptions.

Table 11-9 Field Descriptions for the ONS 15305 Equipment Inventory Table

Field	Description
Alias NE ID	Alias name of the NE.
Module Name	Generic type of card.
Physical Location	Slot number where the card appears.
Install State	Installation state of the card.
Expected Module	Default card for the slot.
Operational State	Operational state of the card. (Not applicable if the slot is empty.)
Software Version	Version of software present on the card. (Not applicable if the slot is empty.)
Board Serial Number	Serial number of the card.
Hardware Version	Hardware version of the card. (Not applicable if the slot is empty.)
NE ID	Name of the selected NE.

11.3.1.3 Equipment Inventory Table for CTC-Based NEs

The Equipment Inventory table for CTC-based NEs displays a complete list of the ONS 15305 R3.0, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15454-M6, ONS 15454-M2, ONS 15600 SONET, ONS 15600 SDH, CPT 600, or CPT 200 system inventory. This section contains the following tables:

- Field Descriptions for the Equipment Inventory Table—CTC-Based NEs
- Service State and Fault Secondary State Values
- Available Equipment Inventory Fields for Passive Cards

The following table lists common field descriptions for the Equipment Inventory table.

Table 11-10 Field Descriptions for the Equipment Inventory Table—CTC-Based NEs

Field	Description
Alias ID	Alias name of the NE.
Equipment Type	Generic type of card.
Admin State	User-assigned designation that drives whether an entity is in service or out of service. The administrative state is the driver for the service state. For SONET nodes, values are: • IS—In Service. Able to carry traffic. • OOS, DSBLD—Out of Service. Unable to carry traffic. • IS, AINS—Auto In Service. Alarm reporting is suppressed, but traffic is carried. • OOS, MT—Out of Service, Maintenance. Alarm reporting is suppressed, but traffic is carried and loopbacks are allowed. • OOS, OOG—Out of Service, Out of Group. This state is used to place a member circuit out of the group and to stop sending traffic. OOS, OOG applies only to the cross-connects on the end node where the VCAT resides. For intermediate nodes, the cross-connects are OOS, MT. For SDH nodes, corresponding values are: • Unlocked (corresponds to IS) • Locked (corresponds to OOS) • Failed (corresponds to FLT) • Locked Maintenance (corresponds to OOS, MT) • Unlocked Automatic In Service (corresponds to IS, AINS) **Note** If the NE release does not support the administrative state, this field shows *N/A*.

Table 11-10 Field Descriptions for the Equipment Inventory Table—CTC-Based NEs (continued)

Field	Description
Service State	Overall availability of the entity. Values are: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • AINS—Automatic In Service. • DSBLD—Traffic is disabled on the entity. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11. • LPBK—Port or connection has a loopback on it. • MEA—Mismatch of equipment due to invalid equipment insertion. • MT—Maintenance, as per the administrative state change. • SWDL—Software download in progress. • UAS—Unassigned. The entity does not exist, has not been created, or has been deleted. • UEQ—Unequipped. There is nothing in the slot. See Table 11-11 for the Service state–Secondary state possible values. **Note** If the NE release does not support the service state, this field shows *N/A*.
Actual Equipment Type	Specific type of card. This field also shows small form-factor pluggable (SFP) information (such as wavelength, reach, and payload rate), Channel Express (CXP), C Form-Factor Pluggable (CFP), and 10-Gigabit Small Form-Factor Pluggable (XFP) for all line cards and pluggable I/O modules (PIMs) that support pluggable port modules (PPMs). **Note** For the Customer Access Panel2 (CAP2) module on the ONS 15600, Prime Optical displays “CAP” for the Equipment Type and “15600-CAP2” for the Actual Equipment Type.
Physical Location	• Slot number where the card appears. • Unit number of passive units. • FOG number of the PTSA_GE panels. For PPMs, this field contains the slot number and the PPM numbers.
CLEI Code	CLEI code for the card. CLEI code is an industry-standard code that precisely defines a component.
Hardware Part Number	Part number used for the card.
Serial Number	Serial number of the card.
Note	Any user-entered comments relating to the equipment.
Hardware Revision	Hardware revision number of the card.
Firmware Version	Firmware version of the card.

Table 11-10 Field Descriptions for the Equipment Inventory Table—CTC-Based NEs (continued)

Field	Description
Inventory Code	Inventory code of the card.
Application Filename	Name of the file that the card loads from the TCC or XTC flash in order to run its application.
Other Information	Additional information entered by the manufacturer.
Equipment State	Current state of the card. Values are: • Active • Deleted • Empty • Failed • Loading • Mismatch • Not Present • Standby
Product ID	Product ID string of 63 characters maximum. If the card does not support the product ID, the field shows *N/A*.
Version ID	Version ID string in the format *V99_*. The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows *N/A*.
NE ID	Name of the selected NE.

The following table lists the service state and fault secondary state values.

Table 11-11 Service State and Fault Secondary State Values

Service State-Secondary State Possible Values	Initial State Transition	Final State Transition
Equipment		
IS-NR	FLT	OOS-AU, FLT
OOS-AU, FLT	All AE Cleared	IS-NR
OOS-AU, FLT	ED: OOS, MT RMV	OOS-AUMA, FLT & MT
OOS-MA, MT	FLT	OOS-AUMA, FLT & MT
OOS-AUMA	FLT	OOS-AUMA, FLT
OOS-AUMA, FLT & MT	All AE Cleared	OOS-MA
Port		
IS-NR	FLT	OOS-AU, FLT
OOS-AU. FLT	FLT Cleared	IS-NR
OOS-AU, AINS	FLT	OOS-AU, AINS & FLT
OOS-AU, AINS & FLT	FLT Cleared	OOS-AU, AINS
OOS-MA, MT	FLT	OOS-AUMA & FLT & MT
OOAS-AUMA & FLT & MT	FLT Cleared	OOS-MA & MT

Table 11-11 Service State and Fault Secondary State Values (continued)

Service State-Secondary State Possible Values	Initial State Transition	Final State Transition
OOS-AUMA & LPBK & MT	FLT	OOS-MA & LPBK & MT & FLT
OOS-AUMA & LPBK & MT & FLT	FLT Cleared	OOS-MA & LPBK & MT & FLT

Passive units are optical devices that the controller card cannot manage and that are not configurable using software. Passive units can be provisioned only in CTC. The following table lists the field descriptions for passive cards.

Table 11-12 Available Equipment Inventory Fields for Passive Cards

Passive Card Type	Fields
USB-connected	• Equipment Type • Administrative State • Service State • Actual Equipment Type • Physical Location • Equipment State • CLEI Code • HW Part Number • Serial Number • HW Revision
Not USB-connected	• Equipment Type • Administrative State • Service State • Actual Equipment Type • Physical Location • Equipment State

11.3.1.3.1 Adding a Note to the Equipment Inventory Table

The User Note dialog box allows you to view and add user notes to CTC-based equipment that has a valid serial number in the Equipment Inventory table. If a piece of equipment has a note, a User Note tool appears under the Note column. Comments are visible to all users. You can open the User Note dialog box only if you have read/write permissions. These permissions are configurable in the User Profile wizard > NE Configuration Management category > Equipment Inventory row.

Note You can add user notes only for CTC-based NEs.

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs > Equipment Inventory Table**.

The Equipment Inventory table opens.

Step 2 Select a piece of equipment and choose **Edit > User Note**. The following table describes the fields in the User Note dialog box.

Table 11-13 Field Descriptions for the User Note Dialog Box

Field	Description
Note	Provides space for you to type your comments about the selected equipment. The maximum length of this field is 2048 characters. To add comments to the previous comments, click the **Append** radio button. To overwrite the previous comments, click **Replace**. To delete the comments, click **Delete**. **Note** You cannot enable and disable the Replace and Delete functions in the Control Panel.
History	Displays comments entered by previous users.

11.3.1.4 ONS 155xx Equipment Inventory Table

The ONS 155xx Equipment Inventory table displays a complete list of the system inventory of the selected ONS 15530 or ONS 15540 NE. The following table provides descriptions.

Table 11-14 Field Descriptions for the ONS 155xx Equipment Inventory Table

Field	Description
Alias ID	Alias name of the NE.
Equipment Type	General type of the component.
Name	Name of the ONS 155xx component.
Module Name	Name of the ONS 155xx module.
Physical Location	Physical location for the component in the NE as a slot, subslot, and port number.
CLEI Code	CLEI code, an industry-standard code that precisely defines a component.
Serial Number	Serial number of the NE.
Hardware Version	Hardware revision of the NE.
Firmware Version	Firmware revision of the NE.
Software Version	Software revision of the NE.
Manufacturer Name	Name of the manufacturer of the NE.
Product Name	Vendor-specific model name; for example, the part number.
Alias	Alias specified for the component by the network manager.
Asset ID	Asset tracking identifier specified for the component by the network manager.
Description	Description of the component.
NE ID	Name of the selected ONS 155xx NE.

11.3.2 Exporting Equipment Inventory Table Data

You can schedule the export of Equipment Inventory table data to a flat file.

The Export Equipment Inventory Table dialog box allows you to export the data as comma-separated values (CSVs) or tab-separated values (TSVs), which are formats commonly used to import data into spreadsheet and database applications for further analysis and manipulation. You can also select a user-specified character as a separator.

Tip If you export data to Microsoft Excel, save the exported file with ".csv" as the filename extension.

To open the Export dialog box, open the Equipment Inventory table for the NE(s); then, click the **Export Data to File** tool (or choose **File > Export**). The following table provides descriptions. After making your selections, click **OK** to export the data.

Table 11-15 Field Descriptions for the Export Equipment Inventory Table Dialog Box

Field	Description
Field Separator	
Comma separated	If selected, the data is exported as comma-separated values.
Tab separated	If selected, the data is exported as tab-separated values.
Other	If selected, the data is exported with the separator that you specify in the Other text field. **Note** If you specify a character as a separator and your data contains the same character, the character in the data is automatically enclosed in double quotes. This allows the spreadsheet or database application to understand that the character is part of your data. Regardless of whether you select Comma separated, Tab separated, or Other, Prime Optical automatically encloses text in double quotes if it has a separator.
Export	
Selected row(s)	If selected, only the selected rows in the current page are exported.
All rows in current page	If selected, all rows in the current page are exported.
Export Data	
Local (file)	If selected, data is exported to a local file on your system. Specify the path directory and the filename. With the Local option, you can export selected rows or all rows in the Equipment Inventory table. By default, exported data is stored in the C:\Cisco\TransportManagerClient*version*\exports file.
Server (dir)	If selected, data is exported to a directory on the server. The directory path is a fixed, display-only string. With the Server option, you can export all rows in the Equipment Inventory table; you cannot export selected rows. By default, exported data is stored in the /opt/CiscoTransportManagerServer/export directory.
Time	

Table 11-15 Field Descriptions for the Export Equipment Inventory Table Dialog Box (continued)

Field	Description
Time (*time zone*)	Set a time for the export. Click **Now** to begin exporting immediately, or click **At Time** and specify when to begin exporting, in 5-minute increments. For local exports, you can only select **Now**. For server exports, you can select **Now** or **At Time**. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.
Repeat	
Once	If selected, the export of inventory data to the server occurs once.
Daily	If selected, the export of inventory data to the server occurs daily.
Weekly	If selected, the export of inventory data to the server occurs weekly.
Monthly	If selected, the export of inventory data to the server occurs monthly.
Job Comments	
Job Comments	Enter comments about the export. The comments will be attached to the scheduled job.

11.3.3 Filtering the Equipment Inventory Table

Step 1 Select a node in the Domain Explorer or Subnetwork Explorer tree.

Step 2 Choose **Configuration > CTC-Based SONET NEs > Equipment Inventory Table**. The Equipment Inventory table opens. (See Figure 11-2.)

Step 3 Choose **File > Filter** (or click the **Filter Data** tool). The Filter dialog box opens.

Step 4 Specify the filter criteria to display the results in the table. The following table describes the fields in the filter.

Step 5 Click **OK**. The filtered data is displayed in the Equipment Inventory table.

Table 11-16 Field Descriptions for the Equipment Inventory Table Filter

Field	Description
NE ID Tab	
Available NE ID/Selected NE ID	List of available NE IDs. Click **Add** and **Remove** to move NE IDs to and from the Selected NE ID list. **Note** Use the scroll bars at the bottom and right side of the Available NE ID list and the Selected NE ID list to display all options in the lists.
Other Tab	
Disregard All Other Filter Criteria	Check this check box to ignore all other filter criteria.
Exclude out of service NEs	Check this check box to exclude any NEs that are marked Out of Service.
Actual Equipment Type	NE model type.
HW Part Number	Part number used for the card.

Table 11-16 Field Descriptions for the Equipment Inventory Table Filter (continued)

Field	Description
Hardware Version	Hardware version of the card. (Not applicable if the slot is empty.)
Firmware Version	Firmware version of the card.
CLEI Code	CLEI code for the device. CLEI code is an industry-standard code that precisely defines a component.

Managing Southbound and Northbound Interfaces

Cisco Prime Optical uses protocols such as CORBA, SNMP, and HTTP to provide southbound and northbound interfaces to communicate with NEs and operations support systems (OSSs).

This chapter contains the following information:

- 12.1 How Do I Manage Southbound Interfaces?, page 12-1
- 12.2 How Do I Manage Northbound Interfaces?, page 12-3

12.1 How Do I Manage Southbound Interfaces?

The Prime Optical server communicates with NEs through the data communications network (DCN) by using several protocols (CORBA, SNMP, HTTP, and so on).

You can access NEs in Prime Optical through:

- NE Explorer—Provides detailed rack, shelf, and card-level views of an NE. Detailed NE attributes and parameters are viewable and configurable.
- Craft Interface—Depending on the NE model, Prime Optical provides access to NE craft interfaces such as CTC, Cisco Edge Craft, web browsers, and the command line interface (CLI). Table 2-4 on page 2-8 lists the available craft interfaces by NE model.

Note A CLI session might not have a scroll bar, depending on the operating system you are using. To enable the scroll bar on Solaris, hold down the Ctrl key, click the middle button of your mouse, and choose **enable scroll bar**.

12.1.1 Southbound Port Details

This section explains the ports that Prime Optical uses to communicate with NEs. For more information, see, Southbound Port Details.

12.1.2 Using a Static CORBA Listener Port on the Prime Optical Server

See 4.5.3.6 CTC IIOP Port Configuration, page 4-75.

12.1.3 Client-Server Communication Protocols

This section explains the protocols that Prime Optical uses for client-server communication. For more information, see Client-Server Communication Protocols.

12.1.4 Changing the Prime Optical Server Port

Normally, users do not change the Prime Optical server port. In cases where the Prime Optical server port is used for other applications, use the NE Service pane to change the TCP port number of the Prime Optical server. All Prime Optical clients use the JMOCO port to connect to the Prime Optical server.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **NE Service** to open the NE Service pane. Click the **NE Poller** tab.

Step 3 In the Prime Optical Server Port field, change the server port. The server port in the Active column displays the current port. The server port in the After Restart column displays the port that is active after the server is restarted.

Step 4 Click **Save**. Changes to this parameter take effect only after the server is restarted.

12.1.5 Changing the HTTP Server Port

If other applications use the HTTP server port, you can change the default port. Complete the following steps:

Step 1 Open a shell on the Prime Optical server workstation and enter the following command to shut down the Prime Optical server:

```
opticalctl stop
```

Step 2 Enter the following commands to change directories to the HTTP server directory and create a copy of the configuration file:

```
cd /Apache/conf
cp httpd.conf httpd.conf.ori
```

Step 3 Locate the following lines in the httpd.conf file:

```
Listen IP-address:8051
Listen 127.0.0.1:8051
ServerName IP-address:8051
```

In each of these lines, replace the default port 8051 with the new HTTP server port.

Step 4 Enter the following command to start the Prime Optical server:

```
opticalctl start
```

Step 5 On each Prime Optical client, locate the following line in the *Prime Optical-client-installation-directory*/config/ems_client.cfg:

```
Apache_port=\:8051
```

Replace 8051 with the new HTTP server port.

Caution Be sure to repeat this change on each Prime Optical client.

Step 6 Launch the Prime Optical client. To verify that the HTTP services are working, choose **Help > Current Window** in the Domain Explorer.

12.2 How Do I Manage Northbound Interfaces?

Prime Optical GateWay is an architectural component that provides northbound EMS-to-NMS interface mediation. Prime Optical GateWay allows service providers to integrate Prime Optical with their OSSs by using open, standard interfaces.

Prime Optical supports three gateway modules that provide northbound EMS-to-NMS interface mediation. Not all NE types are supported by each module. Table 2-2 on page 2-3 shows the NE types supported by each gateway module. This section contains the following information:

- 12.2.1 Managing Prime Optical GateWay/SNMP, page 12-3
- 12.2.2 Managing Prime Optical GateWay/CORBA, page 12-11

12.2.1 Managing Prime Optical GateWay/SNMP

SNMP is a network management protocol used almost exclusively in TCP/IP networks. SNMP allows you to monitor and control network devices, manage configurations, collect statistics, check performance, and monitor security.

Prime Optical's GateWay/SNMP feature provides an SNMP trap forwarding service, where any trap generated or received by the server workstation will be forwarded to the set of defined trap destinations. Traps are autonomous notifications sent by an SNMP agent to an SNMP manager, such as HP Open View. Prime Optical GateWay/SNMP does not support southbound SNMP relaying (SNMP SET, GET, and GETNEXT).

The primary advantage of Prime Optical GateWay/SNMP is to limit the amount of traffic on the wide-area DCN. Imagine NEs deployed over a wide geographic area and a centralized network operations center where the management systems are located. If there are five OSs required to receive NE traps, instead of having each NE send five traps over the wide area to each OS, send a single trap to Prime Optical, which can then relay the trap locally in the NOC to the other OSs. NE configuration is also simpler because only one trap destination needs to be configured on each NE.

Prime Optical GateWay/SNMP supports SNMPv1, SNMPv2c, and SNMPv3 traps. SNMPv2c traps contain the Prime Optical host IP address in the source address of the IP packet.

SNMPv3 traps contain the OSS username, authentication protocol, authentication password, privacy protocol, and privacy password.

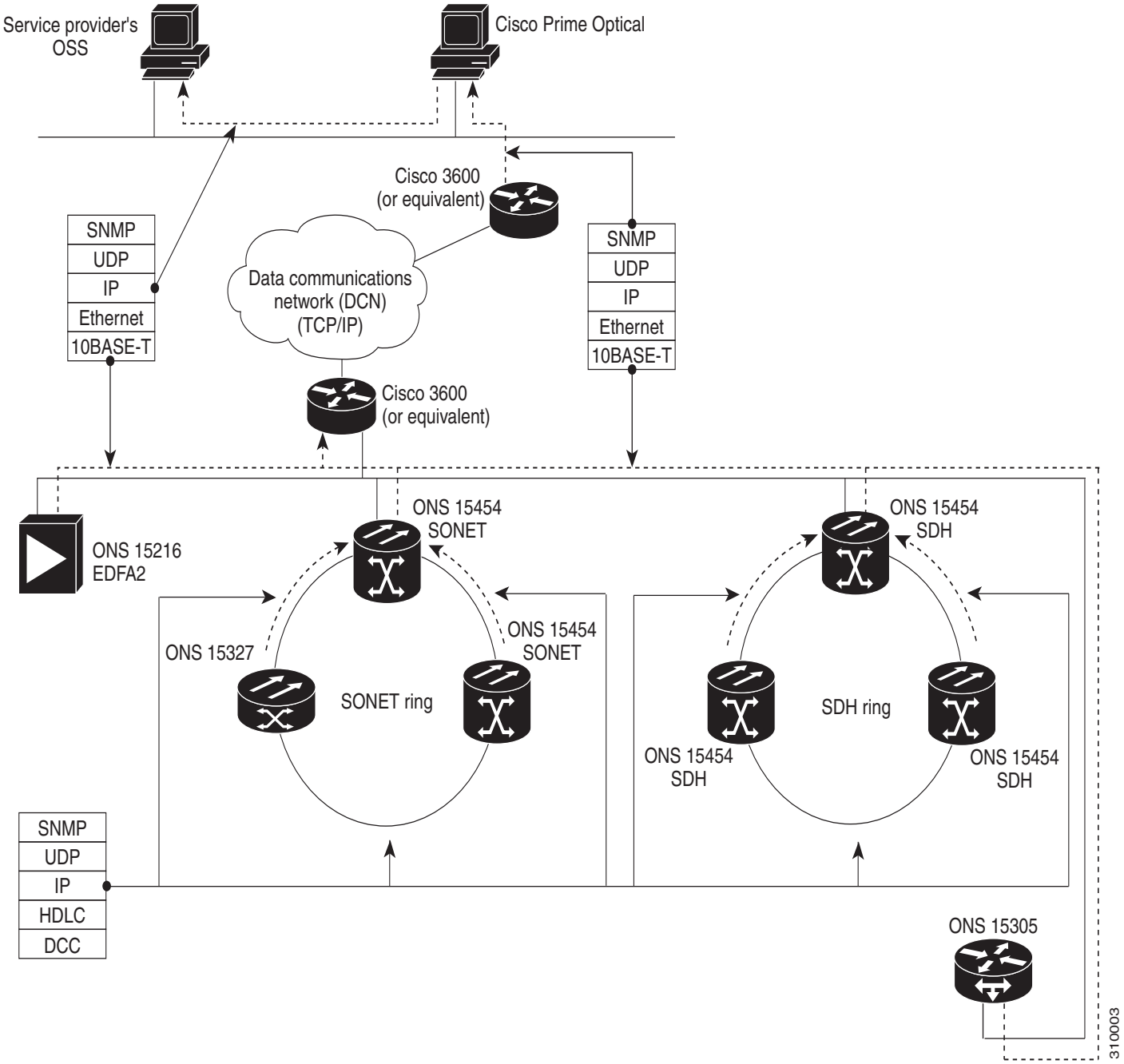
To enable the OS to determine which NE sent the trap, the trap must be defined with a variable binding that indicates the source NE.

Prime Optical GateWay/SNMP applies to any NE with an SNMP interface.

Note Table 2-2 on page 2-3 shows the NEs that support Prime Optical GateWay/SNMP.

The following figure shows the Prime Optical GateWay/SNMP communications architecture within a service provider's OSS environment.

Figure 12-1 Prime Optical GateWay/SNMP Communications Architecture



12.2.1.1 Starting and Stopping the Prime Optical GateWay/SNMP Service

Prime Optical GateWay/SNMP is a Prime Optical process that can be separately started and stopped through the Control Panel. NEs must be configured with the Prime Optical server IP address as a trap destination for traps to be sent from the NEs to Prime Optical.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **GateWay/SNMP Service**. Table 12-1 provides descriptions.

Step 3 In the Status area, click the **Start** button to start Prime Optical GateWay/SNMP. Notice that the service status toggles to *Active*.

Step 4 Click **Stop** to stop the service. The service status toggles to *Not Active*.

Note The Prime Optical GateWay/SNMP Service can take up to 60 seconds to initialize after the GUI status has changed to indicate that the service is up. The status is an indication of the successful initiation of the service startup, not successful initialization. To avoid problems with the service hanging, wait at least 60 seconds after starting or stopping the service before restarting it.

12.2.1.2 Adding and Removing a Prime Optical GateWay/SNMPv1 or Prime Optical GateWay/SNMPv2 Host

You can configure up to 16 SNMP trap destination hosts for Prime Optical GateWay/SNMP. Prime Optical enforces a duplication check error to ensure that you do not enter duplicate OSS IP addresses.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **GateWay/SNMP Service**. The following table provides descriptions.

Step 3 In the SNMP Hosts field, enter a valid IP address or hostname for the SNMP forwarding host; then, click **Add**. To remove an SNMP host, select the IP address or hostname of the host and click **Remove**.

Step 4 Repeat for each host to be added or removed; then, click **Save**.

Table 12-1 Field Descriptions for the GateWay/SNMP Service Pane

Field	Description
Service Status	Displays the current status of the service: Active or Not Active.
Service Action	Allows you to stop or start the Prime Optical GateWay/SNMP service. Notice that the Service Action button toggles between Stop or Start and the Service Status field changes accordingly.

Table 12-1 Field Descriptions for the GateWay/SNMP Service Pane (continued)

Field	Description
Engine ID	Displays the unique identifier for the given Prime Optical GateWay/SNMP application that Prime Optical is communicating with. The engine ID is used to configure the OSS application to receive traps from Prime Optical GateWay/SNMP. The engine ID is generated the first time you install the Prime Optical server.
SNMP Hosts	Displays the IP address or hostname of the host where each SNMP trap will be forwarded. You can enter up to 16 valid IP addresses or hostnames. Use the **Add** and **Remove** buttons to add or remove IP addresses or hostnames.

12.2.1.3 Configuring Northbound OSS SNMPv3 Users—Optical NEs

You can use the OSS SNMPv3 Users table to add, modify, or delete OSS SNMPv3 users.

This section contains the following procedures:

- 12.2.1.3.1 Viewing the OSS SNMPv3 Users Table, page 12-7
- 12.2.1.3.2 Adding an OSS SNMPv3 User, page 12-8
- 12.2.1.3.3 Modifying an OSS SNMPv3 User, page 12-9
- 12.2.1.3.4 Deleting an OSS SNMPv3 User, page 12-9

12.2.1.3.1 Viewing the OSS SNMPv3 Users Table

To view the OSS SNMPv3 Users table, choose **Administration > GateWay/SNMP Users** in the Domain Explorer window. The following table provides descriptions.

Table 12-2 Field Descriptions for the OSS SNMPv3 Users Table

Column Name	Description
Username	Name of the user who authenticates the SNMPv3 trap. The name must contain from 6 to 53 alphanumeric characters. The name cannot contain spaces or special characters.
Authentication Protocol	Type of encryption used to authenticate the SNMPv3 user.
IP Address	IP address to which to forward the SNMPv3 trap.
Privacy Protocol	Privacy protocol set for the SNMPv3 user.
SNMP Port	OSS destination port number. The default port number is 162.
SNMP Version	SNMP version number.
Engine ID	Unique identifier for the given Prime Optical GateWay/SNMP application that Prime Optical is communicating with. The engine ID is used to configure the OSS application to receive traps from Prime Optical GateWay/SNMP. The engine ID is generated the first time you install the Prime Optical server.

12.2.1.3.2 Adding an OSS SNMPv3 User

SNMPv3 user profiles are stored in the OSS SNMPv3 Users table.

Step 1 In the Domain Explorer window, choose **Administration > GateWay/SNMP Users**. The OSS SNMPv3 Users table opens.

Step 2 Choose **Edit > Add** (or click the **Create a New User** tool). The Add OSS SNMPv3 User dialog box opens. The following table provides descriptions.

Step 3 After providing the required information, click **OK**.

Table 12-3 Field Descriptions for the Add/Modify OSS SNMPv3 User Dialog Box

Field	Description
OSS IP Address	Enter the IP address to which to forward the SNMPv3 trap.
Username	Enter a unique name for the new user. The name must contain from 6 to 53 alphanumeric characters. The name cannot contain spaces or special characters.
SNMP Port	Enter the OSS destination port number.
Authentication Protocol	Authentication protocol for the OSS SNMPv3 user. Choose the authentication protocol to use for authenticating the user. Values are No Auth, MD5 (the default), or SHA.
Authentication Password	Enter the password used to authenticate the SNMPv3 user. The password must contain: • From 1 to 12 characters • At least one special character other than an apostrophe (') • At least two letters (A-Z, a-z), including at least one uppercase letter • At least one number (0-9) **Note** Regardless of the actual length of the password, the Password and Confirm Password fields display only a fixed-length string of 15 asterisks (*).
Confirm Authentication Password	Re-enter the password to confirm it.
Privacy Protocol	Select the privacy protocol set for the SNMPv3 user. You can choose one of the following: • NoPriv—No privacy protocol for the user. **Note** The Privacy Protocol can be set to No Priv only when the Authentication Protocol is set to No Auth. • DES—Use Data Encryption Standard (DES) for encryption.
Privacy Password	Enter the password used to decrypt the message payload.
Confirm Privacy Password	Re-enter the privacy password to confirm it.

12.2.1.3.3 Modifying an OSS SNMPv3 User

Step 1 In the Domain Explorer window, choose **Administration > GateWay/SNMP Users**. The OSS SNMPv3 Users table opens.

Step 2 Select the SNMPv3 user to modify; then, choose **Edit > View/Modify** (or click the **Modify User Properties** tool). The Modify OSS SNMPv3 User dialog box opens. Table 12-3 provides descriptions.

Step 3 Modify the fields described in Table 12-3.

Note The IP Address and Username fields are read-only.

Step 4 Click **OK**. The updated user profile is listed in the OSS SNMPv3 Users table.

12.2.1.3.4 Deleting an OSS SNMPv3 User

Step 1 In the Domain Explorer window, choose **Administration > GateWay/SNMP Users**. The OSS SNMPv3 Users table opens.

Step 2 Select the SNMPv3 user to delete; then, choose **Edit > Delete** (or click the **Delete User** tool).

Step 3 Click **OK** in the confirmation dialog box.

12.2.1.4 Configuring SNMP on Optical NEs

SNMP must be configured for each NE that uses Prime Optical GateWay/SNMP. This section contains the following procedures:

- 12.2.1.4.1 Configuring SNMP for the ONS 15216 EDFA2 and EDFA3, page 12-10
- 12.2.1.4.2 Configuring SNMP for the ONS 15305, page 12-10
- 12.2.1.4.3 Configuring SNMP for CTC-Based NEs, page 12-10
- 12.2.1.4.4 Configuring SNMP for the ONS 15530 and ONS 15540, page 12-11

For additional information, refer to the NE user documentation.

Note

- When configuring SNMP on NEs, make sure that no other SNMP daemon is running on the designated Prime Optical server host.
- If you enter the **opticalctl status** command after configuring SNMP, Prime Optical GateWay/SNMP is not shown. This is because the **opticalctl status** command shows all of the Prime Optical processes and Prime Optical GateWay/SNMP is not a separate process. Use the Service Monitor table to view the status of Prime Optical GateWay/SNMP.

12.2.1.4.1 Configuring SNMP for the ONS 15216 EDFA2 and EDFA3

For the ONS 15216 EDFA2 and EDFA3, SNMP trap entries are added automatically when the NE is added to Prime Optical. See 5.3.9 Using SNMP, page 5-15 for more information.

12.2.1.4.2 Configuring SNMP for the ONS 15305

For information on how to configure SNMP for the ONS 15305, see the *Cisco ONS 15305 Installation and Operations Guide*.

12.2.1.4.3 Configuring SNMP for CTC-Based NEs

Note This section details how to configure SNMP v1/v2 from the NE to the server. For information on configuring SNMPv3 for CTC-based NEs, see 8.4.6.2.4 SNMPv3 NE Trap Destinations Table, page 8-69.

Step 1 Select a CTC-based NE in the Domain Explorer tree and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab; then, click the **SNMP** subtab.

Step 3 (Not applicable to the ONS 15600) To allow SNMP proxy, check the **Allow SNMP Proxy** check box.

Step 4 (Not applicable to the ONS 15600) To use the SNMP management software with the NE, check the **Allow SNMP Set** check box.

Step 5 (Not applicable to the ONS 15600) Click **Apply**.

Step 6 Click **Create**. The Create SNMP Trap Destination dialog box opens. The following table provides descriptions.

Step 7 After making your selections, click **OK**.

Step 8 Click **Apply**.

Table 12-4 Field Descriptions for the Create SNMP Trap Destination Dialog Box

Field	Description
IP Address	Enter the IP address of your NMS.
Community Name	Enter the SNMP community name. For a description of SNMP community names, refer to the SNMP information in the NE reference guide. **Note** The community name is a form of authentication and access control. The community name assigned to the ONS 15600 is case-sensitive and must match the community name of the NMS.
UDP Port	Set the UDP port for SNMP. The default port is 162. Allowed UDP port values are 162, 391, and values between 1024 and 65535.

Table 12-4 Field Descriptions for the Create SNMP Trap Destination Dialog Box (continued)

Field	Description
Trap Version	Set the Trap Version field for either SNMPv1 or SNMPv2. See your NMS documentation to determine whether to use SNMPv1 or SNMPv2.
Max Traps per Second *(not applicable to the ONS 15600)*	Enter the maximum number of traps per second that will be sent to the SNMP manager. A zero value indicates that there is no maximum and all traps are sent to the SNMP manager.

12.2.1.4.4 Configuring SNMP for the ONS 15530 and ONS 15540

Configuring SNMP on ONS 15530 and ONS 15540 NEs is a prerequisite for adding an NE to Prime Optical. If SNMP is not configured on the NE, refer to the instructions in the relevant hardware configuration guide.

12.2.2 Managing Prime Optical GateWay/CORBA

Note This section provides a high-level overview of Prime Optical GateWay/CORBA. For detailed information about Prime Optical GateWay/CORBA, including how to enable username and password encryption, set the heartbeat event, and create OSS clients, refer to the *Cisco Prime Optical 9.6.3 GateWay/CORBA User Guide and Programmer Manual*.

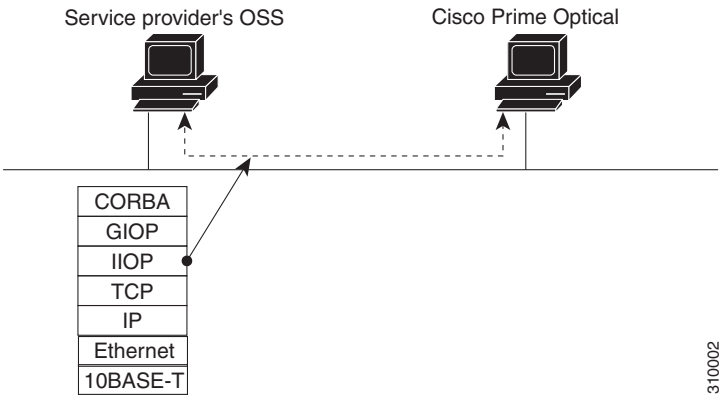
The Common Object Request Broker Architecture (CORBA) is a middleware platform defined by the Object Management Group (OMG). The Prime Optical GateWay/CORBA option is a CORBA-based interface that provides higher-layer management systems with fault, inventory, performance, configuration, Layer 1 circuit provisioning, and Layer 2 VLAN management information for NEs. The Prime Optical GateWay/CORBA option is based on the TeleManagement Forum (TMF) standards for the NMS-to-EMS interface.

Because it is CORBA-based, Prime Optical GateWay/CORBA is independent of the hardware that the integrated OSS is running. This independence allows service providers to easily add Prime Optical as a building block of their management environment.

Note Table 2-2 on page 2-3 shows the NEs that support Prime Optical GateWay/CORBA.

The following figure shows the Prime Optical GateWay/CORBA communications architecture within a service provider's OSS environment.

Figure 12-2 Prime Optical GateWay/CORBA Communications Architecture



Prime Optical GateWay/CORBA is based on the following TMF standards:

- TMF513 v3.0: Multi-Technology Network Management Business Agreement
- TMF608 v3.0: Multi-Technology Network Management Information Agreement
- TMF814 v3.0: Multi-Technology Network Management Solution Set

12.2.2.1 Configuring the CORBA Timeout

The CORBA timeout determines the number of seconds that the Prime Optical server has to process a CORBA call and return it to the Prime Optical client. If the Prime Optical server does not return a response in time, CORBA automatically times out.

Step 1 Open the ems-client.cfg file.

By default, the ems-client.cfg file is located in the following directory:

- Windows: C:\Cisco\TransportManagerClient\config
- Sun Solaris: /opt/CiscoTransportManagerClient/config

Step 2 Set the CORBA_Call_Timeout_Seconds parameter to the desired value. The default timeout is 120 seconds; the recommended range is from 120 to 300 seconds.

Note If the NE is busy or if the Prime Optical server is processing many requests, you might need to increase the CORBA timeout parameter accordingly.

Step 3 Save and close the ems-client.cfg file.

12.2.2.2 Starting or Stopping Prime Optical GateWay/CORBA

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **GateWay/CORBA Service** to open the GateWay/CORBA Service pane.

Step 3 In the **Global** tab > **Status** area, click the **Start** button to start GateWay/CORBA or the **Stop** button to stop the service.

Note The Prime Optical GateWay/CORBA Service can take up to 60 seconds to initialize after the GUI status has changed to indicate that the service is up. The status is an indication of the successful initiation of the service startup, not successful initialization. To avoid problems with the service hanging, wait at least 60 seconds after starting or stopping the service before restarting it.

12.2.2.3 Viewing the Prime Optical GateWay/CORBA Service Pane

Use the Prime Optical GateWay/CORBA Service pane to start and stop the Prime Optical GateWay/CORBA service and configure CORBA ports and parameters. The following table provides descriptions.

Note In CTM R9.2, Prime Optical server ports can be configured from the Ports Configuration tab. Unless otherwise noted, all port configuration changes require a Prime Optical GateWay/CORBA restart.

Table 12-5 Field Descriptions for GateWay/CORBA Service Pane

Field	Description
Global Tab	
Service Status	Displays the current status of the service: Active, Not Active, or Not Installed.
Service Action	Allows you to stop or start a process. Notice that the Service Action button toggles between Stop and Start, and the Service Status field changes accordingly. This field is not available if the Service Status is Not Installed.
Enable Encryption for Username and Password	When checked, usernames and passwords are transmitted between the EMS server and the OSS in encrypted format. The maximum encryption length is 53 bytes. If this check box is unchecked, Prime Optical GateWay/CORBA usernames and passwords are transmitted without encryption. By default, encryption is disabled at installation.
Heartbeat for Notification Channel	Notifies the OSS if a failure in the notification service has occurred. The heartbeat is measured in minutes; the range is 0 to 999 minutes. A zero value implies that the heartbeat is disabled.
Maximum Number of Simultaneous Sessions	Specifies the number of Prime Optical GateWay/CORBA sessions that can be active at the same time. The range is from 4 to 25; the default is 4.

Table 12-5 Field Descriptions for GateWay/CORBA Service Pane (continued)

Field	Description
Maximum Events per Consumer	Sets the MaxEventsPerConsumer administrative quality of service (QoS) parameter on the notification channel. The notification server uses this property to bound the maximum number of events in a given channel allowed to queue at any one time. The default value is 0, meaning that the notification server does not limit the maximum number of events that can be queued. If no limits are imposed on the queue, the notification server might run out of memory, because the server must keep all events in memory until they are consumed by all registered consumers. ⚠ **Caution** Any change to this value should be done with extreme caution. If you set the value too low, the NMS cannot receive all notifications. If you set the value too high, the Prime Optical notification server runs out of memory. The current value can handle alarm bursts of 10,000 events per minute.
Notification Service Name	Defines the service name used by the resolve_initial_reference function to get a reference to the notification service. The Prime Optical GateWay/CORBA installation installs the notification service. However, if you want to use your own notification service, you can modify this parameter. **Note** You do not need to modify this parameter if you plan to use the notification service that is bundled with Prime Optical GateWay/CORBA.
Notification Service Naming Context	Defines the naming context of the notification service. This property is used when the resolve_initial_reference function fails to resolve the notification service. Prime Optical GateWay/CORBA contacts the naming service to resolve the name context defined in this property. The value of this property must match the value published by your notification server. **Note** You do not need to modify this parameter if you plan to use the notification service that is bundled with Prime Optical GateWay/CORBA.
Notification Service Factory IOR Filename	Enter the notification service factory Information Object Repository (IOR) filename located in the /opt/CiscoTransportManagerServer/openfusion/domains/OpenFusion/localhost/NotificationService/NotificationSingleton/NotificationService.ior directory. The FactoryIORFile property defines the path to a text file that contains the IOR of the notification service. This property is used only after the resolve_initial_reference function and the naming service both fail. Prime Optical GateWay/CORBA opens the file as defined by the URL format in this property and retrieves the IOR. This parameter allows you to run your notification service on a different host to improve performance. **Note** You do not need to modify this parameter if you plan to use the notification service that is bundled with Prime Optical GateWay/CORBA.
Name Service Server List	Defines where the name servers are running. Accepts a comma-separated list of hostnames.
Name Service Root IOR	Defines the path to find the naming service's IOR on each host defined on the server list. The complete path is constructed as <http://<item>_of_ServerList><RootIORLoc>.

Table 12-5 Field Descriptions for GateWay/CORBA Service Pane (continued)

Field	Description
Error Level	Defines the error level of messages to log. Error levels are: • Critical • Major • Minor • Informational • Debug • Trace
Port Configuration Tab	
Enable IMR checkbox	IMR is always disabled. This allows you to configure Prime Optical GateWay/CORBA to use static ports. This is a read-only option.
Name Service	Enter the port that the name service uses to listen for incoming requests. The default value is 14005. **Note** This option requires a server restart.
Notification Service	Enter the port that the notification service uses to listen for incoming requests. The default value is 20001.
EMS Session	Enter the EMS session port value. The default value is 20100.
Event Notification (min)	Enter the minimum Event Notification port value. The default value is 20001.
Event Notification (max)	Enter the maximum Event Notification port value. The default value is 20099.
Server-to-Client (min)	Enter the minimum Server-to-Client port value. The default value is 20101.
Server-to-Client (max)	Enter the maximum Server-to-Client port value. The default value is 20199.
Debug Tab	
Dump Cache button	Exports the cache (memory) information of the selected Prime Optical GateWay/CORBA service instance to a log file.
Overall Logging	Click the **Enable** radio button to enable overall debugging and to select debug modules for the PM service. Click the **Disable** radio button to disable overall debugging.
Debug Modules	If overall logging is enabled, lists the modules that can be used for debugging. Select a module from the Available list; then, click the **Add** button to add the module to the Selected list. Use the **Remove** button to return the module to the Available list. Debug logging will be performed on the modules in the Selected list.

12.2.2.4 Viewing the Prime Optical GateWay/CORBA Users Table

The Prime Optical GateWay/CORBA Users table displays information about OSS CORBA client properties. To launch the table, choose **Administration > GateWay/CORBA Users** in the Domain Explorer window. The following table provides descriptions. Use the toolbar icons to create, modify, or delete OSS client users.

Tip You can also launch the GateWay/CORBA Users table from the Control Panel. In the Domain Explorer window, choose **Administration > Control Panel**. In the Control Panel window, choose **Administration > GateWay/CORBA Users**.

Table 12-6 Field Descriptions for the GateWay/CORBA Users Table

Column Name	Description
OSS Profile Name	Displays the name of the selected OSS client.

12.2.2.5 Adding a Prime Optical GateWay/CORBA User

OSS client profiles are stored in the GateWay/CORBA Users table.

Step 1 In the Domain Explorer window, choose **Administration > GateWay/CORBA Users**. The GateWay/CORBA Users table opens.

Step 2 Choose **Edit > Add** (or click the **Create a New User** tool). The Add GateWay/CORBA User dialog box opens. The following table provides descriptions.

Step 3 After making your selections, click **OK**. The new profile is visible when the GateWay/CORBA Users table is refreshed.

Table 12-7 Field Descriptions for Add/Modify GateWay/CORBA User Dialog Box

Field	Description
OSS Profile Name	Enter a unique name for the new OSS profile. The name must contain from 6 to 53 alphanumeric characters. The name cannot contain spaces or special characters.
Password	Enter the password that the OSS client uses to log into the Prime Optical server. The password must contain: • From 1 to 12 characters • At least one special character other than an apostrophe (') • At least two letters (A-Z, a-z), including at least one uppercase letter • At least one number (0-9) **Note** Regardless of the actual length of the password, the Password and Confirm Password fields display only a fixed-length string of 15 asterisks (*).
Confirm Password	Re-enter the password to confirm it.

12.2.2.6 Modifying a Prime Optical GateWay/CORBA User's Properties

Step 1 In the Domain Explorer window, choose **Administration > GateWay/CORBA Users**. The GateWay/CORBA Users table opens.

Step 2 Select the CORBA user profile to modify; then, choose **Edit > View/Modify** (or click the **Modify User Properties** tool). The Modify GateWay/CORBA User dialog box opens. Table 12-7 provides descriptions.

Step 3 After making any necessary modifications, click **OK**. The updated profile is visible when the GateWay/CORBA Users table is refreshed.

12.2.2.7 Deleting a Prime Optical GateWay/CORBA User

Step 1 In the Domain Explorer window, choose **Administration > GateWay/CORBA Users**. The GateWay/CORBA Users table opens.

Step 2 Select the CORBA user profile to delete; then, choose **Edit > Delete** (or click the **Delete User** tool).

Step 3 Click **OK** in the confirmation dialog box.

Note Prime Optical GateWay/CORBA does not allow an OSS profile to be deleted if there are active users logged in using that OSS profile.

12.2.2.8 Viewing Logged-In Prime Optical GateWay/CORBA Users

Step 1 In the Domain Explorer window, choose **Administration > GateWay/CORBA Users**. The GateWay/CORBA Users table opens.

Step 2 Choose **Administration > Logged In GateWay CORBA Users** (or click the **Show Logged In GateWay CORBA Users** tool). The Active GateWay/CORBA Users table opens. The following table provides descriptions.

Table 12-8 Field Descriptions for Active GateWay/CORBA Users Table

Field	Description
OSS Profile Name	Name of the OSS profile. Each client has a unique alphanumeric name.
OSS IP Address	IP address of the OSS client that is authenticated by Prime Optical GateWay/CORBA during the initial connection request made by the OSS.
Login Time (*time zone*)	Time stamp when the CORBA user logged in.

12.2.2.9 Ending an Active GateWay/CORBA User Session

Step 1 In the Domain Explorer window, choose **Administration > GateWay/CORBA Users**. The GateWay/CORBA Users opens.

Step 2 Choose **Administration > Logged In GateWay CORBA Users** (or click the **Show Logged In GateWay CORBA Users** tool). The Active GateWay/CORBA Users table opens.

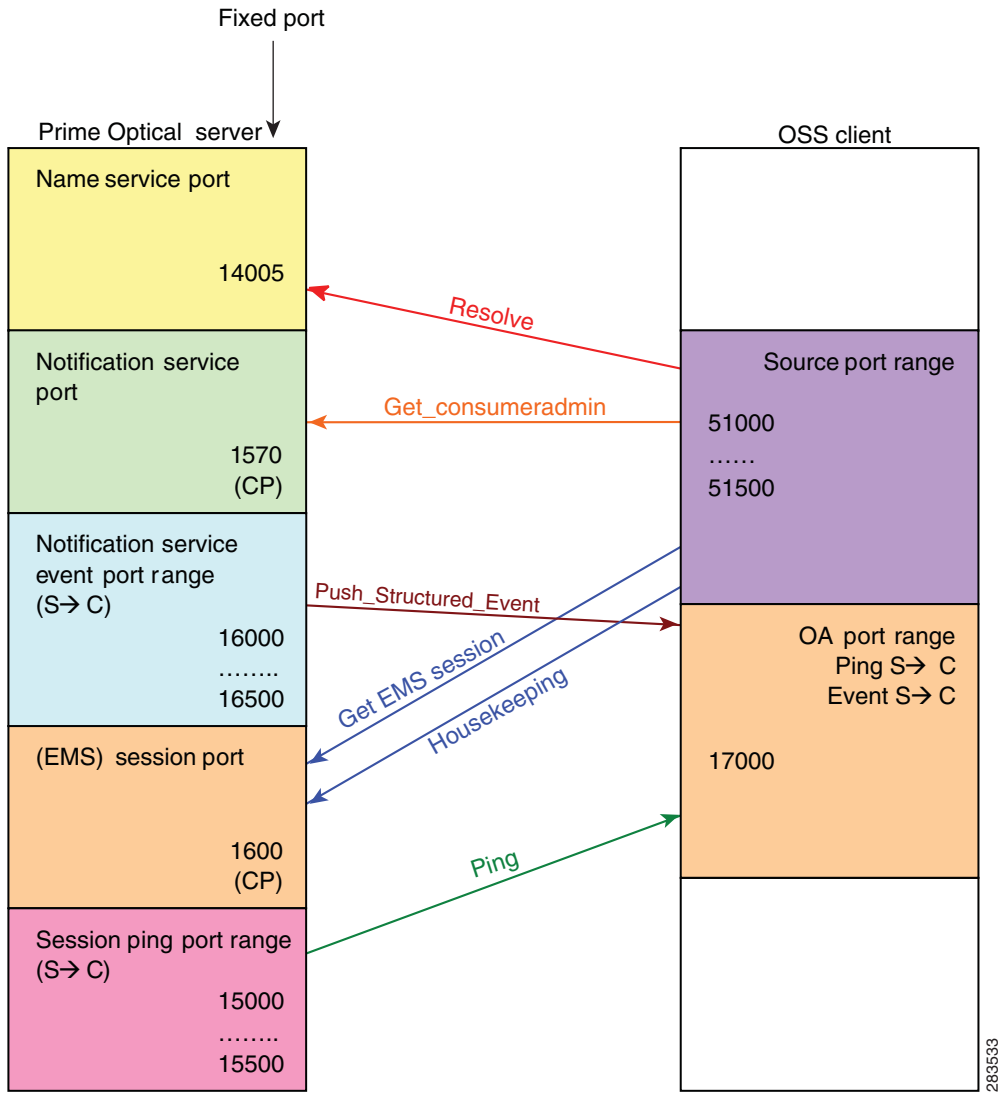
Step 3 In the Active GateWay/CORBA Users table, select the user whose session will be ended and choose **Administration > Log Out GateWay CORBA User** (or click the **Log Out GateWay CORBA User** tool).

12.2.2.10 Changing the Default Settings of Prime Optical Server and OSS CORBA Client Ports

For each connected OSS, JacORB uses several ports that have the following functions, as illustrated in Figure 12-3:

- Session port—The main channel used for handshakes between the OSS and the CORBA gateway. The CORBA gateway assigns this port to a random value between free ports in the system.
- Notification service port—The channel used to receive notifications from the CORBA gateway.
- Name service port—The port used to request a new session. The value is always fixed; the default port number is 14005.
- Session ping port—The channel used to establish a keep-alive handshake between the gateway and the OSS. The CORBA gateway assigns this port to a random value between free ports in the system.
- Notification service event port—A second port range used to push alarms or events from the CORBA gateway to the OSS. This port is a keep-alive channel like the previous association to the notification channel.

Figure 12-3 Sample CORBA Gateway Static Port Settings



CP : Settable through the Control Panel
S→ C: Server to client

Caution Errors resulting from changing the Prime Optical server ports or the OSS CORBA client ports can cause unpredictable system behavior.

Note

- It is recommended that you back up the current configuration files before changing the default settings.
- You can change the default settings only for OSS CORBA client ports that use JacORB.

You can change the default values of the following ports:

- OSS CORBA client ports:
  - 12.2.2.10.1 Object Adapter Port, page 12-20
  - 12.2.2.10.2 Source Port Range, page 12-21
  - 12.2.2.10.3 NAT Between the Prime Optical Server and OSS CORBA Client, page 12-21
- Prime Optical server ports:
  - 12.2.2.10.4 NameService Port, page 12-21
  - 12.2.2.10.5 NotificationService Port, page 12-21
  - 12.2.2.10.6 EMSSession Port, page 12-22
  - 12.2.2.10.7 Ping Server-to-Client Port Range, page 12-22
  - 12.2.2.10.8 Notification Event Port Range, page 12-23

Note You can also set Prime Optical server port values from the **Prime Optical GateWay/CORBA Service pane > Port Configuration tab**. For more information, see 12.2.2.3 Viewing the Prime Optical GateWay/CORBA Service Pane, page 12-13.

To set static values for CORBA gateway ports, it is strongly recommended that you follow these steps:

Step 1 With the Prime Optical server running, use the Control Panel to set the notification service port and the session port. See 12.2.2.10.5 NotificationService Port, page 12-21 and 12.2.2.10.6 EMSSession Port, page 12-22.

Step 2 Enter the following command to stop the Prime Optical server:

```
opticalctl stop
```

Step 3 Disable IMR. See 12.2.2.10.9 Disabling IMR, page 12-23.

Step 4 Set the session ping port range. See 12.2.2.10.7 Ping Server-to-Client Port Range, page 12-22.

Step 5 Set the name service port. See 12.2.2.10.4 NameService Port, page 12-21.

Step 6 Set the notification service event port range. See 12.2.2.10.8 Notification Event Port Range, page 12-23.

Step 7 Enter the following command to start the Prime Optical server:

```
opticalctl start
```

Step 8 Whenever you establish a new CORBA gateway session, use the **netstat** command to verify the actual ports in use and compare them to the newly added session.

12.2.2.10.1 Object Adapter Port

If you want to use a fixed port for the OSS CORBA client, change the value of the –DOAPort property. The –DOAPort property should be added to the file that launches the OSS CORBA client application. If there are two client instances running on the same machine, there should be two different port settings.

12.2.2.10.2 Source Port Range

Step 1 Open the jacorb.properties file from the OSS CORBA client directory.

Step 2 Change the value of the following properties:

```
jacorb.net.socket_factory=org.jacorb.orb.factory.PortRangeSocketFactory
jacorb.net.socket_factory.port.min=xxx
jacorb.net.socket_factory.port.max=yyy
```

12.2.2.10.3 NAT Between the Prime Optical Server and OSS CORBA Client

If Network Address Translation (NAT) exists between the Prime Optical server and OSS CORBA client, configure the jacorb.ior_proxy_host=*xxx.xx.xx.xxx* property from the jacorb.properties file to receive Prime Optical server callback messages and server-to-client pings. The *xxx.xx.xx.xxx* variable is the IP address of **NAT inside global address**.

12.2.2.10.4 NameService Port

Note You can also set the Name Service port value from the **Prime Optical GateWay/CORBA Service pane > Port Configuration tab**. For more information, see 12.2.2.3 Viewing the Prime Optical GateWay/CORBA Service Pane, page 12-13.

Step 1 Enter the following command to stop the Prime Optical server:

```
opticalctl stop
```

Step 2 Open the NameService.xml file from the /opt/*Prime Optical-server-directory*/openfusion/domains/localhost/NameService directory.

Step 3 Change the value of the *Port* property to the desired value. The default value is 14005.

Step 4 Enter the following command to stop the Prime Optical server:

```
opticalctl start
```

Step 5 Complete the following substeps to verify the new value of the port:

a. Enter the following command in the /opt/CiscoTransportManagerServer/openfusion/bin directory:

```
./manager
```

b. Choose **Domains > OpenFusion > localhost > NameService** in the Object Hierarchy tree.

c. Click the **CORBA** tab in the right pane. The Server Port property displays the new port value.

12.2.2.10.5 NotificationService Port

Note You can also set the Notification Service port value from the Prime Optical GateWay/CORBA Service pane > Port Configuration tab. For more information, see 12.2.2.3 Viewing the Prime Optical GateWay/CORBA Service Pane, page 12-13.

Step 1 Stop the Prime Optical GateWay/CORBA service. See 12.2.2.2 Starting or Stopping Prime Optical GateWay/CORBA, page 12-12 for instructions.

Step 2 Change the value of **Notification Service Listening Port Number** to the desired value.

Step 3 Restart the Prime Optical GateWay/CORBA service. See 12.2.2.2 Starting or Stopping Prime Optical GateWay/CORBA, page 12-12 for instructions.

Step 4 Complete the following substeps to verify the new value of the port:

a. Enter the following command in the /opt/CiscoTransportManagerServer/openfusion/bin directory:

```
./manager
```

b. Choose **Domains > OpenFusion > localhost > NotificationService** in the Object Hierarchy tree.

c. Click the **CORBA** tab in the right pane. The Server Port property displays the new port value.

12.2.2.10.6 EMSSession Port

Note You can also set the EMS Session port value from the **Prime Optical GateWay/CORBA Service pane > Port Configuration tab**. For more information, see 12.2.2.3 Viewing the Prime Optical GateWay/CORBA Service Pane, page 12-13.

Step 1 Stop the Prime Optical GateWay/CORBA service. See 12.2.2.2 Starting or Stopping Prime Optical GateWay/CORBA, page 12-12 for instructions.

Step 2 Change the value of **Session Port Number** to the desired value.

Step 3 Restart the Prime Optical GateWay/CORBA service. See 12.2.2.2 Starting or Stopping Prime Optical GateWay/CORBA, page 12-12 for instructions.

12.2.2.10.7 Ping Server-to-Client Port Range

Note You can also set the Server-to-Client port values from the **Prime Optical GateWay/CORBA Service pane > Port Configuration tab**. For more information, see 12.2.2.3 Viewing the Prime Optical GateWay/CORBA Service Pane, page 12-13.

Step 1 Stop the Prime Optical GateWay/CORBA service. See 12.2.2.2 Starting or Stopping Prime Optical GateWay/CORBA, page 12-12 for instructions.

Step 2 Open the jacorb.properties file from the /opt/*Prime Optical-server-directory*/openfusion/classes directory.

Step 3 Do the following in the **Socket Factories** section:

a. Uncomment the .jacorb.net.socket_factory=org.jacorb.orb.factory.PortRangeSocketFactory row.

b. Change the .jacorb.net.socket_factory.port.min value to the desired minimum range value.

c. Change the .jacorb.net.socket_factory.port.max value to the desired maximum range value.

Step 4 Restart the Prime Optical GateWay/CORBA service. See 12.2.2.2 Starting or Stopping Prime Optical GateWay/CORBA, page 12-12 for instructions.

12.2.2.10.8 Notification Event Port Range

Note You can also set the Notification Event port range from the **Prime Optical GateWay/CORBA Service pane > Port Configuration tab**. For more information, see 12.2.2.3 Viewing the Prime Optical GateWay/CORBA Service Pane, page 12-13.

Step 1 Stop the Prime Optical GateWay/CORBA service. See 12.2.2.2 Starting or Stopping Prime Optical GateWay/CORBA, page 12-12 for instructions.

Step 2 Open the NotificationService.xml file from the /opt/*Prime Optical-server-directory*/openfusion/domains/localhost/NotificationService directory.

Step 3 Change the value of the JVMFlags property to the following:

```
<PropertyValue>-Dosgi.parentClassloader=ext
-Djacorb.net.socket_factory=org.jacorb.orb.factory.PortRangeSocketFactory
-Djacorb.net.socket_factory.port.min=xxx
-Djacorb.net.socket_factory.port.max=yyy</PropertyValue>
```

Note Do not use carriage returns when entering the new value of the JVMFlags property. The new value must be entered on the existing row.

Step 4 Restart the Prime Optical GateWay/CORBA service. See 12.2.2.2 Starting or Stopping Prime Optical GateWay/CORBA, page 12-12 for instructions.

12.2.2.10.9 Disabling IMR

By default, IMR is disabled. To enable IMR, you must manually edit the jacorb.properties file.

Step 1 Make a backup copy of the jacorb.properties file located in the *Prime Optical-server-installation-directory*/openfusion/classes directory.

Step 2 In the jacorb.properties file, configure the following properties to “off”:

```
jacorb.use_imr=off
jacorb.use_imr_endpoint=off
```

12.2.2.11 Changing the Prime Optical GateWay/CORBA Client Ports

In CTM R9.0 and earlier releases, Prime Optical GateWay/CORBA was installed and configured to use random ports and did not support a firewall between the OSS client and the Prime Optical server. Starting from CTM R9.1, you can install and configure Prime Optical GateWay/CORBA to use static ports, which facilitates the use of a firewall between the OSS client and the Prime Optical server.

12.2.2.11.1 Installation

When you install Prime Optical GateWay/CORBA, all of the ports are configured with default fixed values. See Table 12-9 for the list of default fixed values.

Note To configure Prime Optical GateWay/CORBA to use static ports, you must disable IMR. See 12.2.2.11.2 Configuration, page 12-24.

Table 12-9 List of Parameters and Fixed Values

Parameters	Default Fixed Values
EMS Session Port	20100
Name Service Port	14005
Notification Service Port	20001
Session Ping Port range	20101–20199
Event Notification Port range	20002–20099
IMR	Off
Proxy Host Address	Not set

Note It is recommended that you change the default fixed values after the Prime Optical GateWay/CORBA installation is complete. If you change the values while installing Prime Optical GateWay/CORBA, the installation might fail.

12.2.2.11.2 Configuration

Note
- You can also configure Prime Optical server ports from the **Prime Optical GateWay/CORBA Service pane > Port Configuration tab**. For more information, see 12.2.2.3 Viewing the Prime Optical GateWay/CORBA Service Pane, page 12-13.
- Prime Optical GateWay/CORBA must be stopped in order to configure ports.

Step 1 Log into the Prime Optical server as the root user.

Step 2 Invoke the manageCTMCorbaPorts.sh file from the *Prime Optical-server-installation-directory*/bin directory.

Note If Prime Optical GateWay/CORBA is running, you only have the option to read port configuration settings.

The following appears:

```
-------------------------------------------------
 Manage CTM GateWay/CORBA Ports Utility
-------------------------------------------------
  1. Read Configuration Set
  2. Read Configuration Running
```

```
  3. Restore All Default Values
  4. Change All Settings
  5. Change Name Service Port
  6. Change Proxy Host Address
  7. Change Notification Service Port
  8. Change EMS Session Port
  9. Change S->C Ping Port Range
 10. Change Notification Event Port Range
  0. Exit
-------------------------------------------------
```

Step 3 Select an item from the menu.

For example, enter **1** to select Read Configuration Set.

For more information on these menu items, see the *Cisco Prime Optical 9.6.3 GateWay/CORBA User Guide and Programmer Manual*.

Note If you select a menu item that changes the configuration, you will be prompted to restart either Prime Optical GateWay/CORBA or the Prime Optical server. See 12.2.2.2 Starting or Stopping Prime Optical GateWay/CORBA, page 12-12 for instructions.

Configuring MPLS-TP Using the CPT System

This chapter describes how to configure Multiprotocol Label Switching Transport Profile (MPLS-TP) services using the Carrier Packet Transport (CPT) System. It contains the following sections:

- 13.1 Understanding Common Terms, page 13-2
- 13.2 Understanding User Privileges and Tasks, page 13-11
- 13.3 Unsupported Features, page 13-14
- 13.4 MPLS-TP Tunnels, page 13-14
  - 13.4.1 How Do I Create an MPLS-TP Tunnel?, page 13-14
  - 13.4.2 Understanding the TP Tunnel Service Table, page 13-20
  - 13.4.3 How Do I View or Modify an MPLS-TP Tunnel?, page 13-20
  - 13.4.4 How Do I Delete an MPLS-TP Tunnel?, page 13-23
  - 13.4.5 How Do I Trace an MPLS-TP Tunnel?, page 13-23
- 13.5 Pseudowires, page 13-29
  - 13.5.1 How Do I Create a Pseudowire?, page 13-29
  - 13.5.2 Understanding the PW Service Table, page 13-34
  - 13.5.3 How Do I View or Modify a Pseudowire?, page 13-35
  - 13.5.4 How Do I Delete a Pseudowire?, page 13-37
  - 13.5.5 How Do I Trace a Pseudowire?, page 13-37
- 13.6 EVCs, page 13-38
  - 13.6.1 How Do I Create an EVC?, page 13-38
  - 13.6.2 Understanding the EVC Service Table, page 13-42
  - 13.6.3 How Do I View or Modify an EVC?, page 13-43
  - 13.6.4 How Do I Delete an EVC?, page 13-47
  - 13.6.5 How Do I Trace an EVC?, page 13-47
- 13.7 Understanding Advanced Troubleshooting Options, page 13-50
  - 13.7.1 Understanding the MPLS-TP Tunnel Cross-Connections Table, page 13-51
  - 13.7.2 Understanding the Pseudowire Cross-Connections Table, page 13-52
  - 13.7.3 Understanding the EVC Cross-Connections Table, page 13-54
  - 13.7.4 Understanding the Refresh L2 Service Data Discovery Option, page 13-55

- 13.8 CPT System QoS, page 13-55
  - 13.8.1 How Do I Create and Manage QoS Objects?, page 13-55
  - 13.8.2 How Do I Provision QoS Objects in the CPT System?, page 13-66
- 13.9 CPT System, page 13-68
  - 13.9.1 Understanding CPT Cards, page 13-68
  - 13.9.2 Overview of the CPT System Property Sheet, page 13-69
  - 13.9.3 Understanding the CPT System Alarms, page 13-87

13.1 Understanding Common Terms

This section describes the common terms used in MPLS-TP and the CPT System. It includes:

- 13.1.1 What Is MPLS?, page 13-2
- 13.1.2 What Is MPLS-TP?, page 13-3
- 13.1.3 What Is the CPT System?, page 13-3
- 13.1.4 What Is Pseudowire?, page 13-4
- 13.1.5 What Is an EVC?, page 13-6
- 13.1.6 What Is CPT System QoS?, page 13-7
- 13.1.7 What Is an LSP?, page 13-7
- 13.1.8 What Is BFD?, page 13-8
- 13.1.9 What Is an EFP?, page 13-8
- 13.1.10 What Is a Bridge Domain?, page 13-9
- 13.1.11 What Is IGMP Snooping?, page 13-9
- 13.1.12 What Is MVR?, page 13-10
- 13.1.13 What Is LACP?, page 13-11

13.1.1 What Is MPLS?

Multiprotocol Label Switching (MPLS) is the technology that scales IP networks for service providers. MPLS is a technique that allows the forwarding of packets based on labels. In a normal IP network, the packets are switched based on the destination IP address. In an MPLS network, the packets are switched based on labels.

MPLS provides mechanisms for IP Quality of Service (QoS) and IP traffic engineering (TE). MPLS is the industry standard on which label switching is based. The label identifies where to forward the packets and instructs the routers and switches in the network. Forwarding of MPLS packets is based on pre-established IP routing information.

MPLS enables service providers to offer additional services, including VPNs, improved TE, QoS, Layer 2 tunneling, and multiprotocol support, to their enterprise customers. There are two ways to set up an MPLS infrastructure:

- LDP

- MPLS-TE

LDP differs from MPLS-TE in terms of the protocol used to distribute the labels along the path. LDP uses Label Distribution Protocol (LDP) whereas MPLS-TE uses Resource Reservation Protocol-Traffic Engineering (RSVP-TE) to distribute the labels. LDP and RSVP-TE uses Open Shortest Path First (OSPF) as the routing protocol.

13.1.2 What Is MPLS-TP?

MPLS-TP is a carrier-grade packet transport technology that enables the move from SONET and SDH time-division multiplexing (TDM) to packet switching. MPLS-TP enables MPLS to be deployed in a transport network and to operate similarly to existing transport technologies. MPLS-TP enables MPLS to support packet transport services with a degree of predictability that is similar to the existing transport networks.

The goal of MPLS-TP is to provide connection-oriented transport for packet and TDM services over optical networks leveraging the widely deployed MPLS technology. Operations, administration, and maintenance (OAM) and resiliency features are defined and implemented in MPLS-TP to ensure:

- Scalable operations
- High availability
- Performance monitoring
- Multidomain support
- Carrier-grade packet transport networks

MPLS-TP can be carried over the existing transport network infrastructure. MPLS-TP defines a profile of MPLS targeted at transport applications and networks. This profile specifies the MPLS characteristics and extensions required to meet the transport requirements.

The following topics describe related Prime Optical features and options:

- 13.4.1 How Do I Create an MPLS-TP Tunnel?, page 13-14
- 13.4.2 Understanding the TP Tunnel Service Table, page 13-20
- 13.4.3 How Do I View or Modify an MPLS-TP Tunnel?, page 13-20
- 13.4.4 How Do I Delete an MPLS-TP Tunnel?, page 13-23
- 13.4.5 How Do I Trace an MPLS-TP Tunnel?, page 13-23
- 13.4.6 How Do I Launch the Pseudowire Service Table from the TP Tunnel Service Table?, page 13-24
- 13.7.1 Understanding the MPLS-TP Tunnel Cross-Connections Table, page 13-51

13.1.3 What Is the CPT System?

The CPT System is the first Packet-Optical Transport System (P-OTS) built on standards-based MPLS-TP technology. The CPT System unifies both packet and transport technologies, giving a strong foundation for next-generation transport. The CPT System is designed to support transport applications so that service providers can continue to offer existing transport services while enabling new packet services.

The existing transport networks must be migrated from TDM networks to packet transport networks because the packet-based services dominate the overall network traffic. Next-generation transport networks enable and support new mesh, multipoint, and multidirectional services. By deploying packet transport networks, you can benefit from:

- Statistical multiplexing
- Dynamic bandwidth allocation
- QoS

Note CPT System is displayed as "PT System" in the Prime Optical user interface.

The CPT System provides the following benefits:

- Ensures a smooth and efficient transition from TDM networks to packet transport networks
- Enables you to deploy new packet transport networks
- Provides architectural flexibility with support for:
  - MPLS-TP
  - IP/MPLS
  - Carrier Ethernet transport
- Provides data plane and control plane flexibility in network deployments
- Enables service providers to provide the following for residential and business customers:
  - Mobile back-haul
  - Ethernet services
  - TDM services

The following topics describe related Prime Optical features and options:

- 13.9.1 Understanding CPT Cards, page 13-68
- 13.9.2 Overview of the CPT System Property Sheet, page 13-69
- 13.9.3 Understanding the CPT System Alarms, page 13-87

13.1.4 What Is Pseudowire?

A pseudowire (PW) is an emulation of a Layer 2 point-to-point, connection-oriented service over a packet-switching network (PSN).

Cisco Prime Optical 9.3.1 supports only the forwarding of the Ethernet frames from customer networks under Any Transport over MPLS (AToM).

Pseudowire is the technique used to transport these types of frames. It is the emulation of a native service over the MPLS network.

The following topics describe related Prime Optical features and options:

- 13.5.1 How Do I Create a Pseudowire?, page 13-29
- 13.5.2 Understanding the PW Service Table, page 13-34
- 13.5.3 How Do I View or Modify a Pseudowire?, page 13-35

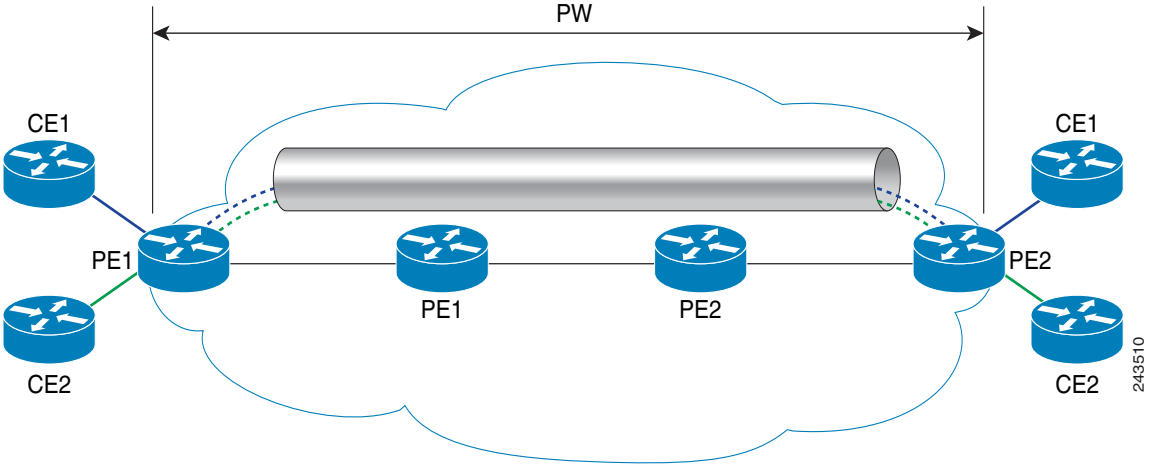
- 13.5.4 How Do I Delete a Pseudowire?, page 13-37
- 13.5.5 How Do I Trace a Pseudowire?, page 13-37
- 13.7.2 Understanding the Pseudowire Cross-Connections Table, page 13-52

13.1.4.1 What Is an L2VPN Pseudowire?

A Layer 2 VPN (L2VPN) pseudowire is a tunnel established between two provider edge (PE) routers across the core carrying the Layer 2 payload encapsulated as MPLS data, as shown in Figure 13-1. This architecture helps the carriers migrate from Layer 2 networks such as Ethernet over MPLS (EoMPLS) to an MPLS core.

Dual-homed pseudowire is a pseudowire-protected circuit on which the destination point is split into two different nodes.

Figure 13-1 L2VPN Pseudowire

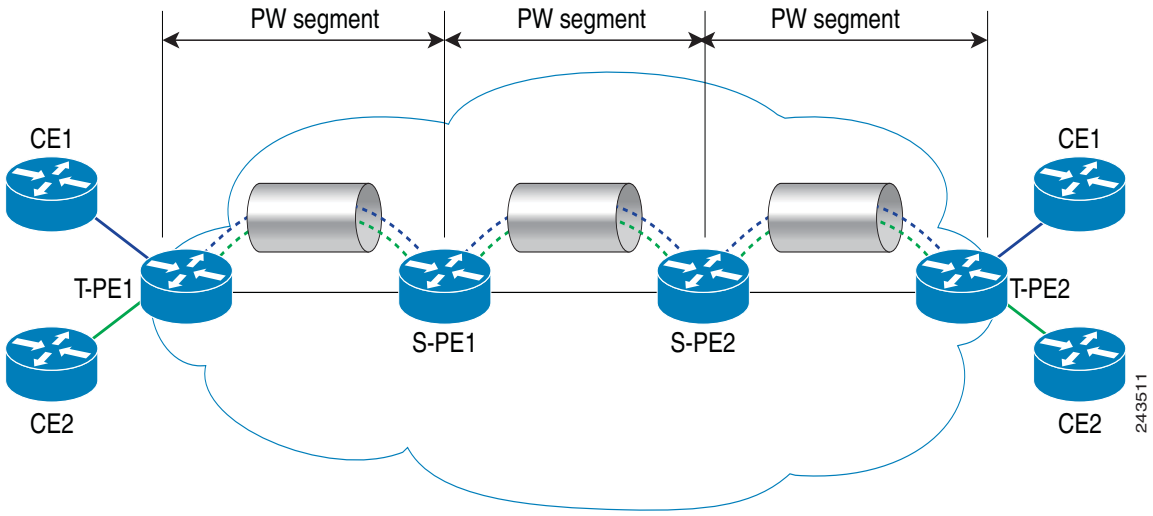


13.1.4.2 What Is L2VPN Multisegment Pseudowire?

An L2VPN multisegment pseudowire (MS-PW) is a collection of two or more PW segments that function as a single PW. It is also known as switched pseudowire. MS-PWs span multiple cores or autonomous systems of the same or different carrier networks. An L2VPN MS-PW can include up to 254 PW segments.

The L2VPN MS-PWs feature enables you to configure two or more Layer 2 pseudowire segments that function as a single pseudowire. The end routers are called terminating provider edge routers (T-PEs) and the switching routers are called switching provider edge routers (S-PEs). The S-PE router terminates the tunnels of the preceding and succeeding PW segments in an MS-PW. The S-PE router can switch the control and data planes of the preceding and succeeding PW segments of the MS-PW. An MS-PW is declared to be up when all single-segment PWs are up.

Figure 13-2 Multisegment Pseudowire



13.1.5 What Is an EVC?

An Ethernet Virtual Circuit (EVC) is a logical relationship between Ethernet User-Network Interfaces (UNIs) in a provider-based Ethernet service. An EVC is the service offered and is carried through the service provider network. Each EVC is configured by its unique name across the service provider network.

An EVC is an end-to-end representation of a single instance of a Layer 2 service that a service provider offers and represents the different parameters based on which the service is offered. An EVC prevents data transfer between sites that are not part of the same EVC. The instance of a specific EVC service on the physical interface of each network device through which the EVC passes is called an Ethernet Flow Point (EFP).

An EVC is the A-Z circuit that enables you to pass customer VLANs from one port on a node to another port on another node in the network. In the CPT System, an EVC represents a Carrier Ethernet service and is an entity that provides an end-to-end connection between two or more customer endpoints.

The global EVC attributes are:

- EVC ID—EVC ID is the associated EVC which the EFP is part of.
- EVC Type—E-Line, E-LAN, or E-Tree.
- List of associated EFPs that belong to an EVC.

The following topics describe related Prime Optical features and options:

- 13.6.1 How Do I Create an EVC?, page 13-38
- 13.6.2 Understanding the EVC Service Table, page 13-42
- 13.6.3 How Do I View or Modify an EVC?, page 13-43
- 13.6.4 How Do I Delete an EVC?, page 13-47
- 13.6.5 How Do I Trace an EVC?, page 13-47
- 13.7.3 Understanding the EVC Cross-Connections Table, page 13-54

13.1.6 What Is CPT System QoS?

CPT System QoS classifies each packet in the network based on one of the following:

- Ethernet Class of Service (CoS)
- IP precedence
- IP Differentiated Services Code Point (DSCP)
- MPLS experiment (MPLS EXP) bits.

After the packets are classified into class flows, additional QoS functions can be applied to each packet as it traverses the CPT System.

Policing provided by the CPT System ensures that the attached equipment does not submit more than a predefined amount of bandwidth into the network. The policing feature can be used to enforce the committed information rate (CIR) and the peak information rate (PIR) available to a customer at an interface. The policing action is applied per classification.

Marking can set the Ethernet CoS, IP precedence, or IP DSCP bits when packets enter the CPT System. For MPLS traffic, marking sets MPLS EXP bits when the packets leave the system. The marking feature operates on the outer IEEE 802.1p tag, IP precedence, or IP DSCP bits and provides a mechanism for tagging packets at the ingress. The subsequent NEs can provide QoS based only on this QoS indicator.

Per-class queuing allows various queuing applications to support service-level agreements. The CPT System uses a combination of Strict Priority Queuing (SPQ) and Weighted Round Robin (WRR) scheduling to guarantee throughput and latency requirements and to provide fair access to excess network bandwidth.

The following topics describe related Prime Optical features and options:

- 13.8.1 How Do I Create and Manage QoS Objects?, page 13-55
- 13.8.2 How Do I Provision QoS Objects in the CPT System?, page 13-66

13.1.7 What Is an LSP?

A Label Switched Path (LSP) is the path that a label takes to pass through a network. An LSP consists of a unidirectional sequence of hops in which a packet travels from one network device to another by means of label switching mechanisms. LSPs can be established statically and dynamically.

In Prime Optical 9.6.3, only static LSP can be established.

The following topics describe related Prime Optical features and options:

- 13.4.1 How Do I Create an MPLS-TP Tunnel?, page 13-14
- 13.4.2 Understanding the TP Tunnel Service Table, page 13-20
- 13.4.6.1 How Do I Add an LSP?, page 13-25
- 13.4.6.2 How Do I Modify an LSP?, page 13-26
- 13.4.6.3 How Do I Trace an LSP?, page 13-27

13.1.8 What Is BFD?

Bidirectional Forwarding Detection (BFD) is a path-failure detection protocol that provides a low-overhead, short-duration method of detecting failures in the forwarding path between two adjacent routers. BFD is enabled at the interface level; it detects failures on interfaces, data links, and forwarding planes and notifies the MPLS-TP server. Prime Optical supports BFD asynchronous mode, which depends on sending BFD control packets between two systems to activate and maintain BFD neighbor sessions between routers.

To create a BFD session, you must configure BFD on both systems (or BFD peers). After you enable BFD on the interfaces:

- A BFD session is created.
- BFD timers are negotiated.
- BFD peers begin sending BFD control packets to each other at the negotiated interval.

BFD provides continuity checks to enable MPLS-TP LSPs to detect forwarding failures between two adjacent routers. When BFD is enabled on the MPLS-TP tunnel interface, the MPLS-TP client creates separate BFD sessions for working and protect LSPs. A single set of BFD timers is configured on the tunnel that applies to both the working and protect LSPs.

The following topics describe related Prime Optical features and options:

- 13.4.1 How Do I Create an MPLS-TP Tunnel?, page 13-14
- 13.9.2.6 Pseudowire Class, page 13-74

13.1.9 What Is an EFP?

Traffic for a service must pass through several switches in the service provider network to connect customer sites across that network. An instance of a specific EVC service on the physical interface of each network device through which the EVC passes is called an Ethernet Flow Point (EFP). An EFP is a logical demarcation point of an EVC within a node on an interface, and it can be associated with a bridge domain.

The main purpose of configuring an EFP is to recognize the traffic belonging to a specific EVC on an interface. Configuring the EFP also applies forwarding behavior and features specific to that EVC, because multiple EVCs can pass through one physical interface.

The CPT System can have EFPs on all ports of the PTF_10GE_4 card, PT_10GE_4 card, or PTSA_GE panel. The EFP administrative state (Up or Down) maps to the EFP administrative state in the Cisco IOS Software.

The key attributes of an EFP are:

- Encapsulation string—Defines the classification criteria for an incoming packet.
- Forwarding operation—Defines the forwarding operation to be applied on frames that belong to the EFP.
- Ingress rewrite operation—Defines the rewrites to be performed on the frames that belong to the EFP before proceeding with the forwarding operation.
- Egress rewrite operation (outgoing encapsulation)—Defines the rewrites to be performed on the frames being transmitted out of the EFP.

The following topics describe related Prime Optical features and options:

- 13.5.1 How Do I Create a Pseudowire?, page 13-29
- 13.5.1.1 How Do I Configure an EFP?, page 13-33
- 13.6.1 How Do I Create an EVC?, page 13-38
- 13.6.3 How Do I View or Modify an EVC?, page 13-43
- 13.6.5.1 How Do I Add a Drop?, page 13-48

13.1.10 What Is a Bridge Domain?

A bridge domain is an Ethernet broadcast domain internal to a device. The bridge domain enables you to decouple a VLAN from a broadcast domain. The bridge domain has one-to-many mapping with EFPs. All EFPs in a node for a specific EVC are grouped using the bridge domain. If EFPs belong to the same bridge domain and have the same bridge domain number, the EFPs receive traffic even if they have different VLAN numbers.

The bridge domain number is local to the node. Different nodes of an EVC can have the same or a different bridge domain number. However, the bridge domain number is unique for an EVC within a node. For an EVC, the bridge domain number range is from 1 to 16384.

The following topic describes related Prime Optical features and options:

- 13.6.3 How Do I View or Modify an EVC?, page 13-43

13.1.11 What Is IGMP Snooping?

As networks increase in size, multicast routing becomes critically important as a means to determine which segments require multicast traffic and which do not. IP multicasting enables IP traffic to be propagated from one source to a number of destinations or from many sources to many destinations. Rather than one packet being sent to each destination, one packet is sent to the multicast group identified by a single IP destination group address.

Internet Group Management Protocol (IGMP) snooping restricts flooding of multicast traffic by sending multicast traffic only to the interfaces that are subscribed to a particular multicast group. The CPT System can use IGMP snooping to constrain the flooding of multicast traffic by dynamically configuring Layer 2 interfaces, so that multicast traffic is forwarded to only those interfaces associated with the IP multicast devices. IGMP snooping requires the CPT System to snoop on the IGMP transmissions between the host and the router and to keep track of multicast groups and member ports.

When the CPT System receives an IGMP report from a host for a particular multicast group, the CPT System adds the host port number to the forwarding table entry. When it receives an IGMP leave group message from a host, it removes the host port from the table entry. It also periodically deletes entries if it does not receive IGMP membership reports from the multicast clients.

The CPT System forwards periodic general queries received from the multicast router in the bridge domain where IGMP snooping is enabled. All hosts interested in this multicast group send join requests and are added to the forwarding table entry. The CPT System creates one entry per bridge domain in the IGMP snooping IP multicast forwarding table for each group from which it receives an IGMP join request.

The IP multicast groups learned through IGMP snooping are dynamic. If a port interface, EFP, or bridge domain state changes, the IGMP snooping-learned multicast groups from this port, EFP, or bridge domain are deleted.

The following topic describes related Prime Optical features and options:

- 13.6.3 How Do I View or Modify an EVC?, page 13-43

13.1.12 What Is MVR?

Multicast VLAN Registration (MVR) is a Layer 2 IP network protocol that enables multicast traffic from a source VLAN to be shared with subscriber VLANs. MVR is designed for applications using wide-scale deployment of multicast traffic across an Ethernet ring-based service provider network; for example, the broadcast of multiple television channels over a service provider network. MVR allows a subscriber on a port to subscribe to (and unsubscribe from) a multicast stream on a network-wide multicast bridge domain. It allows the single multicast bridge domain to be shared over the network while subscribers remain in separate bridge domains.

MVR provides the ability to continuously send multicast streams to subscribers on the multicast bridge domain. It also isolates the streams from the subscriber bridge domains for bandwidth and security reasons. MVR assumes that the subscriber ports subscribe (join) and unsubscribe (leave) these multicast streams by sending out IGMP join and leave messages. These messages can originate from an IGMP version 1-, version 2-, or version 3-compatible host with an Ethernet connection. Although MVR operates on the underlying mechanism of IGMP snooping, the two features operate independently of each other. One feature can be enabled or disabled without affecting the behavior of the other feature. However, if IGMP snooping and MVR are both enabled, MVR reacts only to join and leave messages from multicast groups configured under MVR. IGMP snooping manages join and leave messages from all other multicast groups.

The CPT System identifies the MVR IP multicast streams and their associated IP multicast group in the forwarding table. It intercepts the IGMP messages and modifies the forwarding table to include or exclude the subscriber as a receiver of the multicast stream, even though the receivers might be in a different bridge domain from the source. This forwarding behavior selectively allows traffic to cross between different bridge domains.

The CPT System supports the dynamic mode of MVR operation. In the dynamic mode, multicast data received by MVR source EFPs on the CPT System is forwarded only to those MVR receiver EFPs that have joined through IGMP reports. You must configure EFPs as MVR receiver and source EFPs. Receiver EFPs and source EFPs can be on different CPT cards. Multicast data sent on the multicast bridge domain is forwarded to all MVR receiver EFPs across the CPT System. By default, a CPT System has no source or receiver EFP. If a CPT card fails or is removed, only those receiver EFPs belonging to that CPT card will not receive the multicast data. All other receiver EFPs on other CPT cards continue to receive the multicast data.

The following topic describes related Prime Optical features and options:

- 13.6.3 How Do I View or Modify an EVC?, page 13-43

13.1.13 What Is LACP?

Link Aggregation Control Protocol (LACP) is a control protocol over link aggregation (LAG) that enables checking for LAG misconfigurations. LACP is part of the IEEE 802.3ad standard that enables you to bundle several physical ports together to form a single logical channel. LACP enables a network device, such as a switch, to negotiate an automatic bundling of links by sending LACP packets to the peer device.

LACP enables you to form a single Layer 2 link automatically from two or more Ethernet links. This protocol ensures that both ends of the Ethernet link are functional and agree to be members of the aggregation group. To be operational, LACP must be enabled at both ends of the link.

The following topics describe related Prime Optical features and options:

- 13.9.2.2 Channel Groups, page 13-70
- 13.9.2.10.1 How Do I Configure Channel Group Using LACP?, page 13-79

13.2 Understanding User Privileges and Tasks

This section describes the user privileges and the MPLS-TP and the CPT System tasks and new UI options.

The following table describes the Prime Optical default user profiles and the privileges associated with each profile.

Table 13-1 User Privileges

Role	Privileges
SuperUser	• Tasks—Allowed to perform all the tasks listed in Table 13-2. • UI Options—All the UI options are visible.
NetworkAdmin	• Tasks—Allowed to perform all the tasks listed in Table 13-2. • UI Options—All the UI options are visible.
SysAdmin	• Tasks—Cannot perform any of the tasks listed in Table 13-2. • UI Options—None of the UI options are visible.
Provisioner	• Tasks—Cannot perform the advanced troubleshooting tasks, but can perform the other tasks listed in Table 13-2. • UI Options—The Advanced Troubleshooting options are not visible.
Operator	• Tasks—Allowed to perform only the following tasks: – View Layer 2 services from the TP Tunnel Service table, PW Service table, and EVC Service table. – Trace Layer 2 services from the TP Tunnel Service table, PW Service table, and EVC Service table. • UI Options—Only the View and Trace options are visible. Other UI options are either disabled or not visible.

The following table describes the MPLS-TP and the CPT System tasks and UI options.

Note CPT System is displayed as "PT System" in the Prime Optical user interface.

Table 13-2 MPLS-TP and CPT System Tasks and UI Options

Task	Navigation	For More Information, See...
Creating an MPLS-TP tunnel	**Configuration > PT System > Provision > Create TP Tunnel**	13.4.1 How Do I Create an MPLS-TP Tunnel?, page 13-14
Viewing and modifying TP tunnels	**Configuration > PT System > Display > TP Tunnel Table** You can launch the following wizards from the TP Tunnel Service table: • Modify TP Tunnel • Add LSP • Modify LSP	• 13.4.2 Understanding the TP Tunnel Service Table, page 13-20 • 13.4.3 How Do I View or Modify an MPLS-TP Tunnel?, page 13-20 • 13.4.6.1 How Do I Add an LSP?, page 13-25 • 13.4.6.2 How Do I Modify an LSP?, page 13-26
Troubleshooting MPLS-TP tunnels	**Configuration > PT System > Advanced Troubleshooting > TP Tunnel Cross-Connections Table**	13.7.1 Understanding the MPLS-TP Tunnel Cross-Connections Table, page 13-51
Creating a pseudowire	**Configuration > PT System > Provision > Create Pseudowire** You can launch the following wizards from the Create Pseudowire wizard: • Configure EFP • Configure QoS	• 13.5.1 How Do I Create a Pseudowire?, page 13-29 • 13.5.1.1 How Do I Configure an EFP?, page 13-33 • 13.5.1.2 How Do I Configure QoS?, page 13-34
Viewing and modifying pseudowires	**Configuration > PT System > Display > Pseudowire Table** You can launch the Modify Pseudowire wizard from the PW Service table.	• 13.5.2 Understanding the PW Service Table, page 13-34 • 13.5.3 How Do I View or Modify a Pseudowire?, page 13-35
Troubleshooting pseudowires	**Configuration > PT System > Advanced Troubleshooting > Pseudowire Cross-Connections Table**	13.7.2 Understanding the Pseudowire Cross-Connections Table, page 13-52
Creating an EVC	**Configuration > PT System > Provision > Create EVC**	13.6.1 How Do I Create an EVC?, page 13-38
Viewing and modifying EVCs	**Configuration > PT System > Display > EVC Table** You can launch the following wizards from the EVC Service table: • Modify EVC • Add Drop	• 13.6.2 Understanding the EVC Service Table, page 13-42 • 13.6.3 How Do I View or Modify an EVC?, page 13-43 • 13.6.5.1 How Do I Add a Drop?, page 13-48
Troubleshooting EVCs	**Configuration > PT System > Advanced Troubleshooting > EVC Cross-Connections Table**	13.7.3 Understanding the EVC Cross-Connections Table, page 13-54

Table 13-2 MPLS-TP and CPT System Tasks and UI Options (continued)

Task	Navigation	For More Information, See...
Provisioning QoS objects	**Configuration > PT System > Provision > QoS Provisioning**	13.8.2 How Do I Provision QoS Objects in the CPT System?, page 13-66
Managing QoS objects	**Configuration > PT System > Provision > QoS Editor**	13.8.1 How Do I Create and Manage QoS Objects?, page 13-55
Refreshing Layer 2 services	**Configuration > PT System > Advanced Troubleshooting > Refresh L2 Service Data Discovery**	13.7.4 Understanding the Refresh L2 Service Data Discovery Option, page 13-55
Creating and modifying channel groups	**NE Explorer > PT System > Provisioning > Channel Groups** You can launch the following wizards from the Channel Groups property: • LACP Configuration • Layer 2 Action Configuration	• 13.9.2.10 How Do I Create Channel Groups?, page 13-78 • 13.9.2.11 How Do I Modify Channel Groups?, page 13-82 • 13.9.2.10.1 How Do I Configure Channel Group Using LACP?, page 13-79 • 13.9.2.10.2 How Do I Configure Actions for Each Layer 2 Protocol?, page 13-79
Configuring manual load balancing	**NE Explorer > PT System > Provisioning > Channel Groups**	13.9.2.10.3 How Do I Configure Manual Load Balancing?, page 13-80
Modifying manual load balancing configuration	**NE Explorer > PT System > Provisioning > Channel Groups**	13.9.2.10.4 How Do I Modify Manual Load Balancing Configuration?, page 13-81
Viewing the PT System configuration mode	**NE Explorer > PT System > Provisioning > Configuration Mode**	13.9.2.3 Configuration Mode, page 13-72
Launching CPT IOS CLI	**NE Explorer > PT System > Provisioning > IOS CLI**	13.9.2.4 IOS CLI, page 13-72
Configuring global settings and creating and modifying BFD templates	**NE Explorer > PT System > Provisioning > MPLS-TP**	• 13.9.2.5 MPLS-TP, page 13-73 • 13.9.2.14 How Do I Create a BFD Template?, page 13-85 • 13.9.2.15 How Do I Edit a BFD Template?, page 13-86
Creating and modifying a pseudowire class	**NE Explorer > PT System > Provisioning > Pseudowire Class**	• 13.9.2.12 How Do I Create a Pseudowire Class?, page 13-83 • 13.9.2.13 How Do I Modify a Pseudowire Class?, page 13-84
Viewing QoS objects from the PT System	**NE Explorer > PT System > Provisioning > QoS**	13.9.2.7 QoS, page 13-75
Retrieving service alarms	**NE Explorer > PT System > Provisioning > Service Alarm**	13.9.2.8 Service Alarm, page 13-75
Configuring SyncE ports	**NE Explorer > PT System > Provisioning > Timing**	13.9.2.9 Timing, page 13-77

13.3 Unsupported Features

The CPT 200 and CPT 600 NEs do not support the following:

- Creating a server trail
- Managing VLANs
- Creating and managing BLSR
- ML cards
- Creating and managing SVLANs
- Viewing the IOS Users table
- Launching the L2 Topology table from the NE Explorer

13.4 MPLS-TP Tunnels

This section describes the following:

- 13.4.1 How Do I Create an MPLS-TP Tunnel?, page 13-14
- 13.4.2 Understanding the TP Tunnel Service Table, page 13-20
- 13.4.3 How Do I View or Modify an MPLS-TP Tunnel?, page 13-20
- 13.4.4 How Do I Delete an MPLS-TP Tunnel?, page 13-23
- 13.4.5 How Do I Trace an MPLS-TP Tunnel?, page 13-23

13.4.1 How Do I Create an MPLS-TP Tunnel?

For descriptions of MPLS-TP, BFD, and LSP, see the following sections:

- 13.1.2 What Is MPLS-TP?, page 13-3
- 13.1.8 What Is BFD?, page 13-8
- 13.1.7 What Is an LSP?, page 13-7

MPLS-TP tunnels are provisioned manually at their endpoints across the network. An MPLS-TP tunnel consists of a pair of unidirectional tunnels providing a bidirectional LSP. Each unidirectional tunnel can be protected with a protect LSP that activates automatically upon failure.

Create an MPLS-TP tunnel using the Create MPLS-TP Tunnel Circuit wizard. The following table describes the launch points and the expected behavior for the Create MPLS-TP Tunnel Circuit wizard.

Table 13-3 Create MPLS-TP Tunnel Circuit Wizard Launch Points and Expected Behavior

Launch Points	Expected Behavior
Source NE node in the Domain Explorer or Subnetwork Explorer	Select the source ONS 15454 NE in the Domain Explorer or Subnetwork Explorer and choose **Configuration > PT System > Provision > Create TP Tunnel**. The Create MPLS-TP Tunnel Circuit wizard opens. The source NE is preset to the selected source.
Source and destination NE nodes in the Domain Explorer or Subnetwork Explorer	Select the source ONS 15454 NE in the Domain Explorer or Subnetwork Explorer, right-click the NE, and choose **Create L2 Service > Create TP Tunnel**. The pointer changes to a plus (+) symbol; select the destination NE. The destination NE must be in the same network partition as the source. The Create MPLS-TP Tunnel Circuit wizard opens. Source and destination NEs are preset to the selected source and destination. **Note** If you press the **Esc** key while the plus symbol is enabled, the operation is canceled and the plus symbol returns to a pointer.
Source and destination NE nodes in the Network Map	Select **Layer 2** as the layer rate from the drop-down list in the Network Map toolbar. Select the source ONS 15454 NE in the Network Map, right-click the NE, and choose **Create L2 Service > Create TP Tunnel**. The pointer displays a line extending from the source NE; select the destination NE. The Create MPLS-TP Tunnel Circuit wizard opens. Source and destination NEs are preset to the selected source and destination NE nodes in the Network Map.

To create an MPLS-TP tunnel:

Step 1 Select a node for which to create an MPLS-TP tunnel and open the Create MPLS-TP Tunnel Circuit wizard. For an explanation of wizard launch points, see Table 13-3 on page 13-15.

Step 2 In the Info View pane:

a. In the Tunnel Details area, do the following:

- In the TP Tunnel Name field, enter the TP tunnel name. The TP tunnel name is a free-format string of up to 48 ASCII characters.
- In the TP Tunnel Description field, enter a TP tunnel description of up to 48 characters.
- From the State drop-down list, select a state to apply: Up and Down.
- Check the **Protection** check box if you want the TP tunnel path to be protected.

b. In the Bandwidth area, do the following:

- In the Bandwidth Tx field, enter the bandwidth to be transmitted and click the appropriate radio button.
- In the Bandwidth Rx field, enter the bandwidth to be received and click the appropriate radio button.

c. Click **Next**.

Step 3 In the Source pane:

a. Node—Displays a list of available NEs. From the drop-down list, select the source NE.

b. Shelf—Displays the shelf number, which is automatically retrieved from the NE. This field is enabled only if one or more possible options are available.

c. Slot—Displays the slot number, which is automatically retrieved from the NE. This field is enabled only if one or more possible options are available.

d. BFD—Displays the BFD template, which is automatically retrieved from the NE. From the drop-down list, select **None** to provision the TP tunnel without a BFD template.

e. Node ID—*Display only.* Displays the node ID.

f. Tunnel Number—A free number; however, the number you enter must not be used by any other tunnel on the specified node. By default, the first available free number is displayed. Valid values are from 0 to 999.

g. Working LSP—Displays the working LSP number. The default value is 0. Valid values are 0 or a number from 2 to 65535.

h. Protected LSP—Enabled only if you checked the Protection check box in the Info View pane. This field displays the protect LSP number. The default value is 1. Valid values are from 1 to 65535.

i. Click **Next**.

Step 4 In the Destination pane:

a. Node—Displays a list of available NEs. From the drop-down list, select the destination NE.

b. Shelf—Displays the shelf number, which is automatically retrieved from the NE. This field is enabled only if one or more possible options are available.

c. Slot—Displays the slot number, which is automatically retrieved from the NE. This field is enabled only if one or more possible options are available.

d. BFD—Displays the BFD template, which is automatically retrieved from the NE. From the drop-down list, select **None** to provision the TP tunnel without a BFD template.

e. Node ID—*Display only.* Displays the node ID.

f. Tunnel Number—A free number; however the number you enter must not be used by any other tunnel on the specified node. By default, the first available free number is displayed. Valid values are from 0 to 999.

g. Working LSP—Displays the working LSP number. The default value is 0. Valid values are 0 or a number from 2 to 65535.

h. Protected LSP—Enabled only if you checked the Protection check box in the Info View pane. This field displays the protect LSP number. The default value is 1. Valid values are from 1 to 65535.

i. Click **Next**.

Step 5 In the Routing Preferences pane:

a. In the Routing Details area, confirm the details and perform actions where allowed:

Note The Automatic Routing and Use Required Nodes/Spans options are mutually exclusive.

- Check the **Automatic Routing** check box if you want the route to be calculated by the system.
- Check the **Use Required Nodes/Spans** check box to manually select the route. Include or exclude NEs and links from the path.
- *Display only.* By default, the Review Labels check box is checked.
- *Display only.* If you checked the Protection check box in the Info View pane, the Protected Path check box is checked. If you unchecked the Protection check box in the Info View pane, the Protected Path check box is unchecked.

b. Select one of the following radio buttons from the Node and Link Diversity Options area if the path is protected and if you want the working LSPs and protect LSPs to be routed using paths that traverse different NEs:

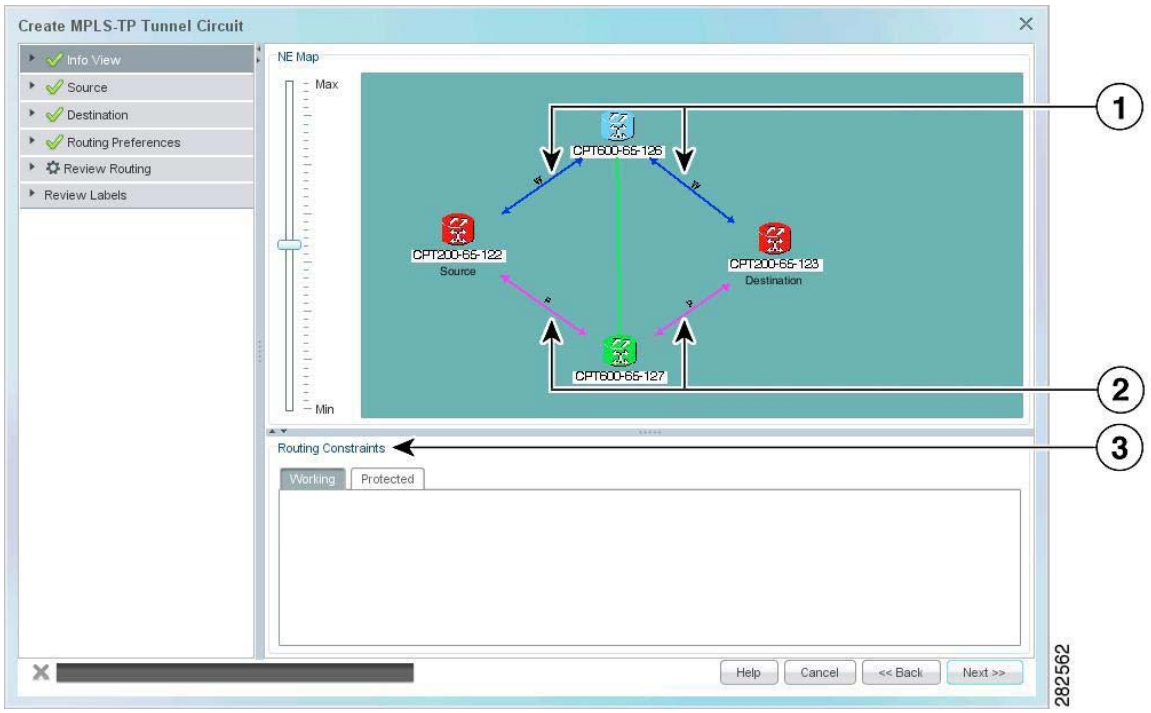
- **Node Diversity Required**—Select if the working LSPs and protect LSPs must be routed on different nodes.
- **Node Diversity Desired**—Select if you prefer the working LSPs and protect LSPs to be routed on different nodes.
- **Link Diversity Only**—Select if you want the working LSPs and protect LSPs to be routed on different links.

c. Click **Next**.

If you checked the Automatic Routing check box in the Routing Preferences pane, go to Step 6. If you checked the Use Required Nodes/Spans check box in the Routing Preferences pane, go to Step 7.

Step 6 In the Review Routing pane, confirm the details and perform actions where allowed:

Figure 13-3 Automatic Routing Review



1	Working LSPs	**2**	Protect LSPs
3	Routing Constraints area		

a. NE Map—Displays the working LSPs (blue links) and protect LSPs (purple links).

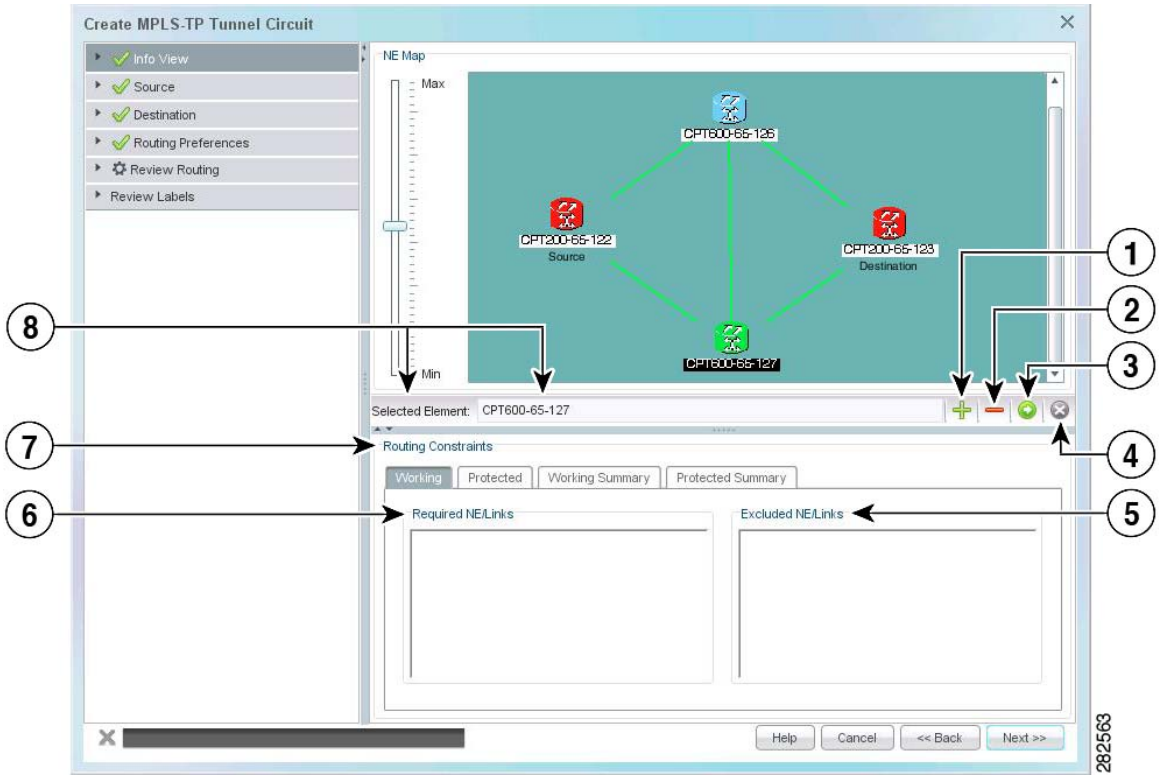
b. Routing Constraints—The Routing Constraints area has two tabs:

- Working—Displays the working spans and provides a summary of the links and ports used by the Layer 2 service.
- Protected—Displays the protected spans and provides a summary of the links and ports used by the Layer 2 service.

c. Click **Next**. Go to Step 8.

Step 7 In the Review Routing pane, confirm the details and perform actions where allowed:

Figure 13-4 Manual Routing Review



1	Insert Node/Link option	**2**	Exclude Node/Link option
3	Calculate Routing option	**4**	Clear Routing Constraints option
5	Excluded NE/Links area	**6**	Required NE/Links area
7	Routing Constraints area	**8**	Selected NE

a. NE Map—Displays the working LSPs and protect LSPs. Add and remove NEs and links using the following options:

- Insert Node/Link—Select the NE or link from the NE map and click **Insert Node/Link**. The selected NE or link is added and displayed in the Required NE/Links section.
- Exclude Node/Link—Select the NE or link from the NE map and click **Exclude Node/Link**. The selected NE or link is excluded and displayed in the Excluded NE/Links section.
- Calculate Routing—The working LSPs and protect LSPs have independent routing constraints. Click **Calculate Routing** to calculate the routing.
- Clear—Click **Clear** to clear the routing constraints.

b. Routing Constraints—The Routing Constraints area has four tabs:

- Working—Displays the working NEs and links added using the Insert Node/Link option and the working NEs and links excluded using the Exclude Node/Link option. To delete an NE or link, right-click the NE or link and click **Delete**.
- Protected—Displays the protected NEs and links added using the Insert Node/Link option and the protected NEs and links excluded using the Exclude Node/Link option. To delete an NE or link, right-click the NE or link and click **Delete**.

- Working Summary—Displays the working spans and provides a summary of the links and ports used by the Layer 2 service.
- Protected Summary—Displays the protected spans and provides a summary of the links and ports used by the Layer 2 service.

c. Click **Next**.

Step 8 In the Review Labels pane, review or modify the label settings that are automatically calculated by the system. The following details are displayed in a table:

- NE—*Display only.* Displays the NE ID.
- Endpoint—*Display only.* Displays the following details of the endpoint:
  - Shelf number
  - Slot number
  - Port number
- Link Number—*Display only.* Displays the link number.
- LSP Number—*Display only.* Displays the LSP number.
- Local Label—Displays the local label number assigned to the LSP. Click the cell to edit the value and click **Apply** to save the changes.
- Out Label—Displays the out label number assigned to the LSP. Click the cell to edit the value and click **Apply** to save the changes.
- Path—*Display only.* Displays the path, which can be Forward Path or Reverse Path, depending on the tunnel protection.

Step 9 Click **Provision**. An MPLS-TP tunnel is created and the details are displayed in the TP Tunnel Service table. If the details are not displayed in the TP Tunnel Service table, refresh the table.

For more information about the TP Tunnel Service table, see 13.4.2 Understanding the TP Tunnel Service Table, page 13-20. For more information about troubleshooting MPLS-TP tunnels, see 13.7.1 Understanding the MPLS-TP Tunnel Cross-Connections Table, page 13-51.

13.4.2 Understanding the TP Tunnel Service Table

For a description of MPLS-TP, see 13.1.2 What Is MPLS-TP?, page 13-3.

Manage MPLS-TP tunnels from the TP Tunnel Service table, which lists the MPLS-TP tunnels created. To launch the table, select an NE or a group and choose **Configuration > PT System > Display > TP Tunnel Table**.

The following topics describe what you can do in the TP Tunnel Service table:

- 13.4.3 How Do I View or Modify an MPLS-TP Tunnel?, page 13-20
- 13.4.4 How Do I Delete an MPLS-TP Tunnel?, page 13-23
- 13.4.5 How Do I Trace an MPLS-TP Tunnel?, page 13-23
- 13.4.6 How Do I Launch the Pseudowire Service Table from the TP Tunnel Service Table?, page 13-24

The following table describes the fields in the TP Tunnel Service table.

Table 13-4 Field Descriptions for the TP Tunnel Service Table

Field	Description
Name	Displays the name of the MPLS-TP tunnel.
Description	Displays the description of the MPLS-TP tunnel.
Discovery State	Displays the result of the Prime Optical consistency check. There are two discovery states: • Discovered—The Layer 2 service is marked as Discovered if the Prime Optical consistency check is successful. • Incomplete—The Layer 2 service is marked as Incomplete if the Prime Optical consistency check fails. The MPLS-TP tunnel is not an end-to-end connection.
Tunnel Key	Displays the tunnel key of the MPLS-TP tunnel. Tunnel key is the service identifier and consists of the following details: • Source node ID • Source tunnel number • Destination node ID • Destination tunnel number
Protection	Displays the protection status of the MPLS-TP tunnel: Protected or Unprotected.
Bandwidth Tx (Kbps)	Displays the bandwidth transmitted.
Bandwidth Rx (Kbps)	Displays the bandwidth received.

13.4.3 How Do I View or Modify an MPLS-TP Tunnel?

For descriptions of MPLS-TP and LSP, see the following sections:

- 13.1.2 What Is MPLS-TP?, page 13-3
- 13.1.7 What Is an LSP?, page 13-7

View or modify MPLS-TP tunnels using the Modify TP Tunnel wizard.

Note Some of the fields in the Modify TP Tunnel wizard are not editable.

Note When updated data is available, an information bar appears. Click **Refresh Data** to retrieve updated data.

To view or modify an MPLS-TP tunnel:

Step 1 From the TP Tunnel Service table, select the MPLS-TP tunnel that you want to view or modify. The row you select is highlighted in gray.

Step 2 In the TP Tunnel Service table, choose **Edit > View/Modify** (or click **View/Modify** in the toolbar). The Modify TP Tunnel wizard opens.

Step 3 In the General tab, there are two areas:

a. In the General area, view or modify the following fields:

Note If even one of the NEs forming the MPLS-TP tunnel is not in service or not reachable, you cannot modify the Name and Description fields.

- Name—Displays the name of the MPLS-TP tunnel. To modify the name, delete the previous entry. In the Name field, enter the new name.
- Circuit Status—*Display only.* Displays the circuit status: Discovered or Incomplete.
- State—*Display only.* Displays the operational state: Up or Down.
- Protection—*Display only.* Displays the protection status: Protected or Unprotected.
- Description—Displays the description of the MPLS-TP tunnel. To modify the description, delete the previous entry. In the Description field, enter the new description.
- Monitoring—*Display only.* Displays the monitoring status of the service:

  Monitored—All NEs involved are in service and reachable.

  Not monitored—All the NEs involved are out of service or unreachable.

  Partially monitored—The NEs involved are in a mixed status (some NEs are reachable and others are not).
- Service ID—*Display only.* Displays the service ID.
- Tunnel Key—*Display only.* Displays the tunnel key.
- Tx Bandwidth—*Display only.* Displays the bandwidth transmitted.
- Rx Bandwidth—*Display only.* Displays the bandwidth received.

b. In the Endpoints area, view or modify the following fields:

- Set Admin State on all Endpoints—From the drop-down list, select the admin state to be applied on all endpoints: Up and Down.
- Node—*Display only.* Displays the NE ID.

- Tunnel No.—*Display only.* Displays the tunnel number.
- Admin State—Displays the admin state. Click the cell to enable the drop-down list. From the drop-down list, select the admin state.
- Oper. State—*Display only.* Displays the operational state.
- BFD—Displays the BFD template. Click the cell to enable the drop-down list. From the drop-down list, select the BFD template.

c. (Optional) Click **Reset** to clear the changes made in the General tab.

d. Click **Apply** to apply the changes made in the General tab.

Step 4 In the LSP tab, do any of the following:

- Add LSP—Select an endpoint from the table and click the **Add LSP** button to add an LSP. You can add only two LSPs. See 13.4.6.1 How Do I Add an LSP?, page 13-25.
- Edit LSP—Select an endpoint from the table and click the **Edit LSP** button to modify the LSP. See 13.4.6.2 How Do I Modify an LSP?, page 13-26.
- Trace LSP—Select an endpoint from the table and click the **Trace LSP** button to open the Trace LSP window. See 13.4.6.3 How Do I Trace an LSP?, page 13-27.
- Delete LSP—This Delete LSP button is enabled only if there are two LSPs. Select an endpoint from the table and click the **Delete LSP** button to delete the LSP.

a. In the LSP tab, confirm the following details that are displayed in the table:

- Endpoints
- LSP number
- Service ID
- Direction
- Span number

b. (Optional) Click **Reset** to clear the changes made in the LSP tab.

c. Click **Apply** to apply the changes made in the LSP tab.

Step 5 In the Protection tab, confirm the details and perform actions where allowed:

Note The Protection tab is read-only if the protection status is Unprotected.

- Force lockout of—The working LSP or protect LSP can be locked out. Only one LSP can be locked out at a time. From the Force lockout of drop-down list, select an LSP. The options are Working LSP and Protect LSP.
- In the Protection tab, view or modify the following details:
  - LSP—*Display only.* Displays the LSP number.
  - Role—*Display only.* Displays the role of the LSP: Working or Protect.
  - State—*Display only.* Displays the state of the LSP.
  - Switch State—Displays the switch state of the LSP and nodes. Click the cell to enable the drop-down list. From the drop-down list, select the switch state.

a. (Optional) Click **Reset** to clear the changes made in the Protection tab.

b. Click **Apply** to apply the changes made in the Protection tab.

Step 6 In the Alarm tab, do the following:

- Click the **Sync Alarms** button to synchronize the alarms.
- Click the **Toggle Filter** button to filter the data displayed in the table.

13.4.4 How Do I Delete an MPLS-TP Tunnel?

Note If a topology change is made on the network (for example, if a new CPT node is added to the network using CTC), the state of one or more patchcords changes to invalid state in the Link table. To enable the correct TP tunnel discovery, you must delete all patchcords that change to the invalid state.

To delete an MPLS-TP tunnel:

Step 1 From the TP Tunnel Service table, select the MPLS-TP tunnel that you want to delete. The row you select is highlighted in gray.

Step 2 In the toolbar, click **Delete**.

Step 3 Click **OK** in the confirmation message box.

If one or more NEs forming the MPLS-TP tunnel are not in service or not reachable, the corresponding cross-connections are not deleted and an error message is displayed. However, the cross-connections on the reachable NEs are deleted.

13.4.5 How Do I Trace an MPLS-TP Tunnel?

Note When updated data is available, an information bar appears. Click **Refresh Data** to retrieve updated data.

To view a high-level trace or detailed trace for an MPLS-TP tunnel:

Step 1 From the TP Tunnel Service table, select the MPLS-TP tunnel for which you want to view a high-level trace or detailed trace. The row you select is highlighted in gray.

Step 2 Choose **Configuration > Trace** (or click the **Trace** tool). The TP Tunnel Trace window opens.

Step 3 From the TP Tunnel Trace window, do any of the following:

- Save—Choose **File > Save** to save your settings. Your settings become a custom map that does not affect the default map for the nodes currently displayed in the Network Map. Users who have not saved their custom map will still see the default map for those nodes.

- Save As Default—Choose **File > Save As Default** to save your settings (map background, node icons, and x and y coordinates) as the default settings. Your settings become the default map for the nodes currently displayed in the Network Map, and this default map is seen by users who have not saved their custom map for those nodes. There can be only one default setting per group of nodes in the Network Map.
- Exit—Choose **File > Exit** to close the TP Tunnel Trace window.
- Refresh Data—Choose **View > Refresh Data** (or click the **Refresh Data** tool) to refresh the data displayed in the TP Tunnel Trace window.
- Toggle Trace Level—Choose **View > Toggle Trace Level** (or click the **Switch Between High-Level and Detailed Trace** tool) to switch between high-level trace and detailed trace.
- Zoom In—Choose **Edit > Zoom In** (or click the **Zoom In** tool) to zoom in on an object in the map view. This tool increases the size of all of the graphic objects on the map.
- Zoom Out—Choose **Edit > Zoom Out** (or click the **Zoom Out** tool) to zoom out on the map view. This tool decreases the size of all of the graphic objects on the map.
- Zoom Area—Choose **Edit > Zoom Area** (or click the **Zoom Area** tool) to pan and zoom the view to a different region of the map. Hold down the left mouse button and use the Zoom Area box to highlight an area on the map. When you release the left mouse button, the zoom is applied on the selected area of the map.

Step 4 In high-level trace mode and detailed trace mode, do any of the following from the node:

- Right-click the node and click **Open NE Explorer** to open the NE explorer.
- Right-click the node and click **Open IOS Console** to launch the Cisco IOS CLI window.
- Right-click the node and click **Filter Alarm Table** to enable node-level filtering in the Alarm tab.

Step 5 To enable link-level filtering in the Alarm tab, right-click the link and click **Filter Alarm Table**.

Step 6 In detailed trace mode, do any of the following from the port:

- Right-click the port and click **Open Port** to open the property sheet for the corresponding card.
- Right-click the port and click **Filter Alarm Table** to enable port-level filtering in the Alarm tab.

Step 7 To view or modify an MPLS-TP tunnel, see 13.4.3 How Do I View or Modify an MPLS-TP Tunnel?, page 13-20.

13.4.6 How Do I Launch the Pseudowire Service Table from the TP Tunnel Service Table?

To launch the Pseudowire Service table from the TP Tunnel Service table:

Step 1 From the TP Tunnel Service table, select the TP tunnel.

Step 2 Choose **Configuration > Pseudowire Table** (or click **Open Pseudowire Table** in the toolbar). The Pseudowire Service table opens for the corresponding TP tunnel.

13.4.6.1 How Do I Add an LSP?

For a description of LSP, see 13.1.7 What Is an LSP?, page 13-7.

Add an LSP using the Add LSP wizard.

To add an LSP:

Step 1 In the TP Tunnel Service table, select an MPLS-TP tunnel and choose **Edit > View/Modify** (or click **View/Modify** in the toolbar). The Modify TP Tunnel wizard opens.

Step 2 In the Modify TP Tunnel wizard, go to the LSP tab.

Step 3 Select an endpoint from the table in the LSP tab and click the **Add LSP** button. The Add LSP wizard opens.

Step 4 In the Routing Preferences pane:

a. In the LSP Number area, enter the LSP number in the LSP field. By default, an incremental value is displayed. For example, if the previous LSP number was 245, the new LSP number is will be 246.

b. In the Routing Details area, confirm the details and perform actions where allowed:

Note The Automatic Routing and Use Required Nodes/Spans options are mutually exclusive.

- Check the **Automatic Routing** check box if you want the route to be calculated by the system.
- Check the **Use Required Nodes/Spans** check box if you want to manually select the route. Include or exclude NEs and links from the path.
- Review Labels—*Display only.* By default, this check box is checked.
- Protected Path—The Protected Path check box is disabled because when you add an LSP to an existing TP tunnel, the unprotected TP tunnel is automatically upgraded to a protected TP tunnel.

c. In the Node and Link Diversity Options area, choose one of the following radio buttons if the path is protected and if you want the working LSPs and protect LSPs to be routed using paths that traverse different NEs:

- **Node Diversity Required**—Select if the working LSPs and protect LSPs must be routed on different nodes.
- **Node Diversity Desired**—Select if you prefer the working LSPs and protect LSPs to be routed on different nodes.
- **Link Diversity Only**—Select if you want to route the working LSPs and protect LSPs on different links.

d. Click **Next**.

If you checked the Automatic Routing check box, go to Step 5. If you checked the Use Required Nodes/Spans check box, go to Step 6.

Step 5 In the Review Routing pane, the route calculated by the system is displayed. There are two areas:

a. In the NE Map area, the following details are displayed:

- Blue links are the working LSPs.
- Green link is the existing LSP.
- Red dotted link is the new LSP.

b. In the Routing Constraints area, the following details are displayed:

- Working—Displays the working spans and provides a summary of the links and ports used by the Layer 2 service.
- Protected—Displays the protected spans and provides a summary of the links and ports used by the Layer 2 service.

c. Click **Next**.

Step 6 If you chose to manually route, confirm the details and perform actions where allowed in the Review Routing pane:

a. NE Map—Do any of the following:

- Insert Node/Link—Select the NE or link from the NE map and click the **Insert Node/Link** button. The selected NE or link is added and is displayed in the Required NE/Links section.
- Exclude Node/Link—Select the NE or link from the NE map and click the **Exclude Node/Link** button. The selected NE or link is excluded and is displayed in the Excluded NE/Links section.
- Calculate Routing—The working LSPs and protect LSPs have independent routing constraints. Click **Calculate Routing** to calculate the routing.
- Clear—Click **Clear** to clear the routing constraints.

b. Routing Constraints—Confirm the details:

- LSP Constraints—Displays the LSP constraints.
- LSP Routing Summary—Displays the working spans and provides a summary of the LSPs used by the Layer 2 service.

c. Click **Next**.

Step 7 In the Review Labels pane, review the label settings that are automatically calculated by the system and click **Provision**. A new LSP is created and the details are displayed in a table in the LSP tab.

13.4.6.2 How Do I Modify an LSP?

For a description of LSP, see 13.1.7 What Is an LSP?, page 13-7.

Modify an LSP using the Modify LSP wizard.

Note Some of the fields in the Modify LSP wizard are not editable.

To modify an LSP:

Step 1 In the TP Tunnel Service table, select an MPLS-TP tunnel and choose **Edit > View/Modify** (or click **View/Modify** in the toolbar). The Modify TP Tunnel wizard opens.

Step 2 In the Modify TP Tunnel wizard, go to the LSP tab.

Step 3 Select an endpoint from the table in the LSP tab and click the **Edit LSP** button. The Modify LSP wizard opens.

Step 4 In the LSP tab, view or modify the following:

Note If even one of the NEs forming the LSP is not in service or not reachable, you cannot modify the Local Label and Out Label fields.

- LSP No.—*Display only.* Displays the LSP number.
- Role—*Display only.* Displays the role of the LSP: Working or Protected.
- Monitoring—*Display only.* Displays the monitoring status of the service:
  - Monitored—All NEs involved are in service and reachable.
  - Not monitored—All the NEs involved are out of service or unreachable.
  - Partially monitored—The NEs involved are in a mixed status (some NEs are reachable and others are not).
- In the Labels table, view or modify the following details:
  - Port—*Display only.* Displays the port number.
  - Link No.—*Display only.* Displays the number of the MPLS link used.
  - Local Label—Displays the local label number. Double-click the cell to edit the local label.
  - Out Label—Displays the out label number. Double-click the cell to edit the out label.
  - Path—*Display only.* Displays the path: Forward or Reverse.

a. (Optional) Click **Reset** to clear the changes made in the LSP tab.

b. Click **Apply** to apply the changes made in the LSP tab.

Step 5 In the Alarm tab, do any of the following:

- Click the **Sync Alarms** button to synchronize the alarms.
- Click the **Toggle Filter** button to filter the data displayed in the table.

13.4.6.3 How Do I Trace an LSP?

For a description of LSP, see 13.1.7 What Is an LSP?, page 13-7.

To view a high-level trace or detailed trace of an LSP:

Step 1 In the TP Tunnel Service table, select an MPLS-TP tunnel and choose **Edit > View/Modify** (or click **View/Modify** in the toolbar). The Modify TP Tunnel wizard opens.

Step 2 In the Modify TP Tunnel wizard, go to the LSP tab.

Step 3 From the table, select an endpoint and click the **Trace LSP** button. The Trace LSP window opens.

Step 4 From the Trace LSP window, do any of the following:

- Save—Choose **File > Save** to save your settings. Your settings become a custom map that does not affect the default map for the nodes currently displayed in the Network Map. Users who have not saved their custom map will still see the default map for those nodes.

- Save As Default—Choose **File > Save As Default** to save your settings (map background, node icons, and x and y coordinates) as the default settings. Your settings become the default map for the nodes currently displayed in the Network Map and this default map is seen by users who have not saved their custom map for those nodes. There can be only one default setting per group of nodes in the Network Map.
- Exit—Choose **File > Exit** to close the Trace LSP window.
- Refresh Data—Choose **View > Refresh Data** (or click the **Refresh Data** tool) to refresh the data displayed in the Trace LSP window
- Toggle Trace Level—Choose **View > Toggle Trace Level** (or click the **Switch Between High-Level and Detailed Trace** tool) to switch between high-level trace and detailed trace.
- Zoom In—Choose **Edit > Zoom In** (or click the **Zoom In** tool) to zoom in on an object in the map view. This tool increases the size of all of the graphic objects on the map.
- Zoom Out—Choose **Edit > Zoom Out** (or click the **Zoom Out** tool) to zoom out on the map view. This tool decreases the size of all of the graphic objects on the map.
- Zoom Area—Choose **Edit > Zoom Area** (or click the **Zoom Area** tool) to pan and zoom the view to a different region of the map. Hold down the left mouse button and use the Zoom Area box to highlight an area on the map. When you release the left mouse button, the zoom is applied on the selected area of the map.

Step 5 In high-level trace mode and detailed trace mode, do any of the following from the node:

- Right-click the node and click **Open NE Explorer** to open the NE explorer.
- Right-click the node and click **Open IOS Console** to launch the Cisco IOS CLI window.
- Right-click the node and click **Filter Alarm Table** to enable node-level filtering in the Alarm tab.

Step 6 To enable link-level filtering in the Alarm tab, right-click the link and click **Filter Alarm Table**.

Step 7 In detailed trace mode, do any of the following from the port:

- Right-click the port and click **Open Port** to open the property sheet for the corresponding card.
- Right-click the port and click **Filter Alarm Table** to enable port-level filtering in the Alarm tab.

Step 8 To modify an LSP, see 13.4.6.2 How Do I Modify an LSP?, page 13-26.

13.5 Pseudowires

This section describes the following:

- 13.5.1 How Do I Create a Pseudowire?, page 13-29
- 13.5.2 Understanding the PW Service Table, page 13-34
- 13.5.3 How Do I View or Modify a Pseudowire?, page 13-35
- 13.5.4 How Do I Delete a Pseudowire?, page 13-37
- 13.5.5 How Do I Trace a Pseudowire?, page 13-37

13.5.1 How Do I Create a Pseudowire?

For a description of pseudowire, see 13.1.4 What Is Pseudowire?, page 13-4.

Create a pseudowire using the Create Pseudowire Circuit wizard. The following table describes the launch points and the expected behavior for the Create Pseudowire Circuit wizard.

Table 13-5 Create Pseudowire Circuit Wizard Launch Points and Expected Behavior

Launch Points	Expected Behavior
Source NE node in the Domain Explorer or Subnetwork Explorer	Select the source ONS 15454 NE in the Domain Explorer or Subnetwork Explorer and choose **Configuration > PT System > Provision > Create Pseudowire**. The Create Pseudowire Circuit wizard opens. The source NE is preset to the selected source.
Source and destination NE nodes in the Domain Explorer or Subnetwork Explorer	Select the source ONS 15454 NE in the Domain Explorer or Subnetwork Explorer, right-click the NE, and choose **Create L2 Service > Create Pseudowire**. The pointer changes to a plus (+) symbol; select the destination NE. The destination NE must be in the same network partition as the source. The Create Pseudowire Circuit wizard opens. Source and destination NEs are preset to the selected source and destination. **Note** If you press the **Esc** key while the plus symbol is enabled, the operation is canceled and the plus symbol returns to a pointer.
Source and destination NE nodes in the Network Map	Select **Layer 2** as the layer rate from the drop-down list in the Network Map toolbar. Select the source ONS 15454 NE in the Network Map, right-click the NE, and choose **Create L2 Service > Create Pseudowire**. The pointer displays a line extending from the source NE; select the destination NE. The Create Pseudowire Circuit wizard opens. Source and destination NEs are preset to the selected source and destination NE nodes in the Network Map.

To create a pseudowire:

Step 1 Select a node for which to create a pseudowire and open the Create Pseudowire Circuit wizard. For an explanation of wizard launch points, see Table 13-5 on page 13-29.

Step 2 In the PW Circuit Attribute pane:

a. In the AC Global Attribute area, do the following:

- Enter the pseudowire name in the PW Name field.
- Enter a description for the pseudowire in the PW Description field.

- Select the pseudowire type from the PW Type drop-down list. The options are Ethernet and VLAN. The pseudowire type depends on the configuration of the node.
- Click the **Up** or **Down** radio button to select the pseudowire status.

b. In the Redundancy area, do the following:

- Check the **Enabled** check box to enable pseudowire redundancy, and then follow the subsequent steps. If you do not enable redundancy, go to c.
- Check the **Dual Homed Peer** check box to create a special case of pseudowire protection. If you check the Dual Homed Peer check box, the pseudowire will have an additional endpoint (T-PE3).
- In the Enable Delay field, enter the number of seconds that the backup pseudowire must wait to take over after the primary pseudowire goes down. The range is from 0 to 180 seconds.
- Click the **Delay** radio button. In the Delay field, enter the number of seconds that the primary pseudowire must wait after it becomes active to take over from the backup pseudowire. The range is from 0 to 180 seconds.
- Click the **Never** radio button to specify that the primary pseudowire never takes over from the backup pseudowire.

c. In the Bandwidth area, do the following:

- Enter the bandwidth in the Value field. Bandwidth determines the quality of service for the pseudowire.
- Click the appropriate radio button: Kbps, Mbps, or Gbps.

d. Click **Next**.

Step 3 (For unidirectional tunnels) In the PW Source TP pane, check the **Unmanaged** check box if the destination node is not a CPT node. In the Router ID field, enter the IP address of the unmanaged router.

Step 4 In the AC Endpoint area, identify the attachment circuit (AC) with the exact endpoint of the CPT System:

a. To choose a port to serve as an endpoint for the pseudowire, do the following:

- From the Shelf drop-down list, select the shelf.
- From the Slot drop-down list, select the slot.
- From the Port drop-down list, select the port.

b. To choose a channel group to serve as an endpoint for the pseudowire, do the following:

- Check the **Channel Group** check box.
- From the Channel Group drop-down list, select the channel group to serve as an endpoint.
- Click **Manual Load Balancing** to configure manual load balancing on the ports of the channel group. The Manual Load Balancing dialog box appears.
- In the Primary Load-Balanced Link area, select a port from the Primary drop-down list.
- In the Backup Load-Balanced Link area, select the required ports from the Available Ports list and click the right arrow button to move the ports to the Selected Ports list.
- Click **Apply**.

Step 5 In the AC Attributes area, select the AC type. From the drop-down list, select Port Based or VLAN Based. If you select VLAN Based as the AC type, the Configure EFP and Configure QoS buttons are enabled. You must complete the following steps before proceeding to Step 6:

- Configure EFP—See 13.5.1.1 How Do I Configure an EFP?, page 13-33.
- Configure QoS—See 13.5.1.2 How Do I Configure QoS?, page 13-34.

Step 6 In the PW Attributes area, do the following:

a. From the PW Class drop-down list, select the pseudowire class.

b. In the VC ID field, enter the VC ID used by the pseudowire.

c. Check the **Local Label** check box to specify that the pseudowire segment starting from T-PE1 is static. In the Local Label field, enter an unused static label. Otherwise, the pseudowire segment is dynamic.

If redundancy is not enabled, go to Step 8.

Step 7 In the PW Backup Attributes area, do the following:

a. From the PW Class drop-down list, select the backup pseudowire class.

b. In the VC ID field, enter the VC ID used by the backup pseudowire.

c. Check the **Local Label** check box to specify that the backup pseudowire segment starting from T-PE1 is static. In the Local Label field, enter an unused static label. Otherwise, the backup pseudowire segment is dynamic.

Step 8 Click **Next**.

Step 9 In the PW Destination TP pane:

a. From the Node drop-down list, select the destination node for the pseudowire and complete Step 3 to Step 8, as appropriate.

b. Click **Next**.

Step 10 In the PW Secondary Destination TP pane:

a. From the Node drop-down list, select the secondary destination node for the pseudowire and complete Step 3 to Step 8, as appropriate.

b. Click **Next**.

Step 11 In the PW Circuit Path pane, confirm the following details:

- NE Map—Displays the network topology. The blue link is the TP tunnel link used for routing.
- Spans—Displays the working spans in the Spans tab.

Step 12 In the PW Circuit Path pane, go to the Working S-PEs tab. The S-PE Nodes area is displayed.

Step 13 Click **Add**. The Add Node dialog box opens. Do the following:

a. (For unidirectional tunnels) Check the **Unmanaged** check box. In the Router ID field, enter the IP address of the unmanaged router.

b. (For bidirectional tunnels) From the Node drop-down list, select the node.

c. Click **Apply**. The node is added and is displayed in the SPE Nodes box.

d. (Optional) Select the node and click **Up** to move the selected node to the top of the SPE Nodes box.

e. (Optional) Select the node and click **Down** to move the selected node to the bottom of the SPE Nodes box.

f. (Optional) Select the node and click **Remove** to remove the node.

Step 14 In the Segment: 1 area, do the following:

a. In the Neighbor ID field, enter the neighbor ID.

b. From the PW Class drop-down list, select the PW class.

c. In the VC ID field, enter the VC ID.

d. (For static pseudowire segments) In the Local Label field, enter an unused static label.

e. Click **Advanced Configuration**. The Advanced Configuration dialog box opens. Do the following:

- (For dynamic pseudowire segments) In the MTU field, enter the MTU value.
- (For static pseudowire segments) Check the **Requested** check box and in the VLAN field, enter the VLAN ID.
- (For dynamic pseudowire segments) In the Interface Description field, enter the interface description.
- From the VCCV Flags drop-down list, select the VCCV flag.
- Click **Apply** to save the advanced configuration for Segment: 1.

Step 15 In the Segment: 2 area, do the following:

a. In the Neighbor ID field, enter the neighbor ID.

b. From the PW Class drop-down list, select the PW class.

c. In the VC ID field, enter the VC ID.

d. (For static pseudowire segments) In the Local Label field, enter an unused static label.

e. Click **Advanced Configuration**. The Advanced Configuration dialog box opens. Do the following:

- (For dynamic pseudowire segments) In the MTU field, enter the MTU value.
- (For static pseudowire segments) Check the **Requested** check box. In the VLAN field, enter the VLAN ID.
- (For dynamic pseudowire segments) In the Interface Description field, enter the interface description.
- From the VCCV Flags drop-down list, select the VCCV flag.
- Click **Apply** to save the advanced configuration for Segment: 2.

Step 16 Click **Provision**. A pseudowire service is created and the details are displayed in the PW Service table. If the details are not displayed in the PW Service table, refresh the table.

For more information about the PW Service table, see 13.5.2 Understanding the PW Service Table, page 13-34. For more information about troubleshooting pseudowires, see 13.7.2 Understanding the Pseudowire Cross-Connections Table, page 13-52.

13.5.1.1 How Do I Configure an EFP?

For a description of an EFP, see 13.1.9 What Is an EFP?, page 13-8.

Configure EFP using the EFP Configuration wizard.

To configure EFP:

Step 1 In the Outer VLAN Configuration area, do the following:

a. Select the type of VLAN tagging by clicking the appropriate radio button. The options are Double Tagged, Single Tagged, Untagged, Default, and Any.

b. From the TP ID drop-down list, select the TP ID. The options are dot1q, dot1ad, 0x9100, and 0x9200.

c. In the VLAN Tag field, enter the VLAN tag.

d. The Exact check box is enabled only if you select Single Tagged as the VLAN tagging type. Check the **Exact** check box if the EFP must match the exact VLAN tag.

Step 2 In the Inner VLAN Configuration area, do the following:

a. From the TP ID drop-down list, select the TP ID. The options are dot1q, dot1ad, 0x9100, and 0x9200.

b. In the VLAN Tag field, enter the VLAN tag.

Step 3 In the Rewrite Ingress Operation area, do the following:

a. From the Operation drop-down list, select the rewrite operation. The options are PUSH 1, PUSH 2, POP 1, POP 2, Translate 1-to-1, Translate 1-to-2, and Translate 2-to-1.

b. From the Outer VLAN TP ID drop-down list, select the outer VLAN TP ID. The options are dot1q, dot1ad, 0x9100, and 0x9200.

c. In the Outer VLAN Tag field, enter the outer VLAN tag.

d. From the Inner VLAN TP ID drop-down list, select the inner VLAN TP ID. The options are dot1q, dot1ad, 0x9100, and 0x9200.

e. In the Inner VLAN Tag field, enter the inner VLAN tag.

f. Check the **Symmetric** check box to enable the symmetric rewrite operation.

Step 4 In the Miscellaneous Configuration area, do the following in the Statistics area:

- In Prime Optical 9.6.3, the Ingress check box is checked by default and you cannot modify it.
- Check the **Egress** check box to enable egress statistics collection.

Step 5 Click **Apply** to save the EFP configuration.

13.5.1.2 How Do I Configure QoS?

Configure QoS using the QoS Configuration wizard.

To configure QoS:

Step 1 From the Table Map drop-down list, select the table map.

Step 2 From the Ingress drop-down list, select the ingress policy.

Step 3 From the Egress drop-down list, select the egress policy.

Step 4 Click **Apply** to apply the QoS configuration.

Step 5 (Optional) Click **Close** to the exit the QoS Configuration wizard.

13.5.2 Understanding the PW Service Table

For a description of pseudowire, see 13.1.4 What Is Pseudowire?, page 13-4.

View or modify a pseudowire using the PW Service table. The PW Service table lists the pseudowires created. To launch the table, select an NE or a group and choose **Configuration > PT System > Display > Pseudowire Table**.

The following topics describe what you can do in the PW Service table:

- 13.5.3 How Do I View or Modify a Pseudowire?, page 13-35
- 13.5.4 How Do I Delete a Pseudowire?, page 13-37
- 13.5.5 How Do I Trace a Pseudowire?, page 13-37

The following table describes the fields in the PW Service table.

Table 13-6 Field Descriptions for the PW Service Table

Field	Description
Name	Displays the name of the pseudowire.
Description	Displays the description of the pseudowire.
Discovery State	Displays the result of the Prime Optical consistency check. There are two discovery states: • Discovered—The Layer 2 service is marked as Discovered if the Prime Optical consistency check is successful. • Incomplete—The Layer 2 service is marked as Incomplete if the Prime Optical consistency check fails. The pseudowire is not an end-to-end connection.
Protection	Displays the protection status of the pseudowire: Protected or Unprotected.
Bandwidth (Kbps)	Displays the bandwidth.

13.5.3 How Do I View or Modify a Pseudowire?

For a description of pseudowire, see 13.1.4 What Is Pseudowire?, page 13-4.

View or modify pseudowire using the Modify PW Circuit wizard.

Note Some of the fields in the Modify PW Circuit wizard are not editable.

Note When updated data is available, an information bar appears. Click **Refresh Data** to retrieve updated data.

To view or modify a pseudowire:

Step 1 From the PW Service table, select the pseudowire that you want to view or modify. The row is highlighted in gray.

Step 2 In the PW Service table, choose **Edit > View/Modify** (or click **View/Modify** in the toolbar). The Modify PW Circuit wizard opens.

Step 3 In the General tab, view or modify the following fields:

Note If even one of the NEs forming the pseudowire is not in service or not reachable, you cannot modify the Name and Description fields.

a. Name—Displays the name of the pseudowire. To modify the name:
   - Delete the previous entry.
   - In the Name field, enter the new name.

b. Circuit Status—*Display only.* Displays the circuit status: Discovered or Incomplete.

c. State—*Display only.* Displays the state: Up or Down.

d. Description—Displays the description of the pseudowire. To modify the description:
   - Delete the previous entry.
   - In the Description field, enter the new description.

e. Monitoring—*Display only.* Displays the monitoring status of the service:
   - Monitored—All NEs involved are in service and reachable.
   - Not monitored—All the NEs involved are out of service or unreachable.
   - Partially monitored—The NEs involved are in a mixed status (some NEs are reachable and others are not).

f. Type—*Display only.* Displays the type of the pseudowire: Ethernet or VLAN.

g. Service ID—*Display only.* Displays the service ID.

h. No. of Spans—*Display only.* Displays the number of spans.

i. Redundancy—*Display only.* Displays whether redundancy is enabled or disabled.

j. Bandwidth (Kbps)—*Display only.* Displays the bandwidth.

k. (Optional) Click **Reset** to clear the changes made in the General tab.

l. Click **Apply** to apply the changes made in the General tab.

Step 4 In the T-PE Nodes tab, view or modify the following fields:

a. Set Admin State on all Endpoints—From the drop-down list, select the admin state to be applied on all endpoints: Up and Down.

b. Node—*Display only.* Displays the node ID.

c. Router ID—*Display only.* Displays the router ID.

d. Admin State—Displays the admin state. Click the cell to modify the admin state.

e. Oper. State—*Display only.* Displays the operational state.

f. (Optional) Click **Reset** to clear the changes made in the T-PE Nodes tab.

g. Click **Apply** to apply the changes made in the T-PE Nodes tab.

Step 5 In the AC Attributes tab (which is display only), confirm the following details that are displayed in a table:

- Node ID—Click the right arrow to expand the node ID row. You can view the following details:
  - Outer—Displays the outer VLAN tagging type.
  - Inner—Displays the inner VLAN tagging type.
  - Rewrite Ingress operation—Click the right arrow to expand the rewrite ingress operation row. You can view the Outer (symmetric) and Inner rows.
  - Statistics—Displays whether statistics collection is enabled or disabled.
- TP ID—Displays the TP ID.
- VLAN Tag—Displays the VLAN tag details.

Step 6 In the PW Attributes tab (which is display only), confirm the following details that are displayed in the table:

- Node—Displays the node details.
- Peer ID—Displays the IP address of the peer.
- PW Class—Displays the pseudowire class.
- VC ID—Displays the VC ID.
- Local Label—Displays the local label.
- Remote Label—Displays the remote label.

Step 7 In the QoS tab, view or modify the following fields:

a. Node—*Display only.* Displays the node details.

b. Table Map—Double-click the cell to modify the table map.

c. Ingress Policy—Double-click the cell to modify the ingress policy.

d. Egress Policy—Double-click the cell to modify the egress policy.

e. (Optional) Click **Reset** to clear the changes made in the QoS tab.

f. Click **Apply** to apply the changes made in the QoS tab.

Step 8 In the Alarm tab, do the following:

- Click the **Sync Alarms** button to synchronize the alarms.
- Click the **Toggle Filter** button to filter the data displayed in the table.

13.5.4 How Do I Delete a Pseudowire?

To delete a pseudowire:

Step 1 From the PW Service table, select the pseudowire that you want to delete. The row that you select is highlighted in gray.

Step 2 In the toolbar, click **Delete**.

Step 3 Click **OK** in the confirmation message box.

If one or more NEs forming the pseudowire are not in service or not reachable, the corresponding cross-connections are not deleted and an error message is displayed. However, the cross-connections on the reachable NEs are deleted.

13.5.5 How Do I Trace a Pseudowire?

Note When updated data is available, an information bar appears. Click **Refresh Data** to retrieve updated data.

To view a high-level trace or detailed trace for a pseudowire:

Step 1 From the PW Service table, select the pseudowire for which you want to view a high-level trace or detailed trace. The row you select is highlighted in gray.

Step 2 Choose **Configuration > Trace** (or click the **Trace** tool). The PW Circuit Trace window opens.

Step 3 From the PW Circuit Trace window, do any of the following:

- Save—Choose **File > Save** to save your settings. Your settings become a custom map that does not affect the default map for the nodes currently displayed in the Network Map. Users who have not saved their custom map will still see the default map for those nodes.
- Save As Default—Choose **File > Save As Default** to save your settings (map background, node icons, and x and y coordinates) as the default settings. Your settings become the default map for the nodes currently displayed in the Network Map, and this default map is seen by users who have not saved their custom map for those nodes. There can be only one default setting per group of nodes in the Network Map.
- Exit—Choose **File > Exit** to close the PW Circuit Trace window.
- Refresh Data—Choose **View > Refresh Data** (or click the **Refresh Data** tool) to refresh the data displayed in the PW Circuit Trace window.
- Toggle Trace Level—Choose **View > Toggle Trace Level** (or click the **Switch Between High-Level and Detailed Trace** tool) to switch between high-level trace and detailed trace.
- Zoom In—Choose **Edit > Zoom In** (or click the **Zoom In** tool) to zoom in on an object in the map view. This tool increases the size of all of the graphic objects on the map.

- Zoom Out—Choose **Edit > Zoom Out** (or click the **Zoom Out** tool) to zoom out on the map view. This tool decreases the size of all of the graphic objects on the map.
- Zoom Area—Choose **Edit > Zoom Area** (or click the **Zoom Area** tool) to pan and zoom the view to a different region of the map. Hold down the left mouse button and use the Zoom Area box to highlight an area on the map. When you release the left mouse button, the zoom is applied on the selected area of the map.

Step 4 In high-level trace mode and detailed trace mode, do any of the following from the node:

- Right-click the node and click **Open NE Explorer** to open the NE explorer.
- Right-click the node and click **Open IOS Console** to launch the IOS CLI window.
- Right-click the node and click **Filter Alarm Table** to enable node-level filtering in the Alarm tab.

Step 5 To enable link-level filtering in the Alarm tab, right-click the link and click **Filter Alarm Table**.

Step 6 In detailed trace mode, do any of the following from the port:

- Right-click the port and click **Open Port** to open the property sheet for the corresponding card.
- Right-click the port and click **Filter Alarm Table** to enable port-level filtering in the Alarm tab.

Step 7 To view or modify a pseudowire, see 13.5.3 How Do I View or Modify a Pseudowire?, page 13-35.

13.6 EVCs

This section describes the following:

- 13.6.1 How Do I Create an EVC?, page 13-38
- 13.6.2 Understanding the EVC Service Table, page 13-42
- 13.6.3 How Do I View or Modify an EVC?, page 13-43
- 13.6.4 How Do I Delete an EVC?, page 13-47
- 13.6.5 How Do I Trace an EVC?, page 13-47

13.6.1 How Do I Create an EVC?

For a description of EVC, see 13.1.5 What Is an EVC?, page 13-6.

Create an EVC using the Create EVC Circuit wizard. The following table describes the launch points and the expected behavior for the Create EVC Circuit wizard.

Table 13-7 Create EVC Circuit Wizard Launch Points and Expected Behavior

Launch Points	Expected Behavior
Source NE node in the Domain Explorer or Subnetwork Explorer	Select the source ONS 15454 NE in the Domain Explorer or Subnetwork Explorer and choose **Configuration > PT System > Provision > Create EVC**. The Create EVC Circuit wizard opens. The source NE is preset to the selected source.
Source and destination NE nodes in the Domain Explorer or Subnetwork Explorer	Select the source ONS 15454 NE in the Domain Explorer or Subnetwork Explorer, right-click the NE, and choose **Create L2 Service > Create EVC**. The pointer changes to a plus (+) symbol; select the destination NE. The destination NE must be in the same network partition as the source. The Create EVC Circuit wizard opens. Source and destination NEs are preset to the selected source and destination. **Note** If you press the **Esc** key while the plus symbol is enabled, the operation is canceled and the plus symbol returns to a pointer.
Source and destination NE nodes in the Network Map	Select **Layer 2** as the layer rate from the drop-down list in the Network Map toolbar. Select the source ONS 15454 NE in the Network Map, right-click the NE, and choose **Create L2 Service > Create EVC**. The pointer displays a line extending from the source NE; select the destination NE. The Create EVC Circuit wizard opens. Source and destination NEs are preset to the selected source and destination NE nodes in the Network Map.

To create an EVC:

Step 1 Select a node for which to create an EVC and open the Create EVC Circuit wizard. For an explanation of wizard launch points, see Table 13-7 on page 13-39.

Step 2 In the Info View pane:

a. In the EVC Details area, do the following:

- In the EVC Name field, enter the name of the EVC.
- In the EVC Description field, enter the description of the EVC.
- From the EVC Type drop-down list, select the EVC type: Private Line, Virtual Private Line, Private LAN, or Virtual Private LAN.
- From the State drop-down list, select the EFP state: Up and Down. This EFP state maps to the EFP admin state in the Cisco IOS software.
- Open Ended—Check the **Open Ended** check box to create an open-ended circuit.

b. In the Bandwidth area, do the following:

- In the Bandwidth Tx field, enter the bandwidth to be transmitted and click the appropriate radio button.
- In the Bandwidth Rx field, enter the bandwidth to be received and click the appropriate radio button.

c. Click **Next**.

Step 3 In the Source pane:

a. From the Node drop-down list, select the source node.

b. To choose a port to serve as the source EFP, confirm the details and perform actions where allowed:

- Shelf—Displays the shelf number, which is automatically retrieved from the NE.
- From the Slot drop-down list, select the slot.

- From the Port drop-down list, select the port. The ports populated in the drop-down list depend on the selected slot.

c. Check the **Channel Group** check box to select a channel group to serve as the source EFP.

- From the Channel Group drop-down list, select the channel group to serve as the source EFP.
- Click **Manual Load Balancing** to configure manual load balancing on the ports of the channel group. The Manual Load Balancing dialog box appears.
- In the Primary Load-Balanced Link area, from the Primary drop-down list, select a port.
- In the Backup Load-Balanced Link area, from the Available Ports list, select the required ports. Click the right arrow button to move the ports to the Selected Ports list.
- Click **Apply**.

d. Click **Next**.

Step 4 In the Destination pane:

a. From the Node drop-down list, select the destination node.

b. To choose a port to serve as the destination EFP, confirm the details and perform actions where allowed:

- Shelf—Displays the shelf number, which is automatically retrieved from the NE.
- From the Slot drop-down list, select the slot.
- From the Port drop-down list, select the port. The ports populated in the drop-down list depend on the selected slot.

c. Check the **Channel Group** check box to choose a channel group to serve as the destination EFP, and then do the following:

- From the Channel Group drop-down list, select the channel group to serve as the destination EFP.
- Click **Manual Load Balancing** to configure manual load balancing on the ports of the channel group. The Manual Load Balancing dialog box appears.
- In the Primary Load-Balanced Link area, from the Primary drop-down list, select a port.
- In the Backup Load-Balanced Link area, from the Available Ports list, select the required ports. Click the right arrow button to move the ports to the Selected Ports list.
- Click **Apply**.

d. Click **Next**.

Step 5 In the Routing pane:

Note The Automatic Routing and Use Required Nodes options are mutually exclusive.

- If you want the route to be calculated by the system, check the **Automatic Routing** check box. Go to Step 6.
- If you want to manually select the route. check the **Use Required Nodes/Spans** check box Go to Step 7.

Step 6 The Node Selection pane is display-only and shows the EVC route as a blue link. Click **Next** and go to Step 8.

Step 7 In the Node Selection pane:

a. To specify the nodes to include in (or exclude from) the EVC, modify, as needed, the options in the NE Map:

- Select the node and click the **Include Node/Link** button. The selected node is added and is displayed in the Required NEs/Links section.
- Select the node and click the **Exclude Node/Link** button. The selected node is excluded and is displayed in the Excluded NEs/Links section.
- The nodes have independent routing constraints. Click **Calculate Routing** to calculate the routing.
- Click **Clear** to clear the routing constraints.

b. The Routing Constraints area displays the following details:

- Constraints—The working NEs added using the Include Node/Link option and the working NEs excluded using the Exclude Node/Link option. To delete a node, right-click the node and click **Delete**.
- Spans Summary—A summary of the spans, links, and ports used by the Layer 2 service.

c. Click **Next**.

Step 8 In the Review EFP pane, specify the VLAN configuration for the EFPs:

a. Select an EFP in the EVC path:

- The node is populated in the Node drop-down list.
- The port is populated in the Port drop-down list.

b. In the Outer VLAN Configuration area, do the following:

- Select the type of VLAN tagging by clicking the appropriate radio button: Double Tagged, Single Tagged, Untagged, Default, or Any.
- From the TP ID drop-down list, select the TP ID: dot1q, dot1ad, 0x9100, or 0x9200.
- In the VLAN Tag field, enter the VLAN tag.
- The Exact check box is enabled only if you select the VLAN tagging type as Single Tagged. Check the **Exact** check box if the EFP must match the exact VLAN tag.

c. In the Inner VLAN Configuration area, do the following:

- From the TP ID drop-down list, select the TP ID: dot1q, dot1ad, 0x9100, or 0x9200.
- In the VLAN Tag field, enter the VLAN tag.

d. In the Rewrite Ingress Operation area, do the following:

- From the Operation drop-down list, select the rewrite operation: PUSH 1, PUSH 2, POP 1, POP 2, Translate 1-to-1, Translate 1-to-2, or Translate 2-to-1.
- From the Outer VLAN TP ID drop-down list, select the outer VLAN TP ID: dot1q, dot1ad, 0x9100, or 0x9200.
- In the Outer VLAN Tag field, enter the outer VLAN tag.
- From the Inner VLAN TP ID drop-down list, select the inner VLAN TP ID: dot1q, dot1ad, 0x9100, or 0x9200.
- In the Inner VLAN Tag field, enter the inner VLAN tag.
- Check the **Symmetric** check box to enable the symmetric rewrite operation.

e. In the Miscellaneous Configuration area, do the following:

- (For Multipoint EVCs) In the Split Horizon area, check the **Enable Split Horizon** check box to enable the split horizon for the EFPs.
- In the Statistics area, check the **Ingress** check box to enable ingress statistics collection, or check the **Egress** check box to enable egress statistics collection.

f. Click **Apply** to apply this configuration on the selected EFP.

g. Click **Apply All** to derive the EFP configuration on all the EFPs in the EVC path from the source UNI and network-to-network interface (NNI) EFP configuration.

The source node UNI and NNI EFP configuration that is specified are copied to the destination node UNI and NNI, respectively. The source node NNI configuration is copied to all the other EFPs. If the EVC has only one node, the Apply All button is disabled.

Step 9 Click **Provision**. An EVC is created and the details are displayed in the EVC Service table. If the details are not displayed in the EVC Service table, refresh the table.

For more information about the EVC Service table, see 13.6.2 Understanding the EVC Service Table, page 13-42. For more information about troubleshooting EVCs, see 13.7.3 Understanding the EVC Cross-Connections Table, page 13-54.

13.6.2 Understanding the EVC Service Table

For a description of EVC, see 13.1.5 What Is an EVC?, page 13-6.

View or modify an EVC from the EVC Service table. The EVC Service table lists the EVCs created. To launch the EVC Service table, select an NE or a group and choose **Configuration > PT System > Display > EVC Table**.

The following topics describe what you can do in the EVC Service table:

- 13.6.3 How Do I View or Modify an EVC?, page 13-43
- 13.6.4 How Do I Delete an EVC?, page 13-47
- 13.6.5 How Do I Trace an EVC?, page 13-47

The following table describes the fields in the EVC Service table.

Table 13-8 Field Descriptions for the EVC Service Table

Field	Description
Name	Displays the name of the EVC.
Description	Displays the description of the EVC.
Discovery State	Displays the result of the Prime Optical consistency check. There are two discovery states: • Discovered—The Layer 2 service is marked as Discovered if the Prime Optical consistency check is successful. • Incomplete—The Layer 2 service is marked as Incomplete if the Prime Optical consistency check fails. The EVC is not an end-to-end connection.
Operational State	Displays the operational state of the EVC circuit: Up or Down.

13.6.3 How Do I View or Modify an EVC?

For descriptions of EVC, EFP, bridge domain, IGMP snooping, and MVR, see the following sections:

- 13.1.5 What Is an EVC?, page 13-6
- 13.1.9 What Is an EFP?, page 13-8
- 13.1.10 What Is a Bridge Domain?, page 13-9
- 13.1.11 What Is IGMP Snooping?, page 13-9
- 13.1.12 What Is MVR?, page 13-10

View or modify an EVC using the Modify EVC Circuit wizard.

Note Some of the fields in the Modify EVC Circuit wizard are not editable.

Note When updated data is available, an information bar appears. Click **Refresh Data** to retrieve updated data.

To view or modify an EVC:

Step 1 Select a row in the EVC Service table. The row is highlighted in gray.

Step 2 In the EVC Service table, choose **Edit > View/Modify** (or click **View/Modify** in the toolbar). The Modify EVC Circuit wizard opens.

Step 3 In the General tab (which is display only), confirm the following details:

- Name—Displays the name of the EVC.
- Description—Displays the description of the EVC.
- Monitoring—*Display only.* Displays the monitoring status of the service:
  - Monitored—All NEs involved are in service and reachable.
  - Not monitored—All the NEs involved are out of service or unreachable.
  - Partially monitored—The NEs involved are in a mixed status (some NEs are reachable and others are not).
- Circuit Status—Displays the status of the EVC: Discovered or Incomplete.
- Service ID—Displays the service ID of the EVC.
- EVC Type—Displays the type of the EVC. The EVC type can be:
  - Ethernet Private Line
  - Ethernet Virtual Private Line
  - Ethernet Private LAN
  - Ethernet Virtual Private LAN

Step 4 In the Endpoint EFPs tab, the endpoints are listed in a table. Do any of the following:

a. Add Drop—Click the **Add Drop** button to add a drop. To add a drop, see 13.6.5.1 How Do I Add a Drop?, page 13-48.

b. Delete Drop—To delete a drop, do the following:
   - Select the endpoint from the Endpoints table.
   - Click the **Delete Drop** button.
   - Click **OK** in the confirmation message box. The endpoint is deleted.

c. (Optional) Click **Reset** to clear the changes made in the Endpoints tab.

d. Click **Apply** to apply the changes made in the Endpoints tab.

Step 5 In the EFP Configuration tab, view or modify the EFP configuration settings:

a. Node ID—*Display only.* Click the right arrow to expand the node ID row. You can view the following details:
   - Slot/Port—*Display only.* Displays the slot number and the port number.
   - Outer—*Display only.* Displays the outer VLAN tagging type.
   - Inner—*Display only.* Displays the inner VLAN tagging type.
   - Rewrite Ingress Operation—*Display only.* Displays the rewrite ingress operation status. Click the right arrow to expand the rewrite ingress operation row. You can view the Outer (symmetric) and Inner rows.
   - Statistics—*Display only.* Displays the type of statistics collection (ingress or egress).

b. TP ID—*Display only.* Displays the TP ID.

c. VLAN Tag—*Display only.* Displays the VLAN tag details.

d. Admin State—Displays the admin state. Click the cell to enable the drop-down list. From the drop-down list, select the admin state: Up and Down.

e. MLB—Displays the manual load balancing configuration. Click the cell to enable the drop-down list. From the drop-down list, select the manual load balancing configuration.

f. (Optional) Click **Reset** to clear the changes made in the EFP Configuration tab.

g. Click **Apply** to apply the changes made in the EFP Configuration tab.

Step 6 In the QoS tab, view or modify the QoS settings on individual EFPs and the node:

a. Node—*Display only.* Displays the node ID.

b. Ingress Policy—Displays the ingress policy applied. Click the cell to enable the drop-down list. All the available ingress QoS policies are populated in the drop-down list. From the drop-down list, select the ingress QoS policy that you want to apply.

c. Egress Policy—Displays the egress policy applied. Click the cell to enable the drop-down list. All the available egress QoS policies are populated in the drop-down list. From the drop-down list, select the egress QoS policy that you want to apply.

d. (Optional) Click **Reset** to clear the changes made in the QoS tab.

e. Click **Apply** to apply the changes made in the QoS tab.

Step 7 In the IGMP Snooping tab, view or modify the IGMP snooping settings:

a. In the Bridge Domain Configuration table, view or modify the following:
   - Bridge Domain—*Display only.* Displays the node ID, slot number, and port number.
   - In the IGMP Snooping column, check the check box to enable IGMP snooping on the corresponding bridge domain.

- In the Immediate Leave column, check the check box to enable immediate leave. When you enable IGMP immediate leave, IGMP snooping immediately removes a port when it detects an IGMP version 2 leave message on that port.
- In the Report Suppression column, check the check box to enable report suppression. When you enable report suppression, the bridge domain forwards only one IGMP report for each multicast query.

b. In the EFP Configuration table, do the following:

- Ethernet Flow Port—*Display only.* Displays the node ID, slot number, and port number.
- In the IGMP Static Router Port column, click the cell to enable the drop-down list. The options are True and False. To add a static router to the EFP, from the drop-down list, select True.

c. (Optional) Click **Reset** to clear the changes made in the IGMP Snooping tab.

d. Click **Apply** to apply the changes made in the IGMP Snooping tab.

Step 8 In the MAC Learning tab, view or modify the MAC learning settings:

a. In the Bridge Domain Configuration table, view or modify the following:

- Bridge Domain—*Display only.* Displays the node ID, slot number, and port number.
- In the MAC Learning column, check the check box to enable MAC learning on the corresponding bridge domain.
- In the Limit column, double-click the cell and enter the upper limit on the number of MAC addresses that reside in a bridge domain. The default MAC address limit on a bridge domain is 1000. The maximum MAC address limit on a bridge domain is 128000.

b. To add MAC addresses, do the following in the EFP Configuration table:

- Select a node.
- Click the **Add MAC Addresses** button. The Add Static MAC Addresses dialog box opens.

Note You can add multiple MAC addresses.

- In the MAC Address field, enter the MAC address.
- Click **Add**. The MAC address appears in the text box. To remove the MAC address, select the MAC address from the text box and click **Remove**.
- Click **Apply**. The MAC address is added.

c. To delete MAC addresses, do the following in the EFP Configuration table:

- Select a node.
- Click the **Clear MAC Addresses** button.
- Click **OK** in the confirmation text box. The MAC addresses are deleted.

d. In the EFP Configuration table, view or modify the following:

- Node—*Display only.* Displays the node ID.
- MAC Address—*Display only.* Displays the MAC address. To add MAC addresses, go to b. To delete MAC addresses, go to c.

e. (Optional) Click **Reset** to clear the changes made in the MAC Learning tab.

f. Click **Apply** to apply the changes made in the MAC Learning tab.

Step 9 In the MVR tab, view or modify the MVR settings:

a. In the Bridge Domain Configuration table, view or modify the following:

- Bridge Domain—*Display only.* Displays the node ID, slot number, and port number.
- In the MVR column, check the check box to enable MVR for the corresponding bridge domain.

b. In the EFP Configuration table, view or modify the following:

- Ethernet Flow Point—*Display only.* Displays the node ID, slot number, and port number.
- In the MVR Type column, click the cell to enable the drop-down list. The MVR Type can be None, Source, or Receiver for each EFP.
- In the Source Service ID column, click the cell, and from the drop-down list, select an MVR-enabled service.
- In the Immediate Leave column, check the check box to enable the drop-down list. The options are True and False. When you enable immediate leave, MVR immediately removes a port when it detects a leave message on that port.
- In the VLAN column, double-click the cell and enter the VLAN ID.

c. (Optional) Click **Reset** to clear the changes made in the MVR tab.

d. Click **Apply** to apply the changes made in the MVR tab.

Step 10 In the Alarm tab, do any of the following:

- Click the **Sync Alarms** button to synchronize the alarms.
- Click the **Toggle Filter** button to filter the data displayed in the table.

13.6.4 How Do I Delete an EVC?

To delete an EVC:

Step 1 From the EVC Service table, select the EVC that you want to delete. The row that you select is highlighted in gray.

Step 2 In the toolbar, click **Delete**.

Step 3 Click **OK** in the confirmation message box.

If one or more NEs forming the EVC are not in service or not reachable, the corresponding cross-connections are not deleted and an error message is displayed. However, the cross-connections on the reachable NEs are deleted.

13.6.5 How Do I Trace an EVC?

Note When updated data is available, an information bar appears. Click **Refresh Data** to retrieve updated data.

To view a high-level trace or detailed trace for an EVC:

Step 1 From the EVC Service table, select the EVC for which you want to view a high-level trace or detailed trace. The row that you select is highlighted in gray.

Step 2 Choose **Configuration > Trace** (or click the **Trace** tool). The EVC Circuit Trace window opens.

Step 3 From the EVC Circuit Trace window, do any of the following:

- Save—Choose **File > Save** to save your settings. Your settings become a custom map that does not affect the default map for the nodes currently displayed in the Network Map. Users who have not saved their custom map will still see the default map for those nodes.
- Save As Default—Choose **File > Save As Default** to save your settings (map background, node icons, and x and y coordinates) as the default settings. Your settings become the default map for the nodes currently displayed in the Network Map, and this default map is seen by users who have not saved their custom map for those nodes. There can be only one default setting per group of nodes in the Network Map.
- Exit—Choose **File > Exit** to close the EVC Circuit Trace window.
- Refresh Data—Choose **View > Refresh Data** (or click the **Refresh Data** tool) to refresh the data displayed in the EVC Circuit Trace window.
- Toggle Trace Level—Choose **View > Toggle Trace Level** (or click the **Switch Between High-Level and Detailed Trace** tool) to switch between high-level trace and detailed trace.
- Zoom In—Choose **Edit > Zoom In** (or click the **Zoom In** tool) to zoom in on an object in the map view. This tool increases the size of all of the graphic objects on the map.
- Zoom Out—Choose **Edit > Zoom Out** (or click the **Zoom Out** tool) to zoom out on the map view. This tool decreases the size of all of the graphic objects on the map.

- Zoom Area—Choose **Edit > Zoom Area** (or click the **Zoom Area** tool) to pan and zoom the view to a different region of the map. Hold down the left mouse button and use the Zoom Area box to highlight an area on the map. When you release the left mouse button, the zoom is applied on the selected area of the map.

Step 4 In high-level trace mode and detailed trace mode, do any of the following from the node:

- Right-click the node and click **Open NE Explorer** to open the NE explorer.
- Right-click the node and click **Open IOS Console** to launch the Cisco IOS CLI window.
- Right-click the node and click **Filter Alarm Table** to enable node-level filtering in the Alarm tab.

Step 5 To enable link-level filtering in the Alarm tab, right-click the link and click **Filter Alarm Table**.

Step 6 In detailed trace mode, do any of the following from the port:

- Right-click the port and click **Open Port** to open the property sheet for the corresponding card.
- Right-click the port and click **Filter Alarm Table** to enable port-level filtering in the Alarm tab.

Step 7 To view or modify an EVC, see 13.6.3 How Do I View or Modify an EVC?, page 13-43.

13.6.5.1 How Do I Add a Drop?

Add a drop using the Add Drop wizard.

To add a drop:

Step 1 Complete Step 1 through Step 3 in 13.6.3 How Do I View or Modify an EVC?, page 13-43.

Step 2 Click the **Add Drop** button. The Add Drop wizard launches.

Step 3 In the Destination pane, do the following:

a. From the Node drop-down list, select the destination node.

b. To choose a port to serve as the destination EFP, confirm the details and perform actions where allowed:

- Shelf—Displays the shelf number, which is automatically retrieved from the NE.
- From the Slot drop-down list, select the slot.
- From the Port drop-down list, select the port. The ports populated in the drop-down list depend on the selected slot.

c. Check the **Channel Group** check box to choose a channel group to serve as the destination EFP.

- From the Channel Group drop-down list, select the channel group to serve as the destination EFP.
- Click **Manual Load Balancing** to configure manual load balancing on the ports of the channel group. The Manual Load Balancing dialog box appears.
- In the Primary Load-Balanced Link area, from the Primary drop-down list, select a port.
- In the Backup Load-Balanced Link area, from the Available Ports list, select the required ports. Click the right arrow button to move the ports to the Selected Ports list.
- Click **Apply**.

d. Click **Next**.

Step 4 In the Routing pane, do the following:

Note The Automatic Routing and Use Required Nodes options are mutually exclusive.

- If you want the route to be calculated by the system, check the **Automatic Routing** check box. Go to Step 5.
- If you want to manually select the route, check the **Use Required Nodes/Spans** check box. Include or exclude NEs and links from the path. Go to Step 6.

Step 5 The Node Selection pane is display-only and shows the EVC route as a blue link. Click **Next** and go to Step 7.

Step 6 In the Node Selection pane, do any of the following:

a. To specify the nodes to include in (or exclude from) the EVC, modify, as needed, the options in the NE Map:
   - Select the node and click the **Include Node/Link** button. The selected node is added and is displayed in the Required NEs/Links section.
   - Select the node and click the **Exclude Node/Link** button. The selected node is excluded and is displayed in the Excluded NEs/Links section.
   - The nodes have independent routing constraints. Click **Calculate Routing** to calculate the routing.
   - Click **Clear** to clear the routing constraints.

b. The Routing Constraints area displays the following details:
   - Working—The working NEs added using the Include Node/Link option and the working NEs excluded using the Exclude Node/Link option. To delete a node, right-click the node and click **Delete**.
   - Spans Summary—A summary of the spans, links, and ports used by the Layer 2 service.

c. Click **Next**.

Step 7 In the Review EFP pane, specify the VLAN configuration for the EFPs:

a. Select an EFP in the EVC path:
   - The node is populated in the Node drop-down list.
   - The port is populated in the Port drop-down list.

b. In the Outer VLAN Configuration area, do the following:
   - Select the type of VLAN tagging by clicking the appropriate radio button: Double Tagged, Single Tagged, Untagged, Default, or Any.
   - From the TP ID drop-down list, select the TP ID: dot1q, dot1ad, 0x9100, or 0x9200.
   - In the VLAN Tag field, enter the VLAN tag.
   - The Exact check box is enabled only if you select the VLAN tagging type as Single Tagged. Check the **Exact** check box to match the exact tag.

c. In the Inner VLAN Configuration area, do the following:
   - From the TP ID drop-down list, select the TP ID: dot1q, dot1ad, 0x9100, or 0x9200.
   - In the VLAN Tag field, enter the VLAN tag.

d. In the Rewrite Ingress Operation area, do the following:

- From the Operation drop-down list, select the rewrite operation: PUSH 1, PUSH 2, POP 1, POP 2, Translate 1-to-1, Translate 1-to-2, or Translate 2-to-1.
- From the Outer VLAN TP ID drop-down list, select the outer VLAN TP ID: dot1q, dot1ad, 0x9100, or 0x9200.
- In the Outer VLAN Tag field, enter the outer VLAN tag.
- From the Inner VLAN TP ID drop-down list, select the inner VLAN TP ID: dot1q, dot1ad, 0x9100, or 0x9200.
- In the Inner VLAN Tag field, enter the inner VLAN tag.
- Check the **Symmetric** check box to enable the symmetric rewrite operation.

e. In the Miscellaneous Configuration area, do the following:

- (For Multipoint EVCs) In the Split Horizon area, check the **Enable Split Horizon** check box to enable the split horizon for the EFPs.
- In the Statistics area, check the **Ingress** check box to enable ingress statistics collection or check the **Egress** check box to enable egress statistics collection.

f. Click **Apply** to apply this configuration on the selected EFP.

g. Click **Apply All** to derive the EFP configuration on all the EFPs in the EVC path from the source UNI and network-to-network interface (NNI) EFP configuration.

The source node UNI and NNI EFP configuration that is specified are copied to the destination node UNI and NNI, respectively. The source node NNI configuration is copied to all the other EFPs. If the EVC has only one node, the Apply All button is disabled.

Step 8 Click **Provision**. An endpoint is created and the details are displayed in the Endpoints table in the Endpoint EFPs tab.

13.7 Understanding Advanced Troubleshooting Options

Use the Advanced Troubleshooting options to troubleshoot Layer 2 services. In Prime Optical, the PT System Advanced Troubleshooting options are visible only to SuperUser and NetworkAdmin users.

Choose **Configuration > PT System > Advanced Troubleshooting**. The following options are available:

- TP Tunnel Cross-Connections Table—Allows you to launch the TP Tunnel Cross-Connections table.
- Pseudowire Cross-Connections Table—Allows you to launch the Pseudowire Cross-Connections table.
- EVC Cross-Connections Table—Allows you to launch the EVC Cross-Connections table.
- Refresh L2 Service Data Discovery—Allows you to refresh Layer 2 services.

From the TP Tunnel Cross-Connections table, Pseudowire Cross-Connections table, and EVC Cross-Connections table, you can identify whether the Operational State or Admin State of a particular service is Down. The Discovery State column displays whether the discovery is successful or not. You can perform the following operations from these tables:

- Rediscover
- Refresh

- Delete
- Open the corresponding service table

The following topics describe the Advanced Troubleshooting options:

- 13.7.1 Understanding the MPLS-TP Tunnel Cross-Connections Table, page 13-51
- 13.7.2 Understanding the Pseudowire Cross-Connections Table, page 13-52
- 13.7.3 Understanding the EVC Cross-Connections Table, page 13-54
- 13.7.4 Understanding the Refresh L2 Service Data Discovery Option, page 13-55

13.7.1 Understanding the MPLS-TP Tunnel Cross-Connections Table

Step 1 Select an NE or a group.

Step 2 Choose **Configuration > PT System > Advanced Troubleshooting > TP Tunnel Cross-Connections Table**. The MPLS-TP Tunnel Cross-Connections table opens.

Step 3 From the MPLS-TP Tunnel Cross-Connections table, do any of the following:

- Delete—To delete an MPLS-TP cross-connection:
  - Select the MPLS-TP cross-connection that you want to delete. The row you select is highlighted in gray.
  - Choose **Edit > Delete**.
  - Click **OK** in the confirmation message box. The MPLS-TP cross-connection is deleted.
- Open TP Tunnel Table—To cross-launch the TP Tunnel Service table:
  - Select the MPLS-TP cross-connection for which you want to cross-launch the TP Tunnel Service table. The row you select is highlighted in gray.
  - Choose **Edit > Open TP Tunnel Table** (or click **Open TP Tunnel Table** in the toolbar). The TP Tunnel Service table for the selected MPLS-TP cross-connection opens.
- Rediscover—To rediscover an MPLS-TP cross-connection:
  - Select the MPLS-TP cross-connection that you want to rediscover. The row you select is highlighted in gray.
  - Choose **Configuration > Rediscover** (or click **Rediscover** in the toolbar).
  - Click **OK** in the confirmation message box. The data for the selected MPLS-TP cross-connection is deleted from the Prime Optical database and then rediscovered from the NE.
- Update—To force polling on an MPLS-TP cross-connection:
  - Select the MPLS-TP cross-connection on which you want to force polling on. The row you select is highlighted in gray.
  - Choose **Configuration > Update** (or click **Update** in the toolbar). Polling is forced on the selected MPLS-TP cross-connection. If there are any changes, the selected MPLS-TP cross-connection is updated.

The following table describes the fields in the MPLS-TP Tunnel Cross-Connections table.

Table 13-9 Field Descriptions for the MPLS-TP Tunnel Cross-Connections Table

Field	Description
Service Name	Displays the name of the MPLS-TP tunnel cross-connection.
Description	Displays the description of the MPLS-TP tunnel cross-connection.
Service ID	Displays the service ID of the MPLS-TP tunnel cross-connection.
Node ID	Displays the node ID of the MPLS-TP tunnel cross-connection.
Discovery State	Displays the discovery state of the MPLS-TP tunnel cross-connection. Values are: • Clean—Discovery is successful and Prime Optical was able to save the data in the database. • Dirty—Prime Optical was unable to save some of the data in the database.
Operational State	Displays the operational state of the MPLS-TP tunnel cross-connection: Up or Down.
Admin State	Displays the admin state of the MPLS-TP tunnel cross-connection: Up or Down.
Cross-Connection Type	Displays the cross-connection type of the MPLS-TP tunnel: Midpoint or Endpoint.

13.7.2 Understanding the Pseudowire Cross-Connections Table

Step 1 Select an NE or a group.

Step 2 Choose **Configuration > PT System > Advanced Troubleshooting > Pseudowire Cross-Connections Table**. The Pseudowire Cross-Connections table opens.

Step 3 From the Pseudowire Cross-Connections table, do any of the following:

- Delete—To delete a pseudowire cross-connection:
  - Select the pseudowire cross-connection that you want to delete. The row you select is highlighted in gray.
  - Choose **Edit > Delete**.
  - Click **OK** in the confirmation message box. The pseudowire cross-connection is deleted.
- Open Pseudowire Table—To cross-launch the PW Service table:
  - Select the pseudowire cross-connection for which you want to cross-launch the PW Service table. The row you select is highlighted in gray.
  - Choose **Edit > Open Pseudowire Table** (or click **Open Pseudowire Table** in the toolbar). The PW Service table for the selected pseudowire cross-connection opens.
- Rediscover—To rediscover a pseudowire cross-connection:
  - Select the pseudowire cross-connection that you want to rediscover. The row you select is highlighted in gray.
  - Choose **Configuration > Rediscover** (or click **Rediscover** in the toolbar).

  - Click **OK** in the confirmation message box. The data for the selected pseudowire cross-connection is deleted from the Prime Optical database and then rediscovered from the NE.
- Update—To force polling on a pseudowire cross-connection:
  - Select the pseudowire cross-connection on which you want to force polling on. The row you select is highlighted in gray.
  - Choose **Configuration > Update** (or click **Update** in the toolbar). Polling is forced on the selected pseudowire cross-connection. If there are any changes, the selected pseudowire cross-connection is updated.

The following table describes the fields in the Pseudowire Cross-Connections table.

Table 13-10 Field Descriptions for the Pseudowire Cross-Connections Table

Field	Description
Service Name	Displays the name of the pseudowire cross-connection.
Description	Displays the description of the pseudowire cross-connection.
Service ID	Displays the service ID of the pseudowire cross-connection.
Node ID	Displays the node ID of the pseudowire cross-connection.
Discovery State	Displays the discovery state of the pseudowire cross-connection. Values are: • Clean—Discovery is successful and Prime Optical was able to save the data in the database. • Dirty—Prime Optical was unable to save some of the data in the database.
Operational State	Displays the operational state of the pseudowire cross-connection: Up or Down.
Admin State	Displays the admin state of the pseudowire cross-connection: Up or Down.
Cross-Connection Type	Displays the cross-connection type of the pseudowire: PW Midpoint or PW Endpoint.

13.7.3 Understanding the EVC Cross-Connections Table

Step 1 Select an NE or a group.

Step 2 Choose **Configuration > PT System > Advanced Troubleshooting > EVC Cross-Connections Table**. The EVC Cross-Connections table opens.

Step 3 From the EVC Cross-Connections table, do any of the following:

- Delete—To delete an EVC cross-connection:
  - Select the EVC cross-connection that you want to delete. The row you select is highlighted in gray.
  - Choose **Edit > Delete**.
  - Click **OK** in the confirmation message box. The EVC cross-connection is deleted.
- Open EVC Table—To cross-launch the EVC Service table:
  - Select the EVC cross-connection for which you want to cross-launch the EVC Service table. The row you select is highlighted in gray.
  - Choose **Edit > Open EVC Table** (or click **Open EVC Table** in the toolbar). The EVC Service table for the selected EVC cross-connection opens.
- Rediscover—To rediscover an EVC cross-connection:
  - Select the EVC cross-connection that you want to rediscover. The row you select is highlighted in gray.
  - Choose **Configuration > Rediscover** (or click **Rediscover** in the toolbar).
  - Click **OK** in the confirmation message box. The data for the selected EVC cross-connection is deleted from the Prime Optical database and then rediscovered from the NE.
- Update—To force polling on an EVC cross-connection:
  - Select the EVC cross-connection on which you want to force polling on. The row you select is highlighted in gray.
  - Choose **Configuration > Update** (or click **Update** in the toolbar). Polling is forced on the selected EVC cross-connection. If there are any changes, the selected EVC cross-connection is updated.

The following table describes the fields in the EVC Cross-Connections table.

Table 13-11 Field Descriptions for the EVC Cross-Connections Table

Field	Description
Service Name	Displays the name of the EVC cross-connection.
Description	Displays the description of the EVC cross-connection.
Service ID	Displays the service ID of the EVC cross-connection.
Node ID	Displays the node ID of the EVC cross-connection.

Table 13-11 Field Descriptions for the EVC Cross-Connections Table (continued)

Field	Description
Discovery State	Displays the discovery state of the EVC cross-connection. Values are: • Clean—Discovery is successful and Prime Optical was able to save the data in the database. • Dirty—Prime Optical was unable to save some of the data in the database.
Operational State	Displays the operational state of the EVC cross-connection: Up or Down.
Admin State	Displays the admin state of the EVC cross-connection: Up or Down.
Service Type	Displays the service type of the EVC cross-connection.

13.7.4 Understanding the Refresh L2 Service Data Discovery Option

To refresh all the Layer 2 services, choose **Configuration > PT System > Advanced Troubleshooting > Refresh L2 Service Data Discovery**.

The Refresh L2 Service Data Discovery option allows you retrieve the current data from the Prime Optical database. After you click Refresh L2 Service Data Discovery, the following tables are updated with the current data from the Prime Optical database:

- TP Tunnel Service Table
- PW Service Table
- EVC Service Table
- TP Tunnel Cross-Connections Table
- Pseudowire Cross-Connections Table
- EVC Cross-Connections Table

13.8 CPT System QoS

This section describes the following:

- 13.8.1 How Do I Create and Manage QoS Objects?, page 13-55
- 13.8.2 How Do I Provision QoS Objects in the CPT System?, page 13-66

13.8.1 How Do I Create and Manage QoS Objects?

For a description of the CPT System QoS, see 13.1.6 What Is CPT System QoS?, page 13-7.

The PT System QoS Editor allows you to create and manage QoS objects in the Prime Optical database. To launch the PT System QoS Editor, choose **Configuration > PT System > Provision > QoS Editor**.

The following table lists the tabs and the function of each option in the PT System QoS Editor.

Table 13-12 PT System QoS Editor Tabs and Options

Tab	Options	Function
Class Maps—See 13.8.1.1 How Do I Create and Manage Class Maps?, page 13-57	Add	Allows you to add a class map.
	Remove	Allows you to delete a class map.
	Edit	Allows you to edit a class map.
	Matching Attributes area	Displays the matching attributes and the value for each attribute.
Actions—See 13.8.1.2 How Do I Add and Manage Actions?, page 13-58	Add	Allows you to add an action.
	Remove	Allows you to delete an action.
	Edit	Allows you to edit an action.
	Traffic Marking	Allows you to create and manage traffic markers.
	Ingress Policing	Allows you to configure ingress policing. Policing provides a means to limit the amount of bandwidth that the traffic traveling through a given port or a service instance can use. Policing works by defining an amount of data that the router is willing to receive in kilobytes per second (KB/s). When policing is configured, it limits the flow of data through the router by dropping or marking down the QoS value. When policing is configured, traffic is placed in one of the following categories: • Conform • Exceed • Violate You can decide the action to be applied from the following three categories: • Packets that conform can be configured to be transmitted. • Packets that exceed can be configured to be sent with a decreased priority. • Packets that violate can be configured to be dropped.
	Egress Shaping	Allows you to configure egress shaping. Traffic shaping allows you to control the traffic going out of an interface in order to match its flow to the speed of the remote target interface and to ensure that the traffic conforms to policies contracted for it. You can use shaping to meet downstream requirements, thereby eliminating bottlenecks in topologies with data-rate mismatches. Shaping is the process of delaying packets in queues to make them conform to a specified profile.
Policy Maps—See 13.8.1.3 How Do I Create and Manage Policy Maps?, page 13-62	Add	Allows you to add a policy map.
	Remove	Allows you to delete a policy map.
	Edit	Allows you to edit a policy map.

Table 13-12 PT System QoS Editor Tabs and Options (continued)

Tab	Options	Function
Table Maps—See 13.8.1.4 How Do I Create and Manage Table Maps?, page 13-64	Add	Allows you to add a table map.
	Remove	Allows you to delete a table map.
	Edit	Allows you to edit a table map.
	Attributes area	Displays the attributes and the value for each attribute.

13.8.1.1 How Do I Create and Manage Class Maps?

Create and manage class maps using the PT System QoS Editor. You can perform the following operations:

- Create a class map—13.8.1.1.1 How Do I Create a Class Map?, page 13-57
- Edit a class map—13.8.1.1.2 How Do I Edit a Class Map?, page 13-58
- Delete a class map—13.8.1.1.3 How Do I Delete a Class Map?, page 13-58

13.8.1.1.1 How Do I Create a Class Map?

To create a class map:

Step 1 Choose **Configuration > PT System > Provision > QoS Editor**. The PT System QoS Editor opens.

Step 2 Go to the Class Maps tab.

Step 3 Click the **Add a Class Map** button. The Add Class Map dialog box opens. Do the following:

a. In the Class Map Name field, enter the name of the class map.

b. Select the match criteria by clicking one of the following radio buttons:

- Match All—If you want the criteria to match all rules from c to g.

Note If you select the Match All radio button, the mpls experimental topmost check box is disabled because it is not applicable.

- Match Any—If you want the criteria to match any rule from c to g.

Note You can enter multiple values in the cos, mpls experimental, qos group, vlan, ip dscp, and ip precedence fields. The values that you enter must be separated by a blank space.

c. Check the check box preceding the cos field and enter a value from 0 to 7 in the cos field.

d. Check the check box preceding the mpls experimental topmost field and enter a value from 0 to 7 in the mpls experimental topmost field.

e. Check the check box preceding the qos group field and enter a value from 0 to 9 in the qos group field.

f. Check the check box preceding the vlan field; then, enter a value from 1 to 4094 or ranges of VLANs [1-4094]. You can enter up to 30 values.

g. Check the check box preceding the ip dscp and ip precedence drop-down list:

- From the drop-down list, select ip dscp and enter a value from 0 to 63 in the ip dscp field.
- From the drop-down list, select ip precedence and enter a value from 0 to 7 in the ip precedence field.

Step 4 Click **OK**. The class map is created. The following details appear in a table in the Class Maps tab:

- Class Map—Displays the class map name.
- Match Criteria—Displays the match criteria you selected.
- Matching Attributes:
  - Match Attribute—Displays the attribute.
  - Attribute Value—Displays the value of the attribute.

13.8.1.1.2 How Do I Edit a Class Map?

To edit a class map:

Step 1 Choose **Configuration > PT System > Provision > QoS Editor**. The PT System QoS Editor opens.

Step 2 Go to the Class Maps tab.

Step 3 Select the class map that you want to edit.

Step 4 Click the **Edit a Class Map** button. The Edit Class Map dialog box opens.

Step 5 Edit the class map details, as appropriate.

Step 6 Click **OK**. The updated details appear in the Class Maps tab.

13.8.1.1.3 How Do I Delete a Class Map?

To delete a class map:

Step 1 Choose **Configuration > PT System > Provision > QoS Editor**. The PT System QoS Editor opens.

Step 2 Go to the Class Maps tab.

Step 3 Select the class map that you want to delete.

Step 4 Click the **Remove a Class Map** button.

Step 5 Click **OK** in the confirmation message box. The class map is deleted.

13.8.1.2 How Do I Add and Manage Actions?

Add and manage actions using the PT System QoS Editor. You can perform the following operations:

- Add an action—13.8.1.2.1 How Do I Add an Action?, page 13-59.
- Edit an action—13.8.1.2.2 How Do I Edit an Action?, page 13-62.
- Delete an action—13.8.1.2.3 How Do I Delete an Action?, page 13-62.

13.8.1.2.1 How Do I Add an Action?

To add an action:

Step 1 Choose **Configuration > PT System > Provision > QoS Editor**. The PT System QoS Editor opens.

Step 2 Go to the Actions tab.

Step 3 Click the **Add an Action** button. The Add Action dialog box opens.

Step 4 In the Action Name field, enter the name of the action. A valid name contains from 1 to 50 characters. Add the following:

- Traffic marker—To create a traffic marker, go to Step 5.
- Ingress policy—To create an ingress policy, go to Step 6.
- Egress shaping policy—To create an egress policy, go to Step 10.

Step 5 Select the Traffic Marking tab and click the **Add a Traffic Marker** button. The Add Traffic Marker dialog box opens. Do the following:

a. From the Attribute drop-down list, select the attribute. See Table 13-13.

b. In the Value field, enter the value for the attribute you selected. See Table 13-13.

Table 13-13 Attribute and Value

Attribute	Value
cos	0 to 7
ip precedence	0 to 7
ip dscp	0 to 63
qos group	0 to 9
discard class	0 to 2

c. Click **OK**. The new traffic marker appears in the Traffic Marking tab.

Step 6 Go to the Ingress Policing tab and do the following:

a. From the Rate drop-down list, select the rate. The options are:

- Single-Rate Dual Color (CIR)
- Single-Rate Dual Color (PIR)
- Single-Rate Three Color
- Dual-Rate Three Color

b. Enter values for any of the following options that remain after you select a rate. (The following options are enabled or disabled depending on the rate you select. For example, if you select Single-Rate Dual Color (CIR) as the rate, the Peak Info Rate and Peak Burst Size options are disabled.)

- In the Committed Info Rate field, enter the value; then, from the drop-down list, select the appropriate bit rate.
- In the Peak Info Rate field, enter the value; then, from the drop-down list, select the appropriate bit rate.

- In the Burst Size field, enter the value; then, from the drop-down list, select the appropriate bit rate.
- In the Peak Burst Size field, enter the value; then, from the drop-down list, select the appropriate bit rate.

Step 7 In the Ingress Policing tab, go to the Conform Actions subtab and click the **Add a Conform Action** button. The Add Conform Action dialog box opens.

a. From the Action drop-down list, select the attribute. See Table 13-14.

b. In the Value field, enter the value for the selected attribute. See Table 13-14.

Table 13-14 Attribute and Value

Attribute	Value
DROP	—
TRANSMIT	If no actions are specified, the default conform action is *transmit*.
set-discard-class-transmit	0 to 2
set-dscp-transmit	0 to 63
set-prec-transmit	0 to 7
set-cos-transmit	0 to 7
set-qos-transmit	0 to 9

c. Click **OK**. The new conform action appears in the Conform Actions subtab. Edit or delete a conform action:

- To edit a conform action, select the row and click the **Edit a Conform Action** button. The Edit Conform Action dialog box opens. Edit the details, as appropriate.
- To delete a conform action, select the row and click the **Remove a Conform Action** button. The conform action is deleted.

Step 8 In the Ingress Policing tab, go to the Exceed Actions subtab and click the **Add an Exceed Action** button. The Add Exceed Action dialog box opens.

a. From the Action drop-down list, select the attribute. See Table 13-15.

b. In the Value field, enter the value for the selected attribute. See Table 13-15.

Table 13-15 Attribute and Value

Attribute	Value
DROP	If no actions are specified, the default exceed action is *drop*.
TRANSMIT	—
set-discard-class-transmit	0 to 2
set-dscp-transmit	0 to 63
set-prec-transmit	0 to 7
set-cos-transmit	0 to 7
set-qos-transmit	0 to 9

c. Click **OK**. The exceed action appears in the Exceed Actions subtab. Add or edit an exceed action:

- To edit an exceed action, select the row and click the **Edit an Exceed Action** button. The Edit Exceed Action dialog box opens. Edit the details, as appropriate.
- To delete an exceed action, select the row and click the **Remove an Exceed Action** button. The exceed action is deleted.

Step 9 In the Ingress Policing tab, go to the Violate Actions subtab and click the **Add a Violate Action** button. The Add Violate Action dialog box opens.

a. From the Action drop-down list, select the attribute. See Table 13-16.

b. In the Value field, enter the value for the selected attribute. See Table 13-16.

Table 13-16 Attribute and Value

Attribute	Value
DROP	If no actions are specified, the default violate action is *drop*.
TRANSMIT	—
set-discard-class-transmit	0 to 2
set-dscp-transmit	0 to 63
set-prec-transmit	0 to 7
set-cos-transmit	0 to 7
set-qos-transmit	0 to 9

c. Click **OK**. The violate action appears in the Violate Actions subtab. Add or edit a violate action:

- To edit a violate action, select the row and click the **Edit a Violate Action** button. The Edit Violate Action dialog box opens. Edit the details, as appropriate.
- To delete a violate action, select the row and click the **Remove a Violate Action** button. The violate action is deleted from the table.

Step 10 Go to the Egress Shaping tab and do the following:

a. Click the **Priority** radio button to enable the Priority field.

Note If you do not want to enter a priority, check the **Blank** check box to disable the Priority option.

- In the Priority field, enter the value. See Table 13-17.
- From the drop-down list, select the unit. See Table 13-17.

Table 13-17 Unit and Value

Unit	Value
kbps	8 to 10000000
%	1 to 100
level	1 to 2

b. Click the **Average Rate** radio button to set the average rate.

- In the Average Rate field, enter the value.
- From the drop-down list, select the unit.

Note The Minimum Bandwidth and Remaining Bandwidth options are enabled only if you select Average Rate. These options are mutually exclusive.

- Click the **Minimum Bandwidth** radio button and enter a value in the Minimum Bandwidth field. From the drop-down list, select the unit.
- Click the **Remaining Bandwidth** radio button and enter a value in the Remaining Bandwidth field. From the drop-down list, select the unit.

Step 11 Click **OK**. The new action appears in the Actions tab.

13.8.1.2.2 How Do I Edit an Action?

To edit an action:

Step 1 Choose **Configuration > PT System > Provision > QoS Editor**. The PT System QoS Editor opens.
Step 2 Go to the Actions tab.
Step 3 Select the action that you want to edit.
Step 4 Click the **Edit an Action** button. The Edit Action dialog box opens.
Step 5 Edit the action details, as appropriate.
Step 6 Click **OK**. The updated details appear in the Actions tab.

13.8.1.2.3 How Do I Delete an Action?

To delete an action:

Step 1 Choose **Configuration > PT System > Provision > QoS Editor**. The PT System QoS Editor opens.
Step 2 Go to the Actions tab.
Step 3 Select the action that you want to delete from the table.
Step 4 Click the **Remove an Action** button.
Step 5 Click **OK** in the confirmation message box. The action is deleted.

13.8.1.3 How Do I Create and Manage Policy Maps?

Create and manage policy maps in the PT System QoS Editor. You can perform the following operations:

- Create a policy map—13.8.1.3.1 How Do I Create a Policy Map?, page 13-63.
- Edit a policy map—13.8.1.3.2 How Do I Edit a Policy Map?, page 13-63.

- Delete a policy map—13.8.1.3.3 How Do I Delete a Policy Map?, page 13-64.

13.8.1.3.1 How Do I Create a Policy Map?

To create a policy map:

Step 1 Choose **Configuration > PT System > Provision > QoS Editor**. The PT System QoS Editor opens.

Step 2 Go to the Policy Maps tab.

Step 3 Click the **Add a Policy Map** button. The Add Policy Map dialog box opens.

Step 4 In the Policy Map Name field, enter the name. A valid name contains from 1 to 50 characters.

Step 5 Click the **Add Policy Map Attributes** button. The Add Policy Map Attributes dialog box opens.

Step 6 Class Map—Enter the name of a class map or click **Browse** to select a class map. The Select a Class Map dialog box opens.

a. To select a class map that you created:
   - Select the class map from the Class Map area. The selected class map name appears in the Selected Class Map field.
   - Click **OK**. The class map is added as an attribute.

b. To select a default class map:
   - Check the check box preceding the Default Class Map drop-down list.
   - From the Default Class Map drop-down list, select the default class map. The selected default class map appears in the Selected Class Map field.
   - Click **OK**. The default class map is added as an attribute.

You can create and manage class maps from the Select a Class Map dialog box. For more information, see 13.8.1.1 How Do I Create and Manage Class Maps?, page 13-57.

Step 7 Action—Enter the name of an action or click **Browse** to browse for an action. The Select an Action dialog box opens.

a. Select an action. The name of the selected action appears in the Selected Action field.

b. Click **OK**. The action is added.

You can create and manage actions from the Select an Action dialog box. For more information, see 13.8.1.2 How Do I Add and Manage Actions?, page 13-58.

Step 8 Child Policy—Enter the name of a child policy or click **Browse** to browse for a child policy map. The Select a Policy Map dialog box opens.

a. Select the child policy map. The name of the child policy map appears in the Selected Policy Map field.

b. Click **OK**. The child policy map is added.

Step 9 Click **OK** in the Add Policy Map Attributes dialog box. The details of the class map, child policy, and action you added appear in the Add Policy Map window.

Step 10 Click **OK** in the Add Policy Map window. The new policy map appears in the Policy Maps tab.

13.8.1.3.2 How Do I Edit a Policy Map?

To edit a policy map:

Step 1 Choose **Configuration > PT System > Provision > QoS Editor**. The PT System QoS Editor opens.

Step 2 Go to the Policy Maps tab.

Step 3 Select the policy map that you want to edit.

Step 4 Click the **Edit a Policy Map** button. The Edit Policy Map dialog box opens.

Step 5 Edit the policy map details, as appropriate.

Step 6 Click **OK**. The updated details appear in the Policy Maps tab.

13.8.1.3.3 How Do I Delete a Policy Map?

To delete a policy map:

Step 1 Choose **Configuration > PT System > Provision > QoS Editor**. The PT System QoS Editor opens.

Step 2 Go to the Policy Maps tab.

Step 3 Select the policy map that you want to delete.

Note If the selected policy map is acting as a child policy in another policy map, you cannot delete it.

Step 4 Click the **Remove a Policy Map** button.

Step 5 Click **OK** in the confirmation message box. The policy map is deleted.

13.8.1.4 How Do I Create and Manage Table Maps?

Create and manage table maps in the PT System QoS Editor. You can perform the following operations:

- Create a table map—13.8.1.4.1 How Do I Create a Table Map?, page 13-65.
- Edit a table map—13.8.1.4.2 How Do I Edit a Table Map?, page 13-66.
- Delete a table map—13.8.1.4.3 How Do I Delete a Table Map?, page 13-66.

13.8.1.4.1 How Do I Create a Table Map?

To create a table map:

Step 1 Choose **Configuration > PT System > Provision > QoS Editor**. The PT System QoS Editor opens.

Step 2 Go to the Table Maps tab.

Step 3 Click the **Add a Table Map** button. The Add Table Map dialog box opens.

Step 4 In the Table Map Name field, enter the table map name.

Note The Default Copy and Default Value options are mutually exclusive.

Step 5 Check the **Default Copy** check box to copy the value of the qos-group set at ingress to the MPLS EXP or VLAN CoS bit. The lower three bits of the qos-group are used as to-value.

Step 6 In the Default Value field, enter the default value. Valid values are from 0 to 999. If there is no combination of qos-group and discard-class provisioned in the table map, set the MPLS EXP bit or the VLAN CoS bit to the value shown in the text box.

Step 7 Click the **Add Table Map Attributes** button in the Add Table Name dialog box to add attributes. The Add Table Map Attributes dialog box opens.

Step 8 In the Add Attributes dialog box, do the following:

a. In the QoS Group field, enter a value from 0 to 999.

b. In the Discard Class field, enter a value from 0 to 999.

c. In the MPLS or CoS field, enter a value from 0 to 999.

d. Click **OK**. The attributes are added and the details are displayed in a table in the Add Table Map dialog box. Edit or delete the attributes:

- To edit the attributes, select the row and click the **Edit Attributes** button. The Edit Attributes dialog box opens. Edit the details, as appropriate.
- To delete an attribute, select the row and click the **Remove Attributes** button. The attribute is deleted from the table.

Step 9 Click **OK** in the Add Table Map dialog box. The table map is created and the following details appear in a table in the Table Maps tab:

- Table Map—Displays the name of the table map.
- Default Copy—Indicates whether default copy is enabled. The value can be True or False.
- Default—Displays the default value.
- Attributes:
  - QoS Group—Displays the QoS group value.
  - Discard Class—Displays the discard class value.
  - MPLS or CoS—Displays the MPLS or CoS value.

13.8.1.4.2 How Do I Edit a Table Map?

To edit a table map:

Step 1 Choose **Configuration > PT System > Provision > QoS Editor**. The PT System QoS Editor opens.

Step 2 Go to the Table Maps tab.

Step 3 Select the table map that you want to edit.

Step 4 Click the **Edit a Table Map** button. The Edit Table Map dialog box opens.

Step 5 Edit the table map details, as appropriate.

Step 6 Click **OK**. The updated details appear in the Table Maps tab.

13.8.1.4.3 How Do I Delete a Table Map?

To delete a table map:

Step 1 Choose **Configuration > PT System > Provision > QoS Editor**. The PT System QoS Editor opens.

Step 2 Go to the Table Maps tab.

Step 3 Select the table map that you want to delete.

Step 4 Click the **Remove a Table Map** button.

Step 5 Click **OK** in the confirmation text box. The table map is deleted.

13.8.2 How Do I Provision QoS Objects in the CPT System?

For a description of the CPT System QoS, see 13.1.6 What Is CPT System QoS?, page 13-7.

Provision QoS objects in the PT System using the Provisioning PT System QoS wizard. To launch the wizard, choose **Configuration > PT System > Provision > QoS Provisioning**.

To provision QoS objects in the PT System:

Step 1 Choose **Configuration > PT System > Provision > QoS Provisioning**. The Provisioning CPT QoS wizard opens.

Step 2 In the Select Class Maps pane, view or modify the following:

a. Available Class Maps—Displays the class maps that you created using the PT System QoS Editor.

- Select the class map that you want to provision. Select multiple class maps by holding down the **Ctrl** key.
- Move the class maps from the Available Class Maps area to the Selected Class Maps area. Use the arrow buttons, as appropriate.

b. Selected Class Maps—Displays the selected class maps.

- Select the class map that you want to deselect and use the arrow buttons, as appropriate.

c. Click **Next**.

Step 3 In the Select Policy Maps pane, view or modify the following:

a. Available Policy Maps—Displays the policy maps that you created using the PT System QoS Editor.
   - Select the policy map that you want to provision. Select multiple policy maps by holding down the **Ctrl** key.
   - Move the policy maps from the Available Policy Maps area to the Selected Policy Maps area. Use the arrow buttons, as appropriate.

b. Selected Policy Maps—Displays the selected policy maps.
   - Select the policy map that you want to deselect and use the arrow buttons, as appropriate.

c. Click **Next**.

Step 4 In the Select Table Maps pane, do the following:

a. Available Table Maps—Displays the table maps that you created using the PT System QoS Editor.
   - Select the table map that you want to provision. Select multiple table maps by holding down the **Ctrl** key.
   - Move the table maps from the Available Table Maps area to the Selected Table Maps area. Use the arrow buttons, as appropriate.

b. Selected Table Maps—Displays the selected table maps.
   - Deselect any of the table maps. Select the table map that you want to deselect and use the arrow buttons, as appropriate.

c. Click **Next**.

Step 5 In the Select CPTs pane, select the node on which to provision the QoS objects and do any of the following:

- Check the Network check box to provision the QoS objects in all the available CPTs in the network.
- Check the NE ID check box to provision the QoS objects in all the available CPTs in the node.
- Check the Shelf check box to provision the QoS objects in all the available CPTs in the shelf.
- Check the Slot check box to provision the QoS objects in that particular slot.

Step 6 Click **Finish**. The QoS Provisioning pane opens and displays the progress:

- Progress Bar—Displays the progress of the provisioning operation.
- Validation Result—The CPT QoS provisioning result is displayed in the Validation Result area of the pane. The result can be one of the following:
  - Success—CPT QoS provisioning succeeded. Proceed to Step 7.
  - In Progress—CPT QoS provisioning is in progress. The Close button is disabled while provisioning is in progress.
  - Partially Failed—CPT QoS provisioning failed on some NEs. The details of the QoS objects and the NEs that failed are displayed in the Provisioning Log area.
  - Failed—CPT QoS provisioning failed. The reason for the failure is displayed in the Provisioning Log area.
- Provisioning Log—Displays the reason for the CPT QoS provisioning failure. Click **Save Log** to save the log in the client file system. You cannot save the log in the Prime Optical server.

Step 7 Click **Close** to exit the Provisioning PT System QoS wizard.

Step 8 Open the NE Explorer of the target NEs and choose **PT System > Provisioning > QoS**. In the QoS property pane, you can view the QoS objects provisioned. For more information, see 13.9.2.7 QoS, page 13-75.

13.9 CPT System

This section describes the following:

- 13.9.1 Understanding CPT Cards, page 13-68
- 13.9.2 Overview of the CPT System Property Sheet, page 13-69
- 13.9.3 Understanding the CPT System Alarms, page 13-87

13.9.1 Understanding CPT Cards

Note CPT System is displayed as “PT System” in the Prime Optical user interface.

The CPT System is supported on the CPT 200 and CPT 600 chassis. The CPT 200 chassis consists of two service slots and has a 160-GB switch capacity. The CPT 600 chassis consists of six service slots and has a 480-GB switch capacity.

The following are the CPT cards:

- PTF_10GE_4—See C.2.44 Slot Properties—PTF_10GE_4, page C-576.
- PT_10GE_4—See C.4.26 Slot Properties—PT_10GE_4, page C-966.

The PTSA_GE panel is a standalone unit and can be connected to the PT System. The PTSA_GE panel enables the number of ports to be scaled on the CPT System. For more information, see C.4.27 Slot Properties—PTSA_GE, page C-974.

PTF_10GE_4 and PT_10GE_4 cards are supported on the CPT 200 and CPT 600 platforms. The CPT System complies with RoHS-6 standards.

The following system configuration is recommended on the CPT 200 shelf:

- Standalone PTF_10GE_4 card
- Standalone TNC, TNCE, TSC, or TSCE card
- One or more PTSA_GE panels

The following system configuration is recommended on the CPT 600 shelf:

- Redundant PTF_10GE_4 cards
- One PT_10GE_4 card
- Redundant TNC, TNCE, TSC, or TSCE cards
- One or more PTSA_GE panels

The CPT System integrates DWDM, OTN, Ethernet, and standards-based MPLS-TP in a single system. The CPT System also integrates with other Cisco platforms such as the ONS 15454, and Carrier Routing System to deliver a combined IP/MPLS and MPLS-TP solution under a single control plane, forwarding mechanism, and NMS. This solution enables you to interoperate with existing IP/MPLS networks.

The CPT System works in the metro edge and access portion of the network, providing an integrated packet and transport solution. The CPT System significantly reduces rack space and power consumption.

The following topics describe the CPT cards:

- C.2.44 Slot Properties—PTF_10GE_4, page C-576
- C.4.26 Slot Properties—PT_10GE_4, page C-966
- C.4.27 Slot Properties—PTSA_GE, page C-974

13.9.2 Overview of the CPT System Property Sheet

For descriptions of the CPT System, CPT cards, and LACP, see the following sections:

- 13.1.3 What Is the CPT System?, page 13-3
- 13.9.1 Understanding CPT Cards, page 13-68
- 13.1.13 What Is LACP?, page 13-11

Note CPT System is displayed as "PT System" in the Prime Optical user interface.

When you choose **Configuration > NE Explorer** for the ONS 15454 SONET or ONS 15454 SDH, the window that Prime Optical displays consists of a tree on the left side and a properties pane on the right. The tree provides a hierarchical view of the NE's physical shelves and slots. In the tree, click **PT System** to open the PT System property sheet. The properties pane shows information about the PT System.

This section includes:

- 13.9.2.1 Identification, page 13-70
- 13.9.2.2 Channel Groups, page 13-70
- 13.9.2.3 Configuration Mode, page 13-72
- 13.9.2.4 IOS CLI, page 13-72
- 13.9.2.5 MPLS-TP, page 13-73
- 13.9.2.6 Pseudowire Class, page 13-74
- 13.9.2.7 QoS, page 13-75
- 13.9.2.8 Service Alarm, page 13-75
- 13.9.2.9 Timing, page 13-77

When you open the PT System, the default property displayed is the Identification property.

13.9.2.1 Identification

The Identification property displays the list of CPT cards managed by the PT System. The Identification property displays the details in a table. The table has two columns:

- Physical Location—Displays the following details:
  - Shelf number
  - Slot number
  - Fan-Out-Group (FOG) number
- Module Name—Displays the name of the card or panel.

13.9.2.2 Channel Groups

The Channel Groups property property has two tabs:

- Channel Groups—Allows you to perform the following operations:
  - Create channel groups—To create a channel group, see 13.9.2.10 How Do I Create Channel Groups?, page 13-78.
  - Edit channel groups—To edit a channel group, see 13.9.2.11 How Do I Modify Channel Groups?, page 13-82.
  - Delete channel groups—To delete a channel group, select the channel group from the Channel Groups table and click the **Delete a Channel Group** button.
  - Filter—Allows you to filter the data displayed in the Channel Groups table.
  - Configure channel groups to use LACP—To configure channel groups to use LACP, see 13.9.2.10.1 How Do I Configure Channel Group Using LACP?, page 13-79.
  - Configure actions for each Layer 2 protocol—To configure actions for each Layer 2 protocol, see 13.9.2.10.2 How Do I Configure Actions for Each Layer 2 Protocol?, page 13-79.
  - Create load balance configuration—To create a load balance configuration, see 13.9.2.10.3 How Do I Configure Manual Load Balancing?, page 13-80.
  - Edit load balance configuration—To edit a load balance configuration, see 13.9.2.10.4 How Do I Modify Manual Load Balancing Configuration?, page 13-81.
  - Delete load balance configuration—Select the load balance configuration from the Manual Load Balancing table and click the **Delete a Load Balance Configuration** button.
  - Filter—Allows you to filter the data displayed in the Manual Load Balancing table.
- Layer 2 Protocols—Allows you to modify the action for each Layer 2 protocol, see 13.9.2.2.2 Layer 2 Protocols Tab, page 13-71.

13.9.2.2.1 Channel Groups Tab

The Channel Groups tab has two tables:

- Channel Groups Table—See Table 13-18.
- Manual Load Balancing Table—See Table 13-19.

Table 13-18 Field Descriptions for the Channel Groups Table

Field	Description
Channel Group	Displays the channel group ID.
Name	Displays the name of the channel group.
Ports	Displays the port details.
MTU	Displays the MTU value.
Ingress Policy Map	Displays the ingress policy map details.
Ingress Table Map	Displays the ingress table map details.
Ingress Table Map Config	This field is disabled in Prime Optical 9.6.3.
Egress Policy Map	Displays the egress policy map details.

Table 13-19 Field Descriptions for the Manual Load Balancing Table

Field	Description
Primary Port	Displays the primary port details.
Secondary Port	Displays the secondary port details.

13.9.2.2.2 Layer 2 Protocols Tab

The Layer 2 Protocols tab allows you to view and modify actions for Layer 2 protocols. To modify an action, click the cell and select the action from the drop-down list.

Table 13-20 Field Descriptions for the Layer 2 Protocols Tab

Field	Description
Port	Displays the port number.
CDP	Displays the Layer 2 action configured for CDP.
DOT1X	Displays the Layer 2 action configured for DOT1X.
DTP	Displays the Layer 2 action configured for DTP.
LACP	Displays the Layer 2 action configured for LACP.
PAGP	Displays the Layer 2 action configured for PAGP.
VTP	Displays the Layer 2 action configured for VTP.
STP	Displays the Layer 2 action configured for STP.

13.9.2.3 Configuration Mode

The Configuration Mode property is display only. The Operation Mode field in the Configuration Mode property displays the operation mode of the PT System. The operation mode can be IOS Mode or CTC Mode.

If the operation mode is CTC Mode, all the following properties are displayed:

- Channel Groups
- Configuration Mode
- IOS CLI
- Pseudowire Class
- QoS
- Service Alarm

If the operation mode is IOS Mode, only the following two properties are displayed:

- Configuration Mode
- IOS CLI

Note If you switch from CTC Mode to IOS Mode, all the Layer 2 services are deleted automatically.

In IOS Mode, you cannot perform the following operations:

- Create Layer 2 services
- View Layer 2 services
- Modify Layer 2 services
- Trace Layer 2 services
- Troubleshoot Layer 2 services

13.9.2.4 IOS CLI

Monitor Layer 2 service level performance counters using the IOS CLI property. From the PT System IOS CLI Interface area, click **Launch CLI**.

- If you are using a Solaris or Linux operating system, an xterm window runs a Telnet tunnel connection to the active PTF_10GE_4 card IOS console of the PT System.
- If you are using a Windows operating system and if Telnet is installed on the PC running the Prime Optical client, Telnet is directly used to open the tunnel connection.

From the IOS CLI window, you can run the **show interfaces** command. You can also run other Cisco IOS commands on the IOS CLI, but it depends on the security settings and the account active on the PT System.

13.9.2.5 MPLS-TP

The MPLS-TP property allows you to:

- Configure global settings—13.9.2.5.1 Global Settings, page 13-73
- Create, edit, and delete BFD templates—13.9.2.5.2 BFD Template, page 13-73

13.9.2.5.1 Global Settings

The following table describes the fields in the Global Settings tab.

Table 13-21 Field Descriptions for the Global Settings Table

Field	Description
Node ID	Enter the source node ID for all the MPLS-TP tunnels configured on the router.
Global ID	Enter the default global ID used for all the endpoints and midpoints. Enter a value from 0 to 2147483647. The default value is 0.
WTR Timer	Enter the wait-to-restore (WTR) timer. This timer controls the length of time that the system needs to wait before reverting to the original working path following the repair of a fault on the original working path. Enter a value from 0 to 2147483647.
TP Fault OAM area	
Refresh Timer	Enter the maximum time between successive fault OAM messages specified in seconds. Enter a value from 1 to 255. The default value is 20.
MPLS Fast Switch Trigger Range area	
Min	Enter the minimum MPLS fast switchover value.
Max	Enter the maximum MPLS fast switchover value.

13.9.2.5.2 BFD Template

The BFD Template table lists the BFD templates. From the BFD Template tab, you can:

- Create BFD template—To create a BFD template, see 13.9.2.14 How Do I Create a BFD Template?, page 13-85.
- Edit BFD template—To edit a BFD template, see 13.9.2.15 How Do I Edit a BFD Template?, page 13-86.
- Delete BFD template—To delete a BFD template, see 13.9.2.16 How Do I Delete a BFD Template?, page 13-87.

The following table describes the BFD Template table fields.

Table 13-22 Field Descriptions for the BFD Template Property

Field	Description
Name	Displays the name of the BFD template.
Single Hop	Displays whether single hop is enabled or disabled.
Unit	Displays the unit of time: Milliseconds or Microseconds.
Min_Tx Interval	Displays the transmit interval between BFD packets.

Table 13-22 Field Descriptions for the BFD Template Property (continued)

Field	Description
Min_Rx Interval	Displays the receive interval between BFD packets.
Multiplier	Displays the number of consecutive BFD control packets that must be missed before BFD declares that a peer is unavailable.

13.9.2.6 Pseudowire Class

The Pseudowire Class property allows you to perform the following operations:

- Create pseudowire class—To create a pseudowire class, see 13.9.2.12 How Do I Create a Pseudowire Class?, page 13-83.
- Edit pseudowire class—To edit a pseudowire class, see 13.9.2.13 How Do I Modify a Pseudowire Class?, page 13-84.
- Delete pseudowire class—Select the pseudowire class from the Pseudowire Class table and click the **Delete a Pseudowire Class** button.

The following table describes the Pseudowire Class table fields.

Table 13-23 Field Descriptions for the Pseudowire Class Table

Field	Description
Name	Displays the name of the pseudowire class.
Encapsulation	Displays the encapsulation type.
Protocol	Displays the protocol details.
Interwork	Displays the type of interworking.
Ctrl Word	Displays whether Ctrl Word is enabled or disabled.
Preferred Path	Displays whether preferred path is enabled or disabled.
Fallback Disable	Displays whether fallback is disabled.
Tunnel Type	Displays the tunnel type.
Tunnel Number	Displays the tunnel number.
Enable Sequencing	Displays whether sequencing is enabled.
Sequencing Mode	Displays the sequencing mode if sequencing is enabled.
Resync Timer	Displays the resync timer.
Static OAM Enable	Displays whether static OAM is enabled.
OAM Class	Displays the OAM class.
BFDoVCCV Enable	Displays whether BFD over VCCV is enabled.
BFD	Displays the BFD template details.
AC Status	Displays whether AC status signaling is enabled or disabled.
Master Redundancy	Displays whether master redundancy is enabled or disabled.

13.9.2.7 QoS

The QoS property has three tabs:

- Class Map—Displays the name of the class maps provisioned using the Provisioning PT System QoS wizard.
- Policy Map—Displays the name of the policy maps provisioned using the Provisioning PT System QoS wizard.
- Table Map—Displays the name of the table maps provisioned using the Provisioning PT System QoS wizard.

13.9.2.8 Service Alarm

Service alarms apply to three different levels:

- Port
- Packet Transport System (PTS)
- Channel group

Service alarms are reported in the Prime Optical alarm browser as a sum of Layer 2 service alarms. From the Service Alarm property, execute a specific query on an NE to find out which service is impacted by these alarms.

Note For the list of service alarms, see Table 13-27 on page 13-91.

For information on the Service Alarm property tabs, see:

- 13.9.2.8.1 How Do I Retrieve Alarms by Service Type?, page 13-75.
- 13.9.2.8.2 How Do I Retrieve Affected Layer 2 Services by Alarm Type?, page 13-76.

13.9.2.8.1 How Do I Retrieve Alarms by Service Type?

The Retrieve Alarms on Service tab allows you to retrieve the Layer 2 alarms by service type.

To retrieve the Layer 2 alarms by service type on the PT System:

Step 1 Click the **Packet Transport System** radio button.

Step 2 From the Service Type drop-down list, select the service type (Carrier Ethernet, Pseudowire, or MPLS TP tunnel).

Step 3 In the Service ID field, enter the service ID.

Step 4 Click **Show**. The Layer 2 alarms by service type on the PT System are displayed in the table.

Step 5 (Optional) Click **Reset** to reset the Service Type drop-down list and the Service ID field.

Step 6 (Optional) Click **Clear Table** to clear the results and run a new query.

To retrieve the Layer 2 alarms by service type on a specific port:

Step 1 Click the **Port** radio button.

Step 2 From the Slot drop-down list, select the slot.

Step 3 From the Port drop-down list, select the port.

Step 4 From the Service Type drop-down list, select the service type (Carrier Ethernet, Pseudowire, or MPLS TP tunnel).

Step 5 In the Service ID field, enter the service ID.

Step 6 Click **Show**. The Layer 2 alarms by service type on the selected port are displayed in the table.

Step 7 (Optional) Click **Reset** to reset the Service Type drop-down list and the Service ID field.

Step 8 (Optional) Click **Clear Table** to clear the results and run a new query.

To retrieve the Layer 2 alarms by service type on a channel group:

Step 1 Click the **Channel Group** radio button.

Step 2 From the Channel Group drop-down list, select the channel group.

Step 3 From the Service Type drop-down list, select the service type (Carrier Ethernet, Pseudowire, or MPLS TP tunnel).

Step 4 In the Service ID field, enter the service ID.

Step 5 Click **Show**. The Layer 2 alarms by service type on the selected channel group are displayed in the table.

Step 6 (Optional) Click **Reset** to reset the Service Type drop-down list and the Service ID field.

Step 7 (Optional) Click **Clear Table** to clear the results and run a new query.

13.9.2.8.2 How Do I Retrieve Affected Layer 2 Services by Alarm Type?

The Retrieve Alarm-Affected Services tab allows you to retrieve the affected Layer 2 services by alarm type.

- To retrieve the affected Layer 2 services by alarm type on the PT System, go to Step 1.
- To retrieve the affected Layer 2 services by alarm type on a specific port, go to Step 2.
- To retrieve the affected Layer 2 services by alarm type on a channel group, go to Step 3.

Step 1 To retrieve the affected Layer 2 services by alarm type on the PT System:

a. Click the **Packet Transport System** radio button.

b. From the Service Type drop-down list, select the service type (Carrier Ethernet, Pseudowire, or MPLS TP tunnel).

c. From the Alarm Type drop-down list, select the alarm type. See Table 13-28 for the list of alarm types.

d. Click **Show**. The affected Layer 2 services by alarm type on the PT System are displayed in the table.

e. (Optional) Click **Reset** to reset the Service Type and Alarm Type drop-down lists.

Step 2 To retrieve the affected Layer 2 services by alarm type on a specific port:

a. Click the **Port** radio button.

b. From the Slot drop-down list, select the slot.

c. From the Port drop-down list, select the port.

d. From the Service Type drop-down list, select the service type (Carrier Ethernet, Pseudowire, or MPLS TP tunnel).

e. From the Alarm Type drop-down list, select the alarm type. See Table 13-28 for the list of alarm types.

f. Click **Show**. The affected Layer 2 services by alarm type on the selected port are displayed in the table.

g. (Optional) Click **Reset** to reset the Service Type and Alarm Type drop-down lists.

Step 3 To retrieve the affected Layer 2 services by alarm type on a channel group:

a. Click the **Channel Group** radio button.

b. From the Channel Group drop-down list, select the channel group.

c. From the Service Type drop-down list, select the service type (Carrier Ethernet, Pseudowire, or MPLS TP tunnel).

d. From the Alarm Type drop-down list, select the alarm type. See Table 13-28 for the list of alarm types.

e. Click **Show**. The affected Layer 2 services by alarm type on the selected channel group are displayed in the table.

f. (Optional) Click **Reset** to reset the Service Type and Alarm Type drop-down lists.

Step 4 (Optional) Click **Service Table** to cross-launch the service table from the Retrieve Alarm-Affected Services tab. For example, if you select Pseudowire as the service type, the Pseudowire Service table opens.

Step 5 (Optional) Click the **Filter** button to filter the affected Layer 2 services displayed in the table. Filter by:

- Service ID
- Name
- Description

Step 6 (Optional) Click **Clear Table** to clear the results and run a new query.

13.9.2.9 Timing

A separate external TDM circuit is required to provide synchronized timing to multiple remote NEs for packet transport networks such as the CPT System. The Synchronous Ethernet (SycnE) feature addresses this requirement by providing effective timing to the remote NEs through a packet network without using an external circuit for timing.

The Timing property allows you to configure SyncE ports.

The following table describes the Timing property table fields.

Table 13-24 Field Descriptions for the Timing Property Table

Field	Description
Card	*Display only.* Displays the card number and slot number.
Port	*Display only.* Displays the port number (n-n) and rate.
ProvidesSync	*Display only.* Selects the port automatically after the port is used as a clock source.
SyncMsgIn	Sets the EnableSync card parameter. Enables synchronization status messages, which allow the node to choose the best timing source.
Admin SSM In	Overrides the synchronization status message (SSM) and the synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU. The options are: • PRS—Primary reference source (Stratum 1) • ST2—Stratum 2 • TNC—Transit node clock • ST3E—Stratum 3E • ST3—Stratum 3 • SMC-SONET minimum clock • ST4—Stratum 4 • DUS—Do not use for timing synchronization • RES—Reserved; quality level set by the user
Send DoNotUse	When checked, sends a DUS message as the QL value.
ESMC Enable	Check the check box on the port where you want to enable SyncE. You can select the clock source among the Ethernet Synchronization Message Channel (ESMC) enabled ports. To select the clock source among the OTN ports, do not check the check box.

13.9.2.10 How Do I Create Channel Groups?

For a description of LACP, see 13.1.13 What Is LACP?, page 13-11.

Create channel groups from the PT System using the Channel Group Creation wizard.

Step 1 Select an ONS 15454 NE and open the NE Explorer (see 1.5.7 NE Explorer, page 1-30 for information on opening an NE Explorer).

Step 2 In the NE Explorer tree, click **PT System** to open the PT System property sheet.

Step 3 Go to the Provisioning area and select **Channel Groups**. The Channel Groups page opens.

Step 4 Click the **Create a Channel Group** button. The Channel Group Creation wizard opens.

Step 5 In the Identification area, do the following:

a. In the Name field, enter the name of the channel group.

b. From the ID drop-down list, select an ID for this channel group. Valid values are from 1 to 128.

c. In the MTU field, enter the MTU value.

d. Check the **Fast Switchover** check box to enable fast switchover for this channel group.

Step 6 In the Ports area, do the following:

a. From the Standalone list, choose the ports that will belong to this channel group and click the right arrow button to move the selected ports to the Bundled list.

b. Displays the selected ports. To change the port selection, use the arrow keys, as appropriate.

Step 7 In the LACP area, do the following:

a. Check the **LACP** check box to configure the channel group using LACP (see 13.9.2.10.1 How Do I Configure Channel Group Using LACP?, page 13-79 for information on configuring the channel group using LACP).

b. In the Minimum Bundle field, enter the minimum number of ports that must be active for the channel group to be active. The default value is 1.

c. In the Maximum Bundle field, enter the maximum number of ports to bundle in a channel group. The default value is 8.

Step 8 In the Layer 2 Action area, use the Layer 2 Action Configuration wizard to configure the actions for each Layer 2 protocol (see 13.9.2.10.2 How Do I Configure Actions for Each Layer 2 Protocol?, page 13-79 for information on configuring actions for each Layer 2 protocol).

Step 9 Click **OK**. The channel group details appear in a table in the **Provisioning > Channel Groups** page of the PT System property sheet.

13.9.2.10.1 How Do I Configure Channel Group Using LACP?

For the description of LACP, see 13.1.13 What Is LACP?, page 13-11.

Configure channel groups to use LACP using the LACP Configuration dialog box.

Step 1 Complete Step 1 through Step 6 in 13.9.2.10 How Do I Create Channel Groups?, page 13-78.

Step 2 Check the **LACP** check box. The Configure Port's LACP link becomes active.

Step 3 Click the **Configure Port's LACP** link. The LACP Configuration dialog box opens.

Step 4 Port—*Display only.* The Port column lists all the ports that are added to the channel group.

Step 5 Choose **Active** or **Passive** for each port from the LACP Config drop-down list.

Step 6 Enter the LACP priority in the Priority field for each port. Valid values are from 1 to 32768. The default value is 32768.

Step 7 Click **OK**. The channel group is configured to use LACP.

13.9.2.10.2 How Do I Configure Actions for Each Layer 2 Protocol?

Use the Layer 2 Action Configuration dialog box to configure actions for the following Layer 2 protocols:

- Link Aggregation Control Protocol (LACP)
- Port Aggregation Protocol (PAgP)
- Dynamic Trunking Protocol (DTP)
- IEEE 802.1x
- Cisco Discovery Protocol (CDP)
- VLAN Trunking Protocol (VTP)
- Spanning Tree Protocol (STP)

Note You can also configure actions for each Layer 2 protocol from the Layer 2 Protocols tab in the Channel Groups property.

Step 1 Complete Step 1 through Step 7 in 13.9.2.10 How Do I Create Channel Groups?, page 13-78.

Step 2 In the Layer 2 Action area, click the **Configure Layer 2 Action** link. The Layer 2 Action Configuration dialog box opens.

Step 3 The Protocol column displays the protocols. From the Action drop-down list, select an action: Drop, Forward, and Peer.

For example, if you to want choose Drop as the action for LACP, click the action row corresponding to LACP to enable the drop-down list. From the drop-down list, select Drop.

Step 4 Click **OK**. The selected action is configured for the Layer 2 protocol.

13.9.2.10.3 How Do I Configure Manual Load Balancing?

Configure manual load balancing using the Manual Load Balancing dialog box.

Step 1 Select an ONS 15454 NE and open the NE Explorer (see 1.5.7 NE Explorer, page 1-30 for information on opening an NE Explorer).

Step 2 In the NE Explorer tree, click **PT System** to open the PT System property sheet.

Step 3 Go to the Provisioning area and select **Channel Groups**. The Channel Groups page opens.

Step 4 From the Channel Group table, select a channel group. The Manual Load Balancing table is updated with the load balancing details.

Step 5 In the Manual Load Balancing area of the Channel Groups page, click the **Create a Load Balance Configuration** button. The Manual Load Balancing dialog box opens.

Step 6 In the Primary Load-Balanced Link area, from the Primary Port drop-down list, select the port.

Step 7 In the Backup Load-Balanced Link area, do the following:

- Available Ports—Lists the available ports. Select the required ports and click the right arrow button to move the ports to the Selected Ports list.
- Selected Ports—Lists the selected ports. To deselect any of the ports, select the port and click the left arrow button.

Step 8 Click **OK**. Manual load balancing is configured and the details appear in the Manual Load Balancing table.

13.9.2.10.4 How Do I Modify Manual Load Balancing Configuration?

Modify the manual load balancing configuration using the Manual Load Balancing dialog box.

Step 1 Select an ONS 15454 NE and open the NE Explorer (see 1.5.7 NE Explorer, page 1-30 for information on opening an NE Explorer).

Step 2 In the NE Explorer tree, click **PT System** to open the PT System property sheet.

Step 3 Go to the Provisioning area and select **Channel Groups**. The Channel Groups page opens.

Step 4 From the Channel Group table, select a channel group.

Step 5 In the Manual Load Balancing table, select the manual load balancing configuration that you want to modify.

Step 6 Click the **Edit a Load Balance Configuration** button. The Manual Load Balancing dialog box opens.

Step 7 *Display only.* In the Primary Load-Balanced Link area, the Primary Port field displays the port number.

Step 8 In the Backup Load-Balanced Link area, modify the following:

- Available Ports—Lists the available ports. Select the required ports and click the right arrow button to move the ports to the Selected Ports list.
- Selected Ports—Lists the selected ports. To deselect any of the ports, select the port and click the left arrow button.

Step 9 Click **OK**. The manual load balancing configuration is modified and the updated details appear in the Manual Load Balancing table.

13.9.2.11 How Do I Modify Channel Groups?

For the description of LACP, see 13.1.13 What Is LACP?, page 13-11.

Modify a channel group from the PT System using the Edit Channel Group wizard.

Note Some of the fields in the Edit Channel Group wizard are not editable.

Step 1 Select an ONS 15454 NE and open the NE Explorer (see 1.5.7 NE Explorer, page 1-30 for information on opening an NE Explorer).

Step 2 In the NE Explorer tree, click **PT System** to open the PT System property sheet.

Step 3 Go to the Provisioning area and select **Channel Groups**. The Channel Groups page opens.

Step 4 From the Channel Groups table, select the channel group that you want to edit and click the **Edit a Channel Group** button. The Edit Channel Group wizard opens.

Step 5 In the Identification area, view or modify the following fields:

a. Name—Displays the name of the channel group. To modify the name:
   - Delete the previous entry.
   - In the Name field, enter the new name.

b. ID—*Display only.* Displays the channel group ID.

c. MTU—Displays the MTU value. To modify the MTU value:
   - Delete the previous entry.
   - In the MTU field, enter the new value.

d. Fast Switchover—Displays whether fast switchover is enabled for this channel group.
   - To disable fast switchover, uncheck the **Fast Switchover** check box.
   - To enable fast switchover, check the **Fast Switchover** check box.

Step 6 In the Ports area:

- Standalone—Displays the list of standalone ports. To modify your previous selection, use the arrow keys, as appropriate.
- Bundled—Displays the list of bundled ports. To modify the port selection, use the arrow keys, as appropriate.

Step 7 In the LACP area, modify the following:

Note You can modify the fields in the LACP area only if there are no bundled ports.

a. LACP—Displays whether LACP is configured.
   - To disable LACP, uncheck the **LACP** check box.
   - To enable LACP, check the **LACP** check box and configure the channel group to use LACP (see 13.9.2.10.1 How Do I Configure Channel Group Using LACP?, page 13-79).

b. Minimum Bundle—Displays the minimum bundle value. To modify the value:
   - Delete the previous entry.
   - In the Minimum Bundle field, enter the new value. The default value is 1.

c. Maximum Bundle—Displays the maximum bundle value. To modify the value:
   - Delete the previous entry.
   - In the Maximum Bundle field, enter the new value. The default value is 8.

Step 8 In the Layer 2 Action area, use the Layer 2 Action Configuration wizard to modify the actions for each Layer 2 protocol (see 13.9.2.10.2 How Do I Configure Actions for Each Layer 2 Protocol?, page 13-79).

Step 9 Click **OK**. The updated details appear in the Channel Groups table in the **Provisioning > Channel Groups** page of the PT System property sheet.

13.9.2.12 How Do I Create a Pseudowire Class?

Create a pseudowire class from the PT System using the Create Pseudowire Class wizard.

Step 1 Select an ONS 15454 NE and open the NE Explorer (see 1.5.7 NE Explorer, page 1-30 for information on opening an NE Explorer).

Step 2 In the NE Explorer tree, click **PT System** to open the PT System property sheet.

Step 3 Go to the Provisioning area and select **Pseudowire Class**. The Pseudowire Class page opens.

Step 4 Click the **Create a Pseudowire Class** button. The Create Pseudowire Class wizard opens.

Step 5 In the Identification area, perform actions where allowed:

a. In the Name field, enter the name of the pseudowire class.

b. Encapsulation—*Display only.* The encapsulation type for tunneling Layer 2 traffic over a pseudowire is set to MPLS and cannot be changed.

c. Interworking—The Interworking option enables the translation between the different Layer 2 encapsulations. From the Interworking drop-down list, select VLAN or Ethernet.

d. Choose **LDP** or **None** to specify the signaling protocol to be used to manage the pseudowires created from this pseudowire class.

e. Check the **Control Word** check box to enable the control word in a dynamic pseudowire connection.

f. Check the **Master Redundancy** check box to place the pseudowire redundancy group on this node in master mode.

Step 6 In the Preferred Path area, specify the MPLS-TP or MPLS-TE tunnel path that must be used by the pseudowire. Do the following:

a. Check the **Enable** check box to enable the preferred path.

b. Choose **TP** or **TE** as the tunnel type for the preferred path.

c. In the Tunnel ID field, enter the tunnel ID.

d. Check the **Disable Fallback** check box to disable the router from using the default path when the preferred path is unreachable.

Step 7 In the Sequencing area, specify the direction in which the sequencing of packets in a pseudowire must be enabled. Do the following:

a. Check the **Enable** check box to enable sequencing.

b. From the Sequencing drop-down list, select the direction. The options are Transmit, Receive, and Both.
   - Transmit—Updates the sequence number field in the headers of packets sent over the pseudowire according to the data encapsulation method that is used.
   - Receive—Keeps the sequence number field in the headers of packets received over the pseudowire. The packets that are not received in sequence are dropped.
   - Both—Enables both the transmit and receive options.

c. The Resync field is optional and is enabled only if you chose LDP as the protocol in the Identification area. In the Resync field, enter the resync value.

Step 8 In the BFDoVCCV area, enable Bidirectional Forwarding Detection (BFD) over virtual circuit connection verification (VCCV) for a pseudowire class. Do the following:

a. Check the **Enable** check box to enable BFD over VCCV.

b. From the BFD Template drop-down list, choose a BFD template.

c. Check the **AC Status Signalling** check box to enable end-to-end attachment circuit status code notification using BFDoVCCV.

Step 9 In the OAM Status area, do the following:

a. Check the **Enable** check box to enable static OAM.

b. From the OAM Class drop-down list, select a static OAM class.

Step 10 Click **OK**. The pseudowire class is created and appears in the Pseudowire Class table in the **Provisioning > Pseudowire Class** page of the PT System property sheet.

13.9.2.13 How Do I Modify a Pseudowire Class?

Modify a pseudowire class from the PT System using the Edit Pseudowire Class wizard.

Step 1 Select an ONS 15454 NE and open the NE Explorer (see 1.5.7 NE Explorer, page 1-30 for information on opening an NE Explorer).

Step 2 In the NE Explorer tree, click **PT System** to open the PT System property sheet.

Step 3 Go to the Provisioning area and select **Pseudowire Class**. The Pseudowire Class page opens.

Step 4 Select the pseudowire class that you want to edit and click the **Edit a Pseudowire Class** button. The Edit Pseudowire Class wizard opens.

Step 5 In the Identification area, do the following:

Note The Name field and the Encapsulation field are not editable.

- From the Interworking drop-down list, select VLAN or Ethernet to enable the translation between the different Layer 2 encapsulations.
- Choose **LDP** or **None** to specify the signaling protocol to be used to manage the pseudowires created from this pseudowire class.
- Check the **Control Word** check box to enable the control word in a dynamic pseudowire connection.

- Check the **Master Redundancy** check box to place the pseudowire redundancy group on this node in master mode.

Step 6 In the Preferred Path area, specify the MPLS-TP or MPLS-TE tunnel path that must be used by the pseudowire. You can make the following modifications:

- Check the **Enable** check box to enable the preferred path.
- Choose **TP** or **TE** as the tunnel type for the preferred path.
- In the Tunnel ID field, enter the tunnel ID.
- Check the **Disable Fallback** check box to disable the router from using the default path when the preferred path is unreachable.

Step 7 In the Sequencing area, specify the direction in which the sequencing of packets in a pseudowire must be enabled. You can make the following modifications:

- Check the **Enable** check box to enable sequencing.
- From the Sequencing drop-down list, select the direction. The options are Transmit, Receive, and Both.
  - Transmit—Updates the sequence number field in the headers of packets sent over the pseudowire according to the data encapsulation method that is used.
  - Receive—Keeps the sequence number field in the headers of packets received over the pseudowire. The packets that are not received in sequence are dropped.
  - Both—Enables both the transmit and receive options.
- The Resync field is optional and is enabled only if you chose LDP as the protocol in the Identification area. In the Resync field, enter the resync value.

Step 8 In the BFDoVCCV area, enable BFD over VCCV for a pseudowire class. You can make the following modifications:

- Check the **Enable** check box to enable BFD over VCCV.
- From the BFD Template drop-down list, choose a BFD template.
- Check the **AC Status Signalling** check box to enable end-to-end attachment circuit status code notification using BFDoVCCV.

Step 9 In the OAM Status area, you can make the following modifications:

- Check the **Enable** check box to enable static OAM.
- From the OAM Class drop-down list, select a static OAM class.

Step 10 Click **OK**. The updated details are displayed in the Pseudowire Class table in the **Provisioning > Pseudowire Class** page of the PT System property sheet.

13.9.2.14 How Do I Create a BFD Template?

To create a BFD template:

Step 1 Select a CPT-200 or CPT-600 NE and open the NE Explorer (see 1.5.7 NE Explorer, page 1-30 for information on opening an NE Explorer).

Step 2 In the NE Explorer tree, click **PT System** to open the PT System property sheet.

Step 3 Go to the Provisioning area and select **MPLS-TP**. The MPLS-TP page opens.

Step 4 Go to the BFD Template tab.

Step 5 Click the **Create a BFD Template** button. The Create BFD Template dialog box opens.

Step 6 In the Name field, enter the BFD template name.

Note The Single Hop check box is checked and cannot be changed.

Step 7 In the Multiplier field, enter the number of consecutive BFD control packets that must be missed before BFD declares that a peer is unavailable.

Step 8 In the Tx field, use the arrow buttons and select the transmit interval between BFD packets.

Step 9 In the Rx field, use the arrow buttons and select the receive interval between BFD packets.

Step 10 From the Time Unit drop-down list, select the time unit. The options are Milliseconds or Microseconds.

Step 11 Click **OK**. The BFD template is created.

13.9.2.15 How Do I Edit a BFD Template?

To edit a BFD template:

Step 1 Select a CPT-200 or CPT-600 NE and open the NE Explorer (see 1.5.7 NE Explorer, page 1-30 for information on opening an NE Explorer).

Step 2 In the NE Explorer tree, click **PT System** to open the PT System property sheet.

Step 3 Go to the Provisioning area and select **MPLS-TP**. The MPLS-TP page opens.

Step 4 Go to the BFD Template tab.

Step 5 Click the **Edit a BFD Template** button. The Edit BFD Template dialog box opens.

Step 6 View or modify the following fields, as appropriate:

- Name—*Display only.* Displays the BFD template name.
- Single Hop—*Display only.* The Single Hop check box is checked.
- Multiplier—Displays the number of consecutive BFD control packets that must be missed before BFD declares that a peer is unavailable. To modify the value, use the arrow buttons.
- Tx—Displays the transmit interval between BFD packets. To modify the value, use the arrow buttons.
- Rx—Displays the receive interval between BFD packets. To modify the value, use the arrow buttons.
- Time Unit—Displays the time unit. To modify the time unit, select the time unit from the Time Unit drop-down list.

Step 7 Click **OK**. The BFD template is modified.

13.9.2.16 How Do I Delete a BFD Template?

To delete a BFD template:

Step 1 Select a CPT-200 or CPT-600 NE and open the NE Explorer (see 1.5.7 NE Explorer, page 1-30 for information on opening an NE Explorer).

Step 2 In the NE Explorer tree, click **PT System** to open the PT System property sheet.

Step 3 Go to the Provisioning area and select **MPLS-TP**. The MPLS-TP page opens.

Step 4 Go to the BFD Template tab.

Step 5 From the BFD Template table, select the template that to delete.

Step 6 Click the **Delete a BFD Template** button.

Step 7 Click **OK** in the confirmation message box. The BFD template is deleted.

13.9.3 Understanding the CPT System Alarms

In Prime Optical 9.6.3, new alarms have been introduced for the CPT System. This section includes:

- 13.9.3.1 Equipment Alarms, page 13-88
- 13.9.3.2 Satellite Alarms, page 13-88
- 13.9.3.3 Port Alarms, page 13-89
- 13.9.3.4 Service Alarms, page 13-91

13.9.3.1 Equipment Alarms

Table 13-25 describes the equipment alarms.

Table 13-25 Equipment Alarms

Alarm	Description	Logical Object
CUTOVER	The Planned Switch Over alarm is raised when a planned switchover of the PTF_10GE_4 card occurs.	EQPT
RESOURCES_LOW	The Running Low on Resources alarm is raised if the resource memory is very low or if more resources cannot be configured.	EQPT
RESOURCES_OVER	The No More Resources Available alarm is raised if the resource memory is used completely or if configuring of resources is not possible.	EQPT

13.9.3.2 Satellite Alarms

Table 13-26 lists and describes the satellite alarms. The satellite alarms listed in the following table are raised when satellite communication is impacted between PTF_10GE_4, PT_10GE_4, and PTSA_GE.

Table 13-26 Satellite Alarms

Alarm	Description
SAT_DISCOVERY_FAIL	Satellite panel discovery failure.
SAT_ACT_LINK_FAIL	Satellite panel active link failure.
SAT_COMM_FAIL	Satellite panel communication failure.
SAT_IMPROPER_CONFIG	Satellite panel improper configuration.
SAT_FAN_MEA	Satellite panel fan mismatch of equipment and attributes.
SAT_FAN_FAIL	Satellite panel fan failure.
SAT_FAN_DEGRADE	Satellite panel partial fan failure.
SAT_FAN_MFGMEM	Satellite panel fan manufacturing data memory (EEPROM) failure.
SAT_FAN_MISSING	Satellite panel fan unit is missing.
SAT_IHITEMP	Satellite panel industrial high temperature.
SAT_HITEMP	Satellite panel high temperature.
SAT_BAT_FAIL	Satellite panel battery failure.
SAT_BAT_FAIL_A	Satellite panel battery A failure.
SAT_BAT_FAIL_B	Satellite panel battery B failure.

13.9.3.3 Port Alarms

Table 13-27 describes the port alarms.

Table 13-27 Port Alarms

Alarm Name/Condition	PTF_10GE_4 Client	Required on PTF_10GE_4 Trunk Ports	Required on PT_10GE_4 Client	Required on PTSA_GE 1G Port	Required on PTSA_GE Client
MAC_MOVE—MAC address is relearned on a different port in the same bridge domain	Yes	Yes	Yes	Yes	—
SAT_ACTIVE_LINK_FAIL—Satellite panel active link failure	Yes	Yes	Yes	—	—
Legacy Alarms on PTF_10GE_4 and PT_10GE_4					
SYNCLOSS	Yes	Yes	Yes	Yes	Yes
SIGLOSS	Yes	Yes	Yes	Yes	Yes
LOCAL-FAULT	Yes	Yes	Yes	No	Yes
REMOTE-FAULT	Yes	Yes	Yes	No	Yes
SF	No	Yes	No	No	No
SD	No	Yes	No	No	No
FEC-MISM	No	Yes	No	No	No
UNC-WORD	No	Yes	No	No	No
GCC-EOC	No	Yes	No	No	No
HELLO	—	Yes	—	—	—
ISIS-ADJ-FAIL	No	No	No	No	No
PROV-MISMATCH	Yes	Yes	Yes	Yes	Yes
TRAIL-SIGNAL	—	—	—	—	—
LMP-SD	No	No	No	No	No
LMP-SF	No	No	No	No	No
LMP-UNALLOC	No	No	No	No	No
LMP-FAIL	No	No	No	No	No
UNC-WORD	No	Yes	No	No	No
LOF	Yes	Yes	Yes	Yes	Yes
LOS	Yes	Yes	Yes	Yes	Yes
OUT-OF-SYNC	Yes	Yes	Yes	Yes	Yes
OTUK-IAE	No	Yes	No	No	No
OTUK-SD	No	Yes	No	No	No
OTUK-SF	No	Yes	No	No	No
OTUK-TIM	No	Yes	No	No	No
LOM	No	Yes	No	No	No
OTUK-LOF	No	Yes	No	No	No

Table 13-27 Port Alarms (continued)

Alarm Name/Condition	PTF_10GE_4 Client	Required on PTF_10GE_4 Trunk Ports	Required on PT_10GE_4 Client	Required on PTSA_GE 1G Port	Required on PTSA_GE Client
FEC-MISM	No	Yes	No	No	No
OTUK-AIS	No	Yes	No	No	No
ODUK-BDI-PM	—	Yes	—	—	—
OTUK-BDI	—	Yes	—	—	—
ODUK-SD-PM	—	Yes	—	—	—
ODUK-SF-PM	—	Yes	—	—	—
ODUK-TIM-PM	—	Yes	—	—	—
ODUK-AIS-PM	—	Yes	—	—	—
ODUK-LCK-PM	—	Yes	—	—	—
ODUK-OCI-PM	—	Yes	—	—	—
HI-RXPOWER	Yes	Yes	Yes	Yes	Yes
LO-RXPOWER	Yes	Yes	Yes	Yes	Yes
HI-TXPOWER	Yes	Yes	Yes	Yes	Yes
LO-TXPOWER	Yes	Yes	Yes	Yes	Yes
HI-LASERBIAS	Yes	Yes	Yes	Yes	Yes
LO-LASERBIAS	Yes	Yes	Yes	Yes	Yes
HI-LASERTEMP	Yes	Yes	Yes	Yes	Yes
LO-LASERTEMP	Yes	Yes	Yes	Yes	Yes
HI-PELTIER	—	—	—	—	—
LO-PELTIER	—	—	—	—	—
HI-XCVRVOLT	—	—	—	—	—
LO-XCVRVOLT	—	—	—	—	—
WVL-MISMATCH	No	Yes	No	No	No
PORT-COMM-FAI	—	—	—	—	—
DSP-FAIL	—	—	—	—	—
UT-COMM-FAIL	—	—	—	—	—
UT-FAIL	—	—	—	—	—
LASER-OFF-WVL	—	—	—	—	—
TX-OFF-NON-CI	Yes	Yes	Yes	Yes	Yes
PORT-CODE-MIS	—	—	—	—	—
PORT-COMM-FAI	—	—	—	—	—
PORT-MISMATCH	—	—	—	—	—
PORT-MISSING	—	—	—	—	—
LPBKTERMINAL	Yes	Yes	Yes	Yes	Yes
LPBKFACILITY	Yes	Yes	Yes	Yes	Yes

Table 13-27 Port Alarms (continued)

Alarm Name/Condition	PTF_10GE_4 Client	Required on PTF_10GE_4 Trunk Ports	Required on PT_10GE_4 Client	Required on PTSA_GE 1G Port	Required on PTSA_GE Client
HELLO	—	—	—	—	—
ISIS-ADJ-FAIL	—	—	—	—	—
AS-CMD	—	—	—	—	—
AS-MT	—	—	—	—	—
NEIGHBOR-ADJACENCY-FAILURE	Yes	Yes	Yes	Yes	No
LINK-FLAPPING	Yes	Yes	Yes	Yes	No
MIS-CONFIGURED-SEGMENT	Yes	Yes	Yes	Yes	No
VLB-FAILED	Yes	Yes	Yes	Yes	No
VLB-DEACTIVATED	Yes	Yes	Yes	Yes	No
PRIMARY-EDGE-PORT-ELECTED	Yes	Yes	Yes	Yes	No
SECONDARY-EDGE-PORT-ELECTED	Yes	Yes	Yes	Yes	No
SEGMENT-HEALED	Yes	Yes	Yes	Yes	No
STNC-GENERATED	Yes	Yes	Yes	Yes	No
VLB-ACTIVATED	Yes	Yes	Yes	Yes	No
VLB-TRIGGER-DELAY-ACTIVE	Yes	Yes	Yes	Yes	No

13.9.3.4 Service Alarms

Table 13-28 describes the service alarms.

Table 13-28 Service Alarms

Alarms	Description	Level
PW Alarms		
WKG_PW_CP_DOWN	Working pseudowire control plane down alarm. This alarm is raised on the port if the working pseudowire control plane is down.	Port/PTS_CHANNEL_GROUP
PRT_PW_CP_DOWN	Protect pseudowire control plane down alarm. This alarm is raised on the port if the protect pseudowire control plane is down.	Port/PTS_CHANNEL_GROUP
WKG_PW_CC_DOWN	Working pseudowire continuity check down alarm. This alarm is raised on the port if the working pseudowire continuity check is down.	Port/PTS_CHANNEL_GROUP
PRT_PW_CC_DOWN	Protect pseudowire continuity check down alarm. This alarm is raised on the port if the protect pseudowire continuity check is down.	Port/PTS_CHANNEL_GROUP
PW_ WKSWPR	Pseudowire traffic switched to protection alarm. This alarm is raised on the port when the pseudowire traffic is switched from the working path to the protected path.	Port/PTS_CHANNEL_GROUP

Table 13-28 Service Alarms (continued)

Alarms	Description	Level
WKG_PW_LOC_AC_TX_FLT	Working pseudowire local AC Tx port fault alarm. This alarm is raised when a working pseudowire local AC Tx port fault is detected.	Port/PTS_CHANNEL_GROUP
PRT_PW_LOC_AC_TX_FLT	Protect pseudowire local AC Tx port fault alarm. This alarm is raised when a protect pseudowire local AC Tx port fault is detected.	Port/PTS_CHANNEL_GROUP
WKG_PW_LOC_AC_RX_FLT	Working pseudowire local AC Rx port fault alarm. This alarm is raised when a working pseudowire local AC Rx port fault is detected.	Port/PTS_CHANNEL_GROUP
PRT_PW_LOC_AC_RX_FLT	Protect pseudowire local AC Rx port fault alarm. This alarm is raised when a protect pseudowire local AC Rx port fault is detected.	Port/PTS_CHANNEL_GROUP
WKG_PW_REM_AC_TX_FLT	Working pseudowire remote AC Tx port fault alarm. This alarm is raised when a working pseudowire remote AC Tx port fault is detected.	Port/PTS_CHANNEL_GROUP
PRT_PW_REM_AC_TX_FLT	Protect pseudowire remote AC Tx port fault alarm. This alarm is raised when a protect pseudowire remote AC Tx port fault is detected.	Port/PTS_CHANNEL_GROUP
WKG_PW_REM_AC_RX_FLT	Working pseudowire remote AC Rx port fault alarm. This alarm is raised when a working pseudowire remote AC Rx port fault is detected.	Port/PTS_CHANNEL_GROUP
PRT_PW_REM_AC_RX_FLT	Protect pseudowire remote AC Rx port fault alarm. This alarm is raised when the protect pseudowire remote AC Rx port fault is detected.	Port/PTS_CHANNEL_GROUP
S_PE Alarms		
WKG_LOC_PW_NOT_FWD	Working local pseudowire not forwarding alarm. This alarm is raised when the local working pseudowire is not forwarding traffic.	PTS**
PRT_LOC_PW_NOT_FWD	Protected local pseudowire not forwarding alarm. This alarm is raised when the local protect pseudowire is not forwarding traffic.	PTS**
WKG_REM_PW_NOT_FWD	Working remote pseudowire not forwarding alarm. This alarm is raised when the remote working pseudowire is not forwarding traffic.	PTS**
PRT_REM_PW_NOT_FWD	Protect remote pseudowire not forwarding alarm. This alarm is raised when the remote protect pseudowire is not forwarding the traffic.	PTS**
MPLS_TP Alarms		
TP_TUNNEL_DOWN	MPLS-TP tunnel down alarm. This alarm is raised when the working or protect LSP is down.	PTS**
WKG_LSP_DOWN	Working LSP down alarm. This alarm is raised on the port if the working LSP is down.	Port/PTS_CHANNEL_GROUP
PRT_LSP_DOWN	Protect LSP down alarm. This alarm is raised on the port if the protect LSP is down.	Port/PTS_CHANNEL_GROUP

Table 13-28 Service Alarms (continued)

Alarms	Description	Level
WKG_LSP_AIS	Working LSP alarm indication signal. This alarm is raised when the working LSP receives an LSP alarm indication signal.	Port/PTS_CHANNEL_GROUP
PRT_LSP_AIS	Protect LSP alarm indication signal. This alarm is raised when the protect LSP receives an LSP alarm indication signal.	Port/PTS_CHANNEL_GROUP
WKG_LSP_RDI	Working LSP remote defect indication. This alarm is raised when the working LSP receives an LSP remote defect indication.	Port/PTS_CHANNEL_GROUP
PRT_LSP_RDI	Protect LSP remote defect indication. This alarm is raised when the protect LSP receives an LSP remote defect indication.	Port/PTS_CHANNEL_GROUP
BFD_DOWN	BFD down alarm. This alarm is raised when the BFD is not enabled on the port.	Port/PTS_CHANNEL_GROUP
TP_WKSPWR	TP traffic switched to protection alarm. This alarm is raised when the MPSL-TP traffic switches from working pseudowire to protected pseudowire.	Port/PTS_CHANNEL_GROUP
WKG_TP_LOCKOUT	Working TP lockout alarm. This alarm is raised when the lockout request is set to ON for the working MPLS-TP.	Port/PTS_CHANNEL_GROUP
PRT_TP_LOCKOUT	Protect TP lockout alarm. This alarm is raised when the lockout request is set to ON for the protect MPLS-TP.	Port/PTS_CHANNEL_GROUP
WKG_LSP_LDI	Working LSP link defect indication. This alarm is raised when the working LSP receives an LSP link defect indication.	Port/PTS_CHANNEL_GROUP
PRT_LSP_LDI	Protect LSP link defect indication. This alarm is raised when the protect LSP receives an LSP link defect indication.	Port/PTS_CHANNEL_GROUP
WKG_LSP_LKR	Working LSP lock report alarm. This alarm is raised when an interface is administratively shutdown on a working path in an MPLS-TP tunnel.	Port/PTS_CHANNEL_GROUP
PRT_LSP_LKR	Protect LSP lock report alarm. This alarm is raised when an interface is administratively locked and a lockout request (LKR) is generated on the nearest reachable endpoint.	Port/PTS_CHANNEL_GROUP
EVC Alarms		
EFP_FAIL	EFP failed alarm. This alarm is raised when the EFP fails due to incomplete hardware provisioning or when the interface on which the EFP is present goes down.	Port
MPLS_TE		
TE_TUNNEL_DOWN	TE tunnel down alarm. This alarm is raised when the working and protected MPLS-LSP goes down.	PTS**

Icons and Menus Displayed in Prime Optical

This appendix describes the icons used in Cisco Prime Optical. This appendix contains the following sections:

- A.1 Network Map, Domain Explorer, and Subnetwork Explorer Icons, page A-1
- A.2 Prime Optical Menu Bars, page A-4

A.1 Network Map, Domain Explorer, and Subnetwork Explorer Icons

The following table displays the icons that appear in the Network Map, Domain Explorer, and Subnetwork Explorer. When you open the Network Map from a selected NE in the Domain Explorer or Subnetwork Explorer, the selected NE is preselected on the map.

The icon has white text displayed on a black background. This allows you to distinguish the previously selected NE from the other NEs in the same map.

Table A-1 Icons

Device	Map Icon
Cisco CRS-1	
All ONS 15216 NEs	
ONS 15305	
ONS 15310 CL	

Table A-1 Icons (continued)

Device	Map Icon
ONS 15310 MA SONET	
ONS 15310 MA SDH	
ONS 15327	
All ONS 15454 NEs	
ONS 15530	
ONS 15540	
ONS 15600	
Network partition	
Domain Area	
Group	
Subnetwork	
Not Managed/Other Vendor **Note** The Not Managed/Other Vendor icon is customizable.	

A.1.1 Alarm Icons

The following table shows the icons that correspond to alarm status.

Table A-2 Icon Colors

Alarm Status	Color	Example
Informational	Blue	
Critical	Red	
Major	Orange	
Minor	Yellow	
Warning	Light blue	
Normal	Green	
Unknown	Blue	

A.1.2 Operational State Icons

The following table shows the icons that correspond to operational status.

Table A-3 Icon States

State	Icon
Preprovisioned	
In Service	

Table A-3 Icon States (continued)

State	Icon
Synchronization Configuration	
In Service Initializing	
Maintenance	
Out of Service	

A.1.3 Communication State Icons

The following table shows the icons that correspond to device communication status.

Table A-4 Communication Icon States

State	Color	Icon
Reachable	Green	
Only Reachable	Orange	
Unreachable	Red	
Initialization Failed	Yellow	
Not Applicable	Dark red	

A.2 Prime Optical Menu Bars

The Prime Optical menus are described below. The associated toolbar icons are listed next to their corresponding menu options.

A.2.1 File Menu

The following table describes the tools and options in the File menu.

Table A-5 File Menu Tools Descriptions

Item	Tool	Description
Add Network Element(s)		Opens the Add New Network Element wizard, which allows you to add a new NE or add several new NEs at once.
Add New Network Partition		Opens the Add New Network Partition dialog box, which allows you to add new network partitions to the domain.
Add New Subnetwork		Opens the New Subnetwork dialog box. From here, you can add a new subnetwork, give the subnetwork a name, specify the type and topology, and provide a brief description of the subnetwork.
Close	—	Closes the current window.
Customize View		You can customize the way tables are displayed by selecting the columns to be displayed, and the order in which to display them. Prime Optical allows you to save your customized table view so that the next time you open the table, it is displayed in the same manner in which it was saved. See 1.6.9 Customizing Table Views, page 1-43 for more information.
Dashboard	—	Opens the Cisco Prime Optical Dashboard, which shows the number of NEs in the management domain, and the number of critical, major, minor, warning, or unacknowledged alarms. The dashboard also contains an Alarm Browser tool, which allows you to launch the Alarm Browser window, and an Open Domain Explorer tool, which layers the Domain Explorer window as the top active window.
Debug Options	—	Opens the Debug Options dialog box. Use this dialog box to select parameters for the Debug Log, which contains data that is useful for debugging purposes.
Delete Saved Filter		Deletes a saved filter from the Alarm Log and Audit Log tables.
Domain Explorer	—	Layers the Domain Explorer window as the top active window.
Domain NE Table	—	Opens the Domain NE table for the selected node.
ENE Devices	—	Opens the ENE Devices table for the selected node.
TNE Devices	—	Opens the TNE Devices table for the selected tunnel NE (TNE).
EVC Table		Opens the EVC table from the EVC Cross-Connections table. Select the EVC cross-connection for which you want to cross-launch the EVC Service table, then click this icon.
Exit	—	Exits the program.
Export Data to File		Opens the Export dialog box.
Filter		Opens a filter dialog box, which allows you to filter for information found in the table or window. There are two filter icons displayed in Prime Optical. **Note** Use the percent sign (%) as a wildcard character for filtering on substrings.

Table A-5 File Menu Tools Descriptions (continued)

Item	Tool	Description
Filter Time Period		Allows you to filter using time as a parameter. As the default, Prime Optical displays alarm and event information that occurred during the last four hours. To quickly filter the time period, select the Filter Time Period (4h) tool. You can change the default time period by using the User Preferences dialog box. The icon displayed in the tool bar changes according to the time period selected.
Generate HTML Report		Allows you to generate an HTML report based on the data in the table. You can generate a report for selected rows or for all rows. After you have made your selection, the browser window appears with the HTML report. Use your browser's Print option to print the HTML report.
Launch Bulk NE Wizard	—	Opens the Bulk NE Wizard, which allows you to add multiple NEs simultaneously.
Network Map		Opens the Network Map window for the selected node.
New Group		Opens the New Group dialog box. From here, you can add a new group, give the group a name, specify the group's geographic location, and provide a brief description of the group.
Notify Users	—	Opens the Notify Users dialog box.
Page Back		Moves the table backward by one page if there is more than one page of data.
Page Forward		Moves the table forward by one page if there is more than one page of data.
Parent (also Show Parent Network Map)		If the Network Map is open to a specific NE, clicking Parent or Show Parent Network Map shifts the view back to the main Network Map view.
Perform Protection Switch Operation		Performs protection operations on single and multiple circuits.
Print Graph		Prints the graphical display.
Pseudowire Table		Opens the Pseudowire table from the EVC Cross-Connections table. Select the pseudowire cross-connection for which you want to cross-launch the PW Service table, then click this icon.
Rediscover		Rediscovers the selected MPLS-TP, EVC, or Pseudowire cross-connection.The data for the selected cross-connection is deleted from the Prime Optical database and then rediscovered from the NE.
Refresh Circuit Power Levels	—	(ONS 155xx only) Refreshes the values in the Destination Optical Power column.

Table A-5 File Menu Tools Descriptions (continued)

Item	Tool	Description
Refresh Data		Refreshes all data being displayed by Prime Optical. There are three icons, and both refresh and sync data from either the server or the database. The Refresh Data icon with blue and red arrow (as seen in the Circuit table) flashes when updates are available. This icon has two modes: manual refresh and autorefresh. The other icons (as seen in the VLAN table or CPT System windows) do not notify you that updates are available. You must click the button in order to retrieve updated data. **Note** Clicking Refresh Data in the Domain Explorer window refreshes all data for the entire Prime Optical client. Depending on the number of NEs in your network, you might experience a delay while the data refreshes. **Note** It takes longer to refresh data from the NE than from the server.
Revert to Default	—	Reverts your map customizations (map background, node icons, and *x* and *y* coordinates) to the default map view.
Save		Saves changes made in the current window.
Save as Default	—	Saves your map customizations (map background, node icons, and *x* and *y* coordinates) as the default map view.
Save Custom View	—	Saves your customized table view so that the next time you open the table, it is displayed in the same manner in which it was saved.
Set PM Collection Status		Opens the PM Collection Status dialog box. Use this dialog box to enable or disable PM collection for specific modules and display the results in the PM Module table.
Show Discrepancy Details		Shows detailed information about the selected ONS 155xx discrepancy.
Show Parent Network Map		See Parent.
Subnetwork Explorer	—	Opens the Subnetwork Explorer window.
TP Table		Force polling on an MPLS-TP, EVC, or Pseudowire cross-connection. Select the cross-connection for which you want to force polling on, then click this icon.
Update		Opens the EVC table from the EVC Cross-Connections table. Select the EVC cross-connection for which you want to cross-launch the EVC Service table, then click this icon.

A.2.2 Edit Menu

The following table describes the tools and options in the Edit menu.

Table A-6 Edit Menu Tools Descriptions

Item	Tool	Description
Accept		(ONS 15600 only) Copies the downloaded software onto the standby TSC and activates it.
Activate	—	Activates the selected image and reboots the device.
Activate CTC Binary		Allows you to activate the selected CTC binary. There can be only one active CTC binary at a time. If you select a CTC binary that is already active, the Activate CTC Binary tool becomes unavailable.
Add		Allows you to add an entry to the table. Selecting **Add** opens the Add SNMP Parameters dialog box, in which you can enter a target IP address, the write and read community strings, the number of connection retry attempts, and the timeout (the length of time after which a connection attempt is aborted).
Add CTC Binary		Allows you to specify a CTC JAR file to upload to the Prime Optical server. Clicking the **Add CTC Binary** tool (or choosing **Edit > Add**) opens the Upload CTC Binary File dialog box, where you can enter the CTC JAR filename or click **Browse** to browse for the filename. In addition, you can make the new binary the active binary by checking the **Activate** check box.
Add EFD Profile		Opens the Create Event Forwarding Discriminator Profile wizard.
Add NE User		Opens the Add NE User wizard.
Add Peer Card		Allows addition of another 100G_LC_C peer card to the CFP_TXP card configuration with only one peer card configured.
Add Predefined User		Opens the Add Predefined User wizard.
Add Supported NE		Allows you to add an NE to the Supported NE table and specify its software version.
Affected Circuits		Allows you to view the affected circuits.
APC Results		Opens the APC Results table, which contains automatic power control (APC) data for the nodes and sides that belong to the selected APC domain.
Cancel Job		Allows you to cancel a scheduled job. Cancel is enabled only for jobs with a Queued status.

Table A-6 Edit Menu Tools Descriptions (continued)

Item	Tool	Description
Cancel Task		Allows you to cancel a task.
Change Map Background	—	Opens the Select Map Background dialog box, which allows you to choose a different geographic background for the selected view.
Change Node Icon	—	Opens the Select Node Icon File dialog box, which allows you to select a new icon for the selected node.
Change Password	—	Opens the Change Password dialog box, which allows you to change your Prime Optical or CTC user password.
Circular Layout	—	Arranges the NE on the Network Map in a circular formation.
Close Tunnel		Closes the TL1 tunnel on the selected TNE. A warning message is displayed, alerting you that closing a tunnel will result in loss of connectivity to the selected TNE and all of its ENEs.
Collapse		Collapses the management domain or group to hide all groups or NEs in that management domain or group.
Collapse All Links	—	Collapses all links on the Network Map.
Commit		For the ONS 15327 and ONS 15454, the Commit operation makes the standby software version the active version if it is a later version than the active software. **Note** Commit is not applicable to ONS 155xx or ONS 15600 NEs.
Copy		Copies the selected NE.
Create a New User		Opens the Create New User wizard. When launched from the GateWay/CORBA Client Configuration table, opens the Add GateWay/CORBA User dialog box.
Create a New User Profile		Opens the Create New User Profile wizard.
Create CTC User Profile		Opens the Create CTC User Profile wizard.
Cut		Copies the selected NE. The NE is not removed from its current location until the Paste action is performed.
Declutter Layout	—	Rearranges the icons on the Network Map so that they do not overlap.

Table A-6 Edit Menu Tools Descriptions (continued)

Item	Tool	Description
Delete	—	Deletes the selected instance of the NE or group. If this is the last instance of the NE, the NE is placed in the Deleted NEs group. Only out-of-service or preprovisioned NEs can be placed in the Deleted NEs group. To delete the NE from the database, select the NE in the Deleted NEs group and choose **Edit > Delete**; then, click **OK**. This removes the NE from the client view and deletes all records associated with the NE from the database. If this is the last instance of the group, the group must be empty before you can delete it. **Note** You cannot delete a GNE that has associated subtending NE(s). You can disassociate a subtending NE from the GNE by deleting and purging it or by assigning it to a different GNE. **Note** You cannot delete a TNE that has associated subtending NE(s). You can disassociate a subtending NE from the TNE by deleting and purging it. **Note** You cannot delete an NE that has links to it that are defined in the Link table. Before deleting the NE, you must first delete the links to it.
Delete		Deletes the selected item. There are two delete icons in Prime Optical. The second and third icons are displayed in the CPT System windows.
Delete All	—	Deletes all instances of the selected NE or group. The NE is placed in the Deleted Network Elements group. Only out-of-service or preprovisioned NEs can be placed in the Deleted NEs group. The group must be empty before you can delete it. **Note** You cannot delete a GNE that has associated subtending NE(s). You can disassociate a subtending NE from the GNE by deleting and purging it or by assigning it to a different GNE. **Note** You cannot delete a TNE that has associated subtending NE(s). You can disassociate a subtending NE from the TNE by deleting and purging it. **Note** Delete All does not delete items in a range. Rather, Delete All deletes multiple instances of the same NE or group.
Delete BLSR/MS-SPRing		Deletes the selected BLSR or MS-SPRing.
Delete CTC User Profile		Deletes the selected CTC user profile.
Delete EFD Profile		Deletes the selected event forwarding discriminator profile.

Table A-6 Edit Menu Tools Descriptions (continued)

Item	Tool	Description
Delete Link		Deletes the selected link.
Delete User Profile		Deletes the selected user profile.
Disable APC		Disables the APC on a selected node.
Discover APC Domain		Discovers all APC domains.
Duplicate User Profile		Opens the Create Duplicate Profile window, which allows you to duplicate an existing Prime Optical user profile.
Edit		Opens the Modify wizard window, which allows you to make changes to the selected object. This icon is displayed in the CPT System windows.
Edit BLSR/MS-SPRing		Opens the Edit BLSR/MS-SPRing window, which allows you to modify the ring ID, ring reversion, and span reversion on a ring.
Enable APC		Enables the APC on a selected node.
Enable Drag		Enables drag-and-drop functionality for all nodes in the Network Map window.
Enable Offview		Enables the display of off-view icons in the Network Map window.
Switch Selected BLSR/MS-SPRing		Opens the Switch BLSR/MS-SPRing window, which allows you to set up BLSR/MS-SPRing scheduling data immediately or for an exact time.
Expand		Expands the management domain or group to display all groups or NEs in that management domain or group.
Expand All Links	—	Expands all links on the Network Map.
Modify CTC User Profile		Opens the Modify CTC User Profile wizard.
Modify EFD Profile		Opens the Modify Event Forwarding Discriminator Profile wizard.

Table A-6 Edit Menu Tools Descriptions (continued)

Item	Tool	Description
Modify Link		Opens the Modify Link wizard, which allows you to modify the name or description of the selected link.
Modify NE User		Opens the Modify NE User wizard.
Modify Tunnel		Allows you to modify the settings of the selected TNE.
Modify User Profile Properties		Opens the Modify Prime Optical User Profile Properties wizard.
Modify User Properties		Opens the Modify Prime Optical User Properties wizard. When launched from the GateWay/CORBA Client Configuration table, opens the Modify GateWay/CORBA User dialog box.
NE Active Users		Opens the NE Active Users table.
NE Software Table		Opens the NE Software table.
Open Tunnel		Opens a TL1 tunnel on the selected TNE.
Paste		Pastes the NE into the selected group.
Remove Peer Card		Allows deletion of an existing 100G_LC_C peer card from a CFP_TXP card configuration.
Reset Specific ML Cards		Opens the Reset ML Cards dialog box.
Revert/Switch		For the ONS 15327 and ONS 15454, the Revert/Switch operation causes the active software version to revert to the standby version. **Note** Revert/Switch is not applicable to ONS 155xx or ONS 15600 NEs.
Run APC		Runs the APC function manually.

Table A-6 Edit Menu Tools Descriptions (continued)

Item	Tool	Description
Search		Opens the Search dialog box, which allows you to search the tree by node name, IP address, or description.
Search Next		Searches for the next occurrence of the entry that was searched for using the Search tool.
Spring Layout	—	Arranges the icons on the Network Map in a coiled spring formation.
Squeeze	—	If you select a file that is marked “deleted” and use this command, the file will be physically removed from flash memory.
Table Layout	—	Arranges the icons on the Network Map in rows and columns.
Tag Under Maintenance	—	Allows you to give a port the status of Under Maintenance. Select an in-service port and choose **Edit > Tag Under Maintenance**.
Upgrade BLSR/MS-SPRing		Allows you to upgrade the selected BLSR or MS-SPRing.
Undelete	—	Undeletes the selected object.
Undelete	—	Prime Optical restores the selected NE under the management domain node.
Unlock User		Allows you to unlock a user account.
User Note		Allows you to add a note to the job or equipment.
User Preferences	—	Opens the User Preferences dialog box.
Verify	—	Verifies the checksum of the selected flash file.
Zoom Area		Allows you to pan and zoom the view to a different region of the window. Hold down the left mouse button and use the Zoom Area box to highlight an area on the window. When you release the left mouse button, the zoom is applied on the selected area of the window.
Zoom In		Allows you to zoom in on the window. This tool increases the size of all of the graphic objects in the window.
Zoom Out		Allows you to zoom out on the window. This tool decreases the size of all of the graphic objects in the window.

A.2.3 Fault Menu

The following table describes the tools and options in the Fault menu.

Table A-7 Fault Menu Tools Descriptions

Item	Tool	Description
Acknowledge Alarms		Acknowledge the selected alarm(s). Click again to unacknowledge the selected alarm(s). To enable alarm unacknowledgement, choose **Control Panel > UI Properties**.
Acknowledge All Alarms		Acknowledges all alarms. Click again to unacknowledge all alarms.
Alarm Browser		Opens the Alarm Browser window.
Alarm Log		Opens the Alarm Log window.
Clear Security Violation Alarm	—	Clears any security violation alarms on the selected NE. This option is only available from the NE Explorer window. If this option is not available on the selected NE, the Clears Security Violation Alarms option is grayed out. A message appears if there are no security violation or intrusion alarms on the NE or if the operation has been accepted.
Clear Selected Alarm(s)		Clear selected alarms. A message appears, informing you that only PM failed and PM lost alarms on NEs in your domain will be cleared.
Event Export Manager	—	Opens the Event Export Manager window.
Hide Acknowledged Alarms		Hides all alarms that have been acknowledged.
Hide Cleared Alarms		Hides all alarms that have been cleared.
Locate Alarm/Event		Opens the NE Explorer for the NE where the selected alarm or event is located.
Ping NE	—	Pings the selected NE for IP connectivity.
Reset All Alarms/Events		Clears (resets) all alarms or events from the current view.
Show Alarm Note		Opens the Alarm Note dialog box for the selected alarm.
Show Cleared Alarms		Shows all alarms that have been cleared.

Table A-7 Fault Menu Tools Descriptions (continued)

Item	Tool	Description
Stop Continuous Beep	—	Disables continuous audible notification whenever a new update occurs in the Dashboard window.
Test NE Connectivity	—	For ONS 155xx NEs, tests SNMP connectivity to the selected NE using the community string configured in the Prime Optical client.
Syslog Viewer	—	Opens the Syslog Viewer window.

A.2.4 Performance Menu

The following table describes the options in the Performance menu.

Table A-8 Performance Menu Descriptions

Item	Description
PM Query by Category	Allows you to search for PM data based on the PM category.
PM Query by NE Model	Allows you to search for PM data based on the non-CTC-based NE model.
PM Collection Settings	Allows you to configure PM collection settings by NE type.

A.2.5 Configuration Menu

The following table describes the tools and options in the Configuration menu.

Table A-9 Configuration Menu Tools Descriptions

Icon/Item	Tool	Description
Add or Create Option		Opens the Create wizards for CPT System windows.
Add Drops		Opens the Add L2 Service Drops window.
Add Member		Opens the Add Member wizard, which allows you to add new members to an existing VCAT circuit.
Cancel Roll		Cancels the pending circuit roll.
Complete Roll		Use the Complete Roll button to terminate a manual roll. You can do this when a manual roll is in a ROLL_PENDING state and you have not yet completed the roll or have not canceled its sibling roll.

Table A-9 Configuration Menu Tools Descriptions (continued)

Icon/Item	Tool	Description
Create Circuit		Allows you to create a circuit between NEs in the same group or subnetwork or between NEs in different groups or subnetworks. When you select an NE and choose **Configuration > Circuit Wizard**, the pointer changes to a plus symbol (+), indicating that you are in Create Circuit mode. Click the destination NE to open the Create Circuit wizard, prepopulated with the source and destination nodes.
Create Circuit Roll		Opens the Roll Circuit wizard.
Create L2 Service		Opens the Create L2 Service wizard.
Create L2 Topology		Opens the Create L2 Topology wizard.
Create Link		Allows you to create a link between NEs in the same group or subnetwork or between NEs in different groups or subnetworks. When you select an NE and choose **Configuration > Create Link**, the pointer changes to a plus symbol (+), indicating that you are in Create Link mode. Click the destination NE to open the Create Link wizard, prepopulated with the source and destination nodes. After the link is created, it is viewable in the Network Map window.
Create QoS Profile		Opens the Create QoS Profile dialog box.
CTC-Based SDH NEs	—	Allows you to view and configure various services and features for SDH NEs, including circuits, MS-SPRings, Layer 2 topologies, QoS profiles, alarm profiles, and so on.
CTC-Based SONET NEs	—	Allows you to view and configure various services and features for SONET NEs, including circuits, BLSRs, Layer 2 topologies, QoS profiles, alarm profiles, and so on.
Delete Circuit		Allows you to delete an existing circuit. You can also select and delete multiple circuits.
Delete Drops		Deletes the selected drop. A popup window appears. Click Yes to delete the L2 service or click No to close the window without deleting the L2 service.
Delete L2 Service		Deletes the selected L2 service. A popup window appears. Click Yes to delete the L2 service or click no to close the window without deleting the L2 service.

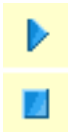
Table A-9 Configuration Menu Tools Descriptions (continued)

Icon/Item	Tool	Description
Delete L2 Topology		Deletes the selected L2 topology. A popup window appears. Click Yes to delete the L2 topology or click No to close the window without deleting the L2 topology. **Note** You must delete any L2 services on the selected topology before you can delete the selected topology.
Delete Link		Deletes the selected link.
Delete QoS Profile		Deletes the selected QoS profile.
Discover L2 Topologies	—	Initiates a manual discovery of L2 topologies by triggering events for valid L1 circuits in the database.
Duplicate QoS Profile		Opens the Duplicate QoS Profile dialog box.
Edit Circuit		Opens the Edit Circuit window.
Equipment Inventory Table	—	Opens the Equipment Inventory table for the selected NE.
Finish Roll		Use the Finish Roll button to complete the circuit processing of both manual and automatic rolls. It changes the circuit state from ROLL_PENDING to ACTIVE.
J1 Path Trace	—	Opens the J1 Path Trace window.
L2 Service Table		Opens the L2 Service table.
Link Table	—	Opens the Link table.
Manage VLANs	—	Opens the Manage VLANs dialog box, which allows you to create new VLANs or delete existing VLANs from the Prime Optical domain.
Member Circuits		Opens the VCAT Member table.
Merge		Merges different circuits into one or more new circuits.
Modify Drops		Opens the Modify L2 Drops window.
Modify L2 Service		Opens the Modify L2 Service wizard.

Table A-9 Configuration Menu Tools Descriptions (continued)

Icon/Item	Tool	Description
Modify L2 Topology		Opens the Modify L2 Topology wizard.
Modify Link		Opens the Modify Link wizard, which allows you to modify the name or description of the selected link.
Modify a QoS Profile		Opens the Modify QoS Profile wizard.
NE Explorer		Opens the NE Explorer window.
NE Remote Console		Launches the local Telnet application.
ONS 15216	—	Opens the Equipment Inventory table and launches the TL1 interface and the CLI.
ONS 15305	—	Opens the Equipment Inventory table and launches the CLI, Cisco Edge Craft, and CTC for R3.0.
ONS 155XX	—	Opens the Equipment Inventory table, Circuit table, NE Discrepancy table, Discovery Info table; allows you to rediscover some or all NEs; and launches the TL1 interface, the CLI, and the Cisco IOS CLI.
Open Circuit Path Span Table		Opens the Circuit Path Span table.
Open Circuit Path Table		Opens the Circuit Path table for the selected link. Unavailable for some NEs.
Open Circuit Span		Opens the Circuit Span table.
Open Circuit Table		Opens the Circuit table for the selected link. Unavailable for some NEs.
Open Link Utilization Table		Opens the Link Utilization table for the selected link.
Set OTS Link Capacity		Opens the OTS Link Capacity window.
Open Link Utilization Report		Opens the OTS Link Utilization report for the selected links.

Table A-9 Configuration Menu Tools Descriptions (continued)

Icon/Item	Tool	Description
Open Circuit Report		From the OTS Link Utilization report, opens the Circuit report for the selected links.
Refresh Lined Up Circuits		Refreshes any new aligned circuits with the selected circuit.
Restoration Balloon Icon		Displays the most relevant current restoration value.
Roll Circuit		Opens the Roll Circuit wizard, which allows you to transfer ONS 15600 traffic from one facility to another without service interruption.
Show Contained Circuits	—	(ONS 15530 only) Opens a second Circuit table, which shows the circuits contained within the selected circuit.
Show Circuit Note		Allows you to view and add notes to circuits displayed in the Circuit table.
Show Drops		Opens the L2 Service Drop Ports table.
Show QoS Profile		Opens the QoS Classes table.
Start/Stop Template Configuration CLI Recording		Starts and stops recording configuration operations. When you stop recording, the Save Template Configuration dialog box opens, allowing you to save configuration details to a template file.
Trace Circuit		Opens the Circuit Trace window, which traces the connectivity of a circuit by showing in detail the source node, the destination node, and any intermediate nodes in graphical format.
Trace High-Level Circuit		Opens the High-Level Circuit Trace window, which uses high-level span information such as NEs and links to display the circuit trace.
Trace Circuit and Trace High-Level Circuit (GMPLS)		When the cursor is positioned over this icon, the tooltip displays the accepted threshold and optical values as displayed in the circuit table.
VLAN Table	—	Opens the VLAN table.

A.2.6 Administration Menu

The following table describes the tools and options in the Administration menu.

Table A-10 Administration Menu Tools Descriptions

Item	Tool	Description
Add Predefined User		Opens the Add Predefined User wizard.
Add User		Opens the Add User wizard.
Audit Log		Opens the Audit Log window.
Bulk FTP Hosts Creation	—	Opens the Bulk FTP Hosts Creation wizard, which allows you to create FTP hosts in a GNE/ENE firewall environment for multiple NEs simultaneously.
Bulk Software Activation	—	Opens the Bulk Software Activation dialog box, which allows you to schedule a bulk software activation job.
Control Panel	—	Opens the Control Panel window.
CTC-Based NEs	—	Opens the NE User Access Administration table, Audit Trail table, Security Advisory Message Management dialog box, NE Authentication dialog box, or Cisco IOS Users table.
CTC Upgrade Table	—	Opens the CTC Upgrade table.
User Profiles		Opens the Prime Optical User Profiles table.
Users	—	Opens the Prime Optical Users window.
Delete User		Opens a user deletion confirmation window. Click **Yes** to delete the selected user.
Disconnect User		Disconnects the selected user from the Prime Optical application.
Enable/Disable Log		Opens the Enable/Disable Log Activation wizard.
Error Log		Opens the Error Log window.
GateWay/SNMP Users	—	Opens the OSS SNMPv3 Users table, which allows you to add and configure the OSS clients that manage SNMPv3 traps.
GW/CORBA Client Configuration Table	—	Opens the Prime Optical GateWay/CORBA Client Configuration table.
Image Transfer	—	Opens the Image Upload window.

Table A-10 Administration Menu Tools Descriptions (continued)

Item	Tool	Description
Job Monitor	—	Opens the Job Monitor table.
Logged in Users		Opens the Logged In Prime Optical Users table, which lists the Prime Optical users who are currently logged into the Prime Optical application.
Logged in GateWay CORBA Users		Opens the Active GateWay/CORBA Users table, which lists the Prime Optical GateWay/CORBA users who are currently logged into the Prime Optical application.
Log Out GateWay CORBA User		Logs out the selected Prime Optical GateWay/CORBA user from the Prime Optical application.
Log Out User		Logs out the selected user from the Prime Optical application.
Memory Backup	—	Opens the Memory Backup dialog box.
Memory Backup Upload	—	Opens the Backup File dialog box.
Memory Restore	—	Opens the Memory Restore dialog box.
Modify User		Opens the Modify User wizard.
NE Active Users		Opens the NE Active Users table.
NE Software Table	—	Opens the NE Software table.
NE Users Access Activity Log		Opens the NE Users Access Activity Log table.
ONS 15216	—	Opens the NE User Access Administration table and the NE Authentication dialog box.
ONS 155XX	—	Opens the SNMP Settings table, Flash File table, or NE Authentication dialog box.
Retrieve Last Activity Time		Refreshes the Last Activity Time field for the current list of active users, if the activity time has changed. The last activity time is the date and time when the last activity was performed by the active user on the NE.
Self Monitor	—	Opens the Self Monitor table, where you can view information about Prime Optical threshold parameters.
Service Monitor	—	Opens the Service Monitor table.
Show Failed Login Attempts		Opens the Unknown User Login Attempts table.
Show User Note		Allows you to view a user note.

Table A-10 Administration Menu Tools Descriptions (continued)

Item	Tool	Description
SNTP Configuration	—	Opens the SNTP Configuration dialog box.
Software Management	—	The Optical submenu opens the Software Download wizard.
Supported NE Table	—	Opens the Supported NE table.
Unlock		Allows you to unlock a user account.
Update Log		Updates the NE Access Log table.

A.2.7 View Menu

The following table describes the tools and options in the View menu.

Table A-11 View Menu Tools Descriptions

Item	Tool	Description
Clear PM Counters on NE		Clears the real-time PM counters on the NE.
Clear Screen		Clears the current real-time PM data buffer of all values.
Configure Graphing Parameters		Plots gauge parameters that have been stored over time. You can select parameters to plot on the same X-axis and modify the preselected start and end time. For 15-minute PM data, the time period can be plus or minus 125 hours from the selected row time stamp.
Fit in Window		Sizes the graph within the window. When multiple graphs are displayed, select a graph with your mouse pointer; then, click **Fit in Window**.
Launch Real-Time Performance Session		Launches a real-time PM session from the selected row in the PM table. If you select more than one row (or no rows), the toolbar icon is disabled.
Normalize Y Axes		Allows you to normalize axes values in PM graphs and compare data of the same type (for example, receive versus transmit packets).
Plot		Retrieves the available data points (rows) from the Prime Optical database and plots the graph. When the row selection changes on the table, you must click **Plot** again.

Table A-11 View Menu Tools Descriptions (continued)

Item	Tool	Description
Restore Y Axes		Allows you to restore axes values to the previous graph visualization in comparable PM graphs.
Specify Real-Time Polling Interval		By default, the real-time PM session polls the attributes every 10 seconds. Click this toolbar icon to change the real-time polling interval, or to start or stop real-time polling. The polling interval range is from 10 to 900 seconds.
Toggle Graph		Toggles between line and bar graphs.
WDM Topology	—	Allows you to view the complete circuit span between the source and destination NEs.
Zoom In		Reduces the scope of the graph. When multiple graphs are displayed, select a graph with your mouse pointer; then, click **Zoom In**.
Zoom Out		Increases the scope of the graph. When multiple graphs are displayed, select a graph with your mouse pointer; then, click **Zoom Out**.

A.2.8 Window Menu

The following table describes the tools and options in the Window menu.

Table A-12 Window Menu Tools Descriptions

Item	Tool	Description
Arrange Horizontally	—	When multiple Prime Optical windows are open, this option displays the windows side-by-side horizontally.
Arrange Vertically	—	When multiple Prime Optical windows are open, this option displays the windows side-by-side vertically.
Cascade	—	When multiple Prime Optical windows are open, this option positions the active window in the upper left corner, and all other windows are layered on top of the active window in cascading order.
Close All	—	Closes all Prime Optical windows except the Domain Explorer.
Minimize All	—	Minimizes all Prime Optical windows.
Restore All	—	Restores all minimized Prime Optical windows.
Reset to Default Size		Resets the current window to its default size.

A.2.9 Help Menu

The following table describes the tools and options in the Help menu.

Table A-13 Help Menu Tools Descriptions

Item	Tool	Description
Contents and Index	—	Displays the contents and index for the online help.
Current Window		Displays online help for the current window.
About Cisco Prime Optical	—	Opens the About Cisco Prime Optical dialog box, which lists the Prime Optical release you are running, including server and client version.

NE Explorer Information

This appendix provides information on the various NE Explorer windows supported in Cisco Prime Optical. This appendix contains the following sections:

- B.1 ONS 15216 NE Explorer, page B-1
- B.2 ONS 15305, page B-25
- B.3 ONS 15305 CTC NE Explorer, page B-26
- B.4 ONS 15310 CL NE Explorer, page B-32
- B.5 ONS 15310 MA SONET NE Explorer, page B-59
- B.6 ONS 15310 MA SDH NE Explorer, page B-89
- B.7 ONS 15327 NE Explorer, page B-120
- B.8 ONS 15454 MSTP NE Explorer, page B-148
- B.9 ONS 15454 SONET NE Explorer, page B-188
- B.10 ONS 15454 SDH NE Explorer, page B-232
- B.11 ONS 15454-M6 NE Explorer, page B-280
- B.12 ONS 15454-M2 NE Explorer, page B-319
- B.13 ONS 15600 SONET NE Explorer, page B-356
- B.14 ONS 15600 SDH NE Explorer, page B-384
- B.15 CPT 200 NE Explorer, page B-412
- B.16 CPT 600 NE Explorer, page B-441
- B.17 CRS-1/3 NE Explorer, page B-471
- B.18 Unmanaged NE/Other Vendor Node Properties Pane, page B-474

Note In the Prime Optical GUI, display-only fields have a gray background.

B.1 ONS 15216 NE Explorer

The NE Explorer for the ONS 15216 displays information about the selected ONS 15216 NE. ONS 15216 NEs are grouped as active NEs or passive NEs. Passive NEs do not have a management interface, so there is no communication between Prime Optical and passive ONS 15216 NEs. For passive ONS 15216 NEs, the NE Explorer summarizes NE information that has been entered manually through

the Domain Explorer and also allows you to specify the serial number. For active ONS 15216 NEs, the NE Explorer allows you to view the actual values of settings and parameters on the NE and modify configurable parameters.

Table B-1 ONS 15216 NEs

Active ONS 15216 NEs	Passive ONS 15216 NEs
ONS 15216 100-GHz OADM	ONS 15216 EDFA1
ONS 15216 EDFA2	ONS 15216 200-GHz OADM
ONS 15216 EDFA3	ONS 15216 100-GHz DWDM Filters
	ONS 15216 200-GHz DWDM Filters
	ONS 15216 OSC
	ONS 15216 DCU
	ONS 15216 FlexLayer

B.1.1 Active ONS 15216 NEs

The Network Element Properties pane for active ONS 15216 NEs displays information specific to the active ONS 15216 erbium-doped fiber amplifier (EDFA) and optical add/drop multiplexer (OADM) NEs. The properties pane contains the following slot properties:

- B.1.1.1 Status, page B-2
- B.1.1.2 Identification, page B-3
- B.1.1.3 Address, page B-3
- B.1.1.4 NE Authentication, page B-4

The following table lists the different types of active ONS 15216 NEs.

Table B-2 List of Active ONS 15216 NE Types and Descriptions

Active ONS 15216 Types	Description
EDFA	Active EDFA with an IP address.
OADM	Active 100-GHz OADM with an IP address. The OADM can be a 1-, 2-, or 4-channel OADM.

B.1.1.1 Status

The Status Properties pane displays status information for the active NE.

Table B-3 Field Descriptions for the Status Properties Pane

Field	Description
NE ID	Displays the user-defined name of the selected NE.
Description	Displays information that a user has entered (if any) to describe the NE.

Table B-3 Field Descriptions for the Status Properties Pane (continued)

Field	Description
NE Model	Identifies the model of the selected ONS 15216 NE.
Alarm Status	Displays the total number of critical, major, minor, and warning alarms currently existing on the selected NE.
Communication State	Displays the current connectivity state between Prime Optical and the selected NE. Values are Available or Unavailable.
Operational State	Displays the current operational state of the selected NE and allows you to change the state. Values are In Service, Out of Service, and Under Maintenance.

B.1.1.2 Identification

The Identification Properties pane displays NE identification information.

Table B-4 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the user-defined name of the selected NE.
Description	Displays information that user has entered (if any) to describe the NE.
NE Model	Identifies the model of the selected ONS 15216 NE.
NE Type	Displays the ONS 15216 NE type.
Vendor Name	Displays the vendor name. The default vendor name is Cisco Systems.
Software Version	Displays the NE software version.
Version Name	Displays the name of the software version.
Location Name	Displays the geographic location of the selected NE.

B.1.1.3 Address

The Address Properties pane provides address information for the NE. If you change an address, the NE is reset automatically to make the new address selection valid.

Table B-5 Field Descriptions for the Address Properties Pane

Field	Description
NE ID	Displays the user-defined name of the selected NE.
Description	Displays information that a user has entered (if any) to describe the NE.
NE Model	Identifies the model of the selected ONS 15216 NE.
Active IP Address	Displays the IP address of the selected NE.
SNMP Community String	Displays the configured community string name used in Simple Network Management Protocol (SNMP) messages. The community name is used to determine whether a user has access to the device.
GNE ID	Displays the ID for the gateway NE (GNE) on the selected NE ring.

Table B-5 Field Descriptions for the Address Properties Pane (continued)

Field	Description
Subnetwork ID	Displays the name of the subnetwork associated with the selected NE.
Network Partition ID	Displays the name of the network partition associated with the selected NE.

B.1.1.4 NE Authentication

The NE Authentication Properties pane allows you to specify usernames and passwords for Prime Optical server connections to ONS 15216 NEs. Fields shown depend on the type of NE selected.

Table B-6 Field Descriptions for the NE Authentication Properties Pane

Field	Description
NE Connection	
Username	Specify the username that the Prime Optical server uses to connect to ONS 15216 NEs.
Password	Specify the password to use for Prime Optical server-to-NE connections.
Confirm Password	Retype the password to confirm it.

Note Regardless of the actual length of the password, the Password and Confirm Password fields display only a fixed-length string of 15 asterisks (*).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.1.2 Passive ONS 15216 NEs

The Network Element Properties pane for passive ONS 15216 NEs displays information specific to the passive EDFA, the passive OADM, the DCU, the OSC, and the DWDM ONS 15216 NEs. The passive ONS 15216 properties pane contains an Identification.

The following table lists the different types of passive ONS 15216 NEs.

Table B-7 List of Passive ONS 15216 NE Types and Descriptions

Passive ONS 15216 Types	Description
EDFA	Passive EDFA with no IP address or connectivity.
OADM	Passive 200-GHz OADM with no IP address or connectivity. The OADM can be either a 1- or 2-channel OADM.
DCU	Passive DCU with no IP address or connectivity.

Table B-7 List of Passive ONS 15216 NE Types and Descriptions (continued)

Passive ONS 15216 Types	Description
OSC	Passive OSC with no IP address or connectivity.
DWDM	Passive DWDM filter with no IP address or connectivity. The DWDM filter can be a red, 200-GHz, DWDM filter; a blue, 200-GHz, DWDM filter; a red, 100-GHz, DWDM filter; or a blue, 100-GHz, DWDM filter.

B.1.2.1 Identification

The Identification Properties pane displays the NE identification information.

Table B-8 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the user-defined name of the selected NE.
Description	Displays information that a user has entered (if any) to describe the NE.
NE Model	Identifies the model of the selected NE (ONS 15216).
NE Type	Displays the ONS 15216 NE type.
Vendor Name	Displays the vendor name. The default vendor name is Cisco Systems.
Version Name	Displays the name of the software version.
Location Name	Displays the geographic location of the selected NE.
Operational State	Displays the current operational state of the system: In Service, Under Maintenance, or Out of Service.
Subnetwork ID	Displays the name of the subnetwork associated with the selected NE.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.1.3 ONS 15216 Passive DCU NE Explorer

The ONS 15216 Passive DCU NE Explorer displays information about the ONS 15216 Passive DCU NE. It contains Identification, Slot 1, and Slot 2 Properties panes. (See Figure B-1.)

Each slot can accommodate any one of the following modules:

- DCU-100 (100 ps/nm)
- DCU-350 (350 ps/nm)
- DCU-450 (450 ps/nm)
- DCU-550 (550 ps/nm)
- DCU-750 (750 ps/nm)
- DCU-950 (950 ps/nm)

- DCU-1150 (1150 ps/nm)
- DCU-E-200 (200 ps/nm, ELEAF type)
- DCU-E-350 (350 ps/nm, ELEAF type)
- DCU-L-300 (300 ps/nm)
- DCU-L-600 (600 ps/nm)
- DCU-L-700 (700 ps/nm)
- DCU-L-800 (800 ps/nm)
- DCU-L-1000 (1000 ps/nm)
- DCU-L-1100 (1100 ps/nm)
- DCU-DS-L-100 (100 ps/nm)
- DCU-DS-L-200 (200 ps/nm)
- DCU-DS-L-300 (300 ps/nm)
- 15216-FBGDCU-165 (165 ps/nm)
- 15216-FBGDCU-331 (331 ps/nm)
- 15216-FBGDCU-496 (496 ps/nm)
- 15216-FBGDCU-661 (661 ps/nm)
- 15216-FBGDCU-826 (826 ps/nm)
- 15216-FBGDCU-992 (992 ps/nm)
- 15216-FBGDCU-1157 (1157 ps/nm)
- 15216-FBGDCU-1322 (1322 ps/nm)
- 15216-FBGDCU-1653 (1653 ps/nm)
- 15216-FBGDCU-1983 (1983 ps/nm)

B.1.3.1 Identification

The Identification Properties pane displays identification information for the ONS 15216 DCU NE.

Table B-9 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
NE Type	Displays the type of NE.
NE Version	Displays the software version of the NE.
Product Name	Displays the name of the product.
CLEI Code	Displays the CLEI code.
Serial Number	Displays the serial number of the NE.
Location Name	Displays the name of the location where the NE is installed.

Table B-9 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Subnetwork ID	Displays the ID of the subnetwork to which the NE belongs.
Network Partition ID	Displays the ID of the network partition.

B.1.3.2 Slot 1 and Slot 2

The Slot 1 and Slot 2 Properties panes display information about the first and second slots. The fields in both Properties panes are identical, except that they pertain to different slots.

Table B-10 Field Descriptions for the Slot 1 and Slot 2 Properties

Field	Description
Module Type	Displays the NE model type. Select one of the following module types: • DCU-100 (100 ps/nm) • DCU-350 (350 ps/nm) • DCU-450 (450 ps/nm) • DCU-550 (550 ps/nm) • DCU-750 (750 ps/nm) • DCU-950 (950 ps/nm) • DCU-1150 (1150 ps/nm) • DCU-E-200 (200 ps/nm, ELEAF type) • DCU-E-350 (350 ps/nm, ELEAF type) • DCU-L-300 (300 ps/nm) • DCU-L-600 (600 ps/nm) • DCU-L-700 (700 ps/nm) • DCU-L-800 (800 ps/nm) • DCU-L-1000 (1000 ps/nm) • DCU-L-1100 (1100 ps/nm) • DCU-DS-L-100 (100 ps/nm) • DCU-DS-L-200 (200 ps/nm) • DCU-DS-L-300 (300 ps/nm)
Product Name	Displays the name of the product.
CLEI Code	Displays the CLEI code.
Serial Number	Displays the serial number of the NE.

B.1.4 ONS 15216 DWDM NE Explorer

The NE Explorer for the ONS 15216 DWDM displays information about the passive ONS 15216 DWDM NE. It contains an Identification Properties pane.

The Cisco ONS 15216 48-channel muxponder/demuxponder unit is a new ONS 15216 FlexLayer unit that allows 48 channels of ITU wavelengths to be placed onto a single fiber, and removes 48 channels of ITU wavelengths from a single fiber.

R9.6 supports the ONS 15216 48-channel muxponder/demuxponder odd/even unit:

- 15216-MD-48-ODD=: 48 channels spaced at 100 GHz on the Odd ITU grid
- 15216-MD-48-EVEN=: 48 channels spaced at 100 GHz on the Even ITU grid

B.1.4.1 Identification

The Identification Properties pane displays identification information about the ONS 15216 DWDM NE. See the following table for field descriptions.

Table B-11 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
NE Type	Displays the type of NE.
NE Version	Displays the software version of the NE.
Product Name	Displays the name of the product.
CLEI Code	Displays the Common Language Equipment Identification (CLEI) code.
Serial Number	Displays the serial number of the NE.
Location Name	Displays the name of the location where the NE is installed.
Subnetwork ID	Displays the ID of the subnetwork to which the NE belongs.
Network Partition ID	Displays the ID of the network partition.

B.1.5 ONS 15216 FlexLayer NE Explorer

The ONS 15216 FlexLayer NE Explorer displays information about the ONS 15216 FlexLayer NE. It contains the following Properties panes:

- B.1.5.1 Identification
- B.1.3.2 Slot 1 and Slot 2

B.1.5.1 Identification

The Identification Properties pane displays identification information about the ONS 15216 FlexLayer NE.

Table B-12 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
NE Type	Displays the type of NE.
NE Version	Displays the software version of the NE.
Product Name	Displays the name of the product.
CLEI Code	Displays the CLEI code.
Serial Number	Displays the serial number of the NE.
Location Name	Displays the name of the location where the NE is installed.
Subnetwork ID	Displays the ID of the subnetwork to which the NE belongs.
Network Partition ID	Displays the ID of the network partition.

B.1.5.2 Slot 1 Through Slot 4

The Slot Properties panes show module information pertaining to the selected ONS 15216 FlexLayer NE slot. The fields in both Properties panes are identical, except that they pertain to different slots.

Table B-13 Field Descriptions for the Slot 1 through Slot 4 Properties

Field	Description
Module Type	Displays the type of module in the slot.
Product Name	Displays the name of the product.
CLEI Code	Displays the CLEI code.
Serial Number	Displays the serial number of the NE.

B.1.6 ONS 15216 Passive EDFA NE Explorer

The ONS 15216 Passive EDFA NE Explorer displays information about the ONS 15216 Passive EDFA NE. It contains an Identification Properties pane.

B.1.6.1 Identification

The Identification Properties pane displays identification information for the ONS 15216 Passive EDFA NE.

Table B-14 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
NE Type	Displays the type of NE.
NE Version	Displays the software version of the NE.
Product Name	Displays the name of the product.
CLEI Code	Displays the CLEI code.
Serial Number	Displays the serial number of the NE.
Location Name	Displays the name of the location where the NE is installed.
Subnetwork ID	Displays the ID of the subnetwork to which the NE belongs.
Network Partition ID	Displays the ID of the network partition.

B.1.7 ONS 15216 Active EDFA2 NE Explorer

The ONS 15216 EDFA2 NE Explorer contains the following Properties panes, some of which apply only to a specific NE version:

- B.1.7.1 Identification, page B-10
- B.1.7.2 Address, page B-11
- B.1.7.3 Config/Status, page B-11
- B.1.7.4 Diagnostics, page B-13
- B.1.7.5 Thresholds, page B-13
- B.1.7.6 Alarm Behavior, page B-14
- B.1.7.7 SNMP, page B-15

B.1.7.1 Identification

The Identification Properties pane displays identification information about the ONS 15216 EDFA2 NEs.

Table B-15 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Alias	Displays the alias name of the NE.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.

Table B-15 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
NE Type	Displays the type of NE.
NE Version	Displays the software version of the NE.
Wavelength(s)	Displays the number of wavelengths for the NE. This field is not applicable to the active EDFA NE type.
Product Name	Displays the name of the product.
CLEI Code	Displays the CLEI code.
Serial Number	Displays the serial number of the NE.
Location Name	Displays the name of the location where the NE is installed.
Location	
Latitude	Allows you to set the latitude in the database. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude in the database. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.
Use Daylight Savings Time	If checked, Daylight Savings Time is observed.

B.1.7.2 Address

The Address Properties pane displays information about the NE network address.

Table B-16 Field Descriptions for the Address Properties Pane

Field	Description
IP Address	Displays the IP address of the NE.
Subnet Mask	Displays the subnetwork mask ID of the NE.
Gateway Address	Displays the gateway address of the NE.
SNMP Community String	Displays the SNMP community string of the NE. You can edit this field.
GNE ID	Displays the GNE ID.
Subnetwork ID	Displays the ID of the subnetwork to which the NE belongs.
Network Partition ID	Displays the ID of the network partition.

B.1.7.3 Config/Status

The Config/Status Properties pane displays the configuration settings and status of the EDFA2.

Table B-17 Field Descriptions for the Config/Status Properties Pane

Field	Description
Overall	
Overall Gain	Displays the value of the gain set point in dB when the mode is GAINTEMP (gets cerent15216EdfaConstGainOverallGainMeasured). Must be an integer from 13.0 to 22.0.
Measured Gain	Displays the measured overall gain in dB. The range is from 0.0 to 23.0. **Note** If there is no input power, this field reports a negative (invalid) value.
Pre-Attenuation	Displays the gain preattenuation value in dB (gets cerent15216EdfaVariableGainPreAttenuationMeasured). Must be an integer from 0.0 to 11.0.
Input Power	Displays the EDFA2 input power. Must be an integer from –9999.99 to 9999.99.
Output Power	Displays the EDFA2 output power. Must be an integer from –999.99 to 999.99.
DC Power Bus Mode	Displays the power bus mode setting (Simplex or Duplex) and allows you to change the mode.
Auto Laser Shutdown	Allows you to enable (On) or disable (Off) auto laser shutdown for the EDFA2. **Note** The auto laser shutdown feature is available for the ONS 15216 EDFA2 R2.4 and later.
Pump	
Control Mode Setting	Displays the control mode of the laser pumps. Constant gain is achieved by using an automatic control circuit that adjusts pump power when changes in input power are detected. The ONS 15216 EDFA2 operates in Constant Gain Temperature Compensated mode by default, but since there might be applications where other operating modes are required, the ONS 15216 EDFA2 can be set to operate in any one the following pump control modes: • Constant Gain Temperature Compensated mode (ConstGainTempComp; Cisco default). • Constant Output Power mode (ConstOutputPower). **Note** Pump 1 cannot be set to ConstOutputPower mode. • Constant Pump Current mode (ConstCurrent). • Constant Pump Power mode (ConstPower). • Idle—Laser pumps can be shut down using the Idle control mode. **Caution** Use the pump control modes Constant Output Power, Constant Pump Current, and Constant Pump Power with extreme caution. These modes are service affecting and can reduce the lifecycle of the lasers if used in extreme conditions. The factory default setting and the recommended mode of operation is Constant Gain Temperature Compensated mode. It is recommended that you contact the Cisco TAC before changing from this mode of operation.
Actual Control Mode	Displays the actual control mode of the laser pumps.
Constant Pump Current	Displays the laser pump constant pump current in milliamperes (mA). This is the current used when the control mode is changed to constCurrent. When changing Pump 1, Pump 2 is changed automatically when the Apply button is clicked.
Constant Pump Power	Displays the constant pump power in milliwatts (mW). The range is from 0 to 100 mW; the Cisco default is 0. You must set the constant power of pump 1 and pump 2 at the same time.
Constant Output Power	Displays the constant output power in mW. Only Pump2 is writeable. When ConstOutputPower is selected as the control mode, this field is enabled and editable for Pump2 and not for Pump1. The Const Power field is enabled with the Cisco default value (0). The range is from 0.0 to 65.0 mW.

B.1.7.4 Diagnostics

The Diagnostics Properties pane allows you to view NE laser pump attributes.

Table B-18 Field Descriptions for the Diagnostics Properties Pane

Field	Description
Gain Module Temp	Displays the gain module temperature in degrees Celsius. Must be an integer from –99.99 to 99.99.
Gain Module Volt	Displays the gain module voltage in volts. Must be an integer from 0 to 999.
Input Power	Displays the laser input power in dBm. Must be an integer from –9999.99 to 9999.99.
Output Power	Displays the laser output power in dBm. Must be an integer from –999.99 to 999.99.
Gain	Displays the laser gain in dB. Must be an integer from –999.9 to 999.9.
Pump	
Chip Temp	Displays the chip temperature in degrees Celsius. Must be an integer from –999.9 to 999.9.
Chip Temp Set Pt.	Displays the chip temperature set point in degrees Celsius. Must be an integer from 0.0 to 99.9.
TEC Current	Displays the TEC current in mA. Must be an integer from 0 to 99999.
Current	Displays the laser current in mA. Must be an integer from 0 to 999.
Power	Displays the pump power in mW. Must be an integer from 0.0 to 999.99.

B.1.7.5 Thresholds

The Thresholds Properties pane displays the threshold settings of the EDFA2.

Table B-19 Field Descriptions for the Thresholds Properties Pane

Field	Description
Input Power	
Threshold	Displays the input power threshold value in dBm. Must be an integer from –31 to –15.
Hysteresis	Displays the input power hysteresis value in dB. Must be an integer from 0 to 10.
Input Power	Displays the input power threshold value. Must be an integer from –9999.99 to 9999.99.
Output Power	
Alm Deviation	Displays the output power alarm deviation value in dB. Must be an integer from 0 to 10.
Alm Hysteresis	Displays the output power alarm hysteresis value in dB. Must be an integer from 0 to 10.
Output Power Setpt	Displays the output power setpoint threshold value.
Gain	
Min Gain	Displays the minimum gain setting. Must be an integer from –999.99 to 999.99.
Max Gain	Displays the maximum gain setting. Must be an integer from –999.99 to 999.99.
Measured Gain	Displays the value of the gain in dB when the mode is GAINTEMP (gets cerent15216EdfaConstGainOverallGainMeasured). Must be an integer from 0 to 23.
Gain Module Temperature	
Min Temperature	Displays the minimum case temperature in degrees Celsius. Must be an integer from –10 to 10.
Max Temperature	Displays the maximum case temperature in degrees Celsius. Must be an integer from 20 to 70.

Table B-19 Field Descriptions for the Thresholds Properties Pane (continued)

Field	Description
Min Hysteresis	Displays the minimum case temperature hysteresis in degrees Celsius. Must be an integer from 0 to 10.
Max Hysteresis	Displays the maximum case temperature hysteresis in degrees Celsius. Must be an integer from 0 to 10.
Power Bus	
Power Bus Min	Displays the minimum allowable power bus DC voltage. Must be an integer from –70 to –35.
Power Bus Max	Displays the maximum allowable power bus DC voltage. Must be an integer from –70 to –35.
Laser 1 Current	
Out-of-Range	Displays the Laser 1 pump temperature that is out of range.
Current	Displays the current of the Laser 1 pump in mA.
Laser 2 Current	
Out-of-Range	Displays the Laser 2 pump temperature that is out of range.
Current	Displays the current of the Laser 2 pump in mA.
Laser 1 Temperature	
Temp Min	Displays the minimum temperature of Laser 1.
Temp Max	Displays the maximum temperature of Laser 1.
Chip Temp	Displays the Laser 1 chip temperature in degrees Celsius. Must be an integer from –999.99 to 999.99.
Laser 2 Temperature	
Temp Min	Displays the minimum temperature of Laser 2.
Temp Max	Displays the maximum temperature of Laser 2.
Chip Temp	Displays the Laser 2 chip temperature in degrees Celsius. Must be an integer from –999.99 to 999.99.

B.1.7.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to enter, save, view, and update NE fault management attributes.

Table B-20 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Probable Cause	Displays the probable cause of the alarm.
Severity	Displays the alarm severity (Critical, Major, Minor, Informational, or Not Alarmed). **Note** If two minor power bus alarms are generated, the second alarm is escalated to critical in the Alarm Browser window. If the alarm severity is changed to another value, the alarm remains critical due to the power bus escalation feature, which overrides the alarm severity provisioning for power bus alarms.

B.1.7.7 SNMP

The SNMP Properties pane displays the settings for the SNMP Community table, the Trap Destination table, and SNMP views. The SNMP Properties pane contains the following tabs: SNMP Community Table, Trap Destination Table, and SNMP Views.

Table B-21 Field Descriptions for the SNMP Properties Pane

Field	Description
SNMP Community Table	
Community Name	Displays the SNMP community name.
View Index	Displays the view index that specifies which MIBs that the community string can access.
Privileges	Displays the bitmap of access privilege that govern what management operations a particular community can perform. These privileges are expressed as a sum of values, where each value represents a particular operation. The decimal values and their respective SNMP operation are: • 1—Get • 2—GetNext • 4—Response (enabled for all community strings) • 8—Set • 16—SNMPv1-Trap • 32—GetBulk • 64—Inform (enabled for all community strings) • 128—SNMPv2-Trap (enabled for all community strings) For example, 255 is the sum of all decimal values and specifies access to all SNMP operations. This sum is the default private community. 247 is the sum for all SNMP operations with the exception of the Set operation. This sum is the default public community. Use the buttons in the Privileges column to set privilege values. In the Privilege Editor dialog box, check the check boxes that correspond to the privileges that you want to set. After making your selections, click **OK**. Prime Optical computes the bit value automatically.
IP Address	Displays the source IP address.
Subnet Mask	Displays the subnet mask for the source IP address.
Status	Displays the community string status. Values are: • Active • Not in Service • Not Ready • Create and Go • Create and Wait • Destroy
Trap Destination Table	
IP Address	Displays the trap destination IP address.
UDP Port	Displays the trap destination UDP port.
Community Name	Displays the trap destination community string.

Table B-21 Field Descriptions for the SNMP Properties Pane (continued)

Field	Description
Version	Displays the trap version number.
View Index	Displays the trap destination MIB view index.
Status	Displays the community string status. Values are: • Active • Not in Service • Not ready • Create and Go • Create and Wait • Destroy
SNMP Trap Enable check box	If checked, allows you to enable SNMP traps on the NE. **Note** This is a global setting, meaning all users are affected by a change to this setting.
SNMP Views	
View Index	Displays the view index number, which is a unique value for each MIB view.
Subtree	Displays an object identifier that designates a subtree element in the MIB hierarchy.
Mask	Displays a bit mask that identifies objects in the subtree.
Type	Displays a flag that specifies the status of the view. Valid entries are included and excluded.
Status	Indicates the status of the SNMP view entry. If the entry currently exists, the status is active.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.1.8 ONS 15216 Active EDFA3 NE Explorer

The ONS 15216 EDFA3 NE Explorer contains the following Properties panes:

- B.1.8.1 Identification, page B-16
- B.1.8.2 Address, page B-17
- B.1.8.3 Config/Status, page B-18
- B.1.8.4 Diagnostics, page B-19
- B.1.8.5 Thresholds, page B-19
- B.1.8.6 Alarm Behavior, page B-20
- B.1.8.7 SNMP, page B-20

B.1.8.1 Identification

The Identification Properties pane displays identification information for the ONS 15216 EDFA3 NE.

Table B-22 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
NE Type	Displays the type of NE.
NE Version	Displays the software version of the NE.
Wavelength(s)	Displays the number of wavelengths for the NE. This field is not applicable to the active EDFA NE type.
Product Name	Displays the name of the product.
CLEI Code	Displays the CLEI code.
Serial Number	Displays the serial number of the NE.
Location Name	Displays the name of the location where the NE is installed.
NE Date and Time	Displays the date and time configured on the NE.
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).

B.1.8.2 Address

The Address Properties pane displays information about the NE network address.

Table B-23 Field Descriptions for the Address Properties Pane

Field	Description
IP Address	Displays the IP address of the NE.
Subnet Mask	Displays the subnetwork mask ID of the NE.
Gateway Address	Displays the gateway address of the NE.
SNMP Community String	Displays the SNMP community string of the NE. You can edit this field.
MAC Address	Displays the ONS 15216 EDFA3 address as it is identified on the IEEE 802 MAC layer.
GNE ID	Displays the GNE ID.
Subnetwork ID	Displays the ID of the subnetwork to which the NE belongs.
Network Partition ID	Displays the ID of the network partition.

B.1.8.3 Config/Status

The Config/Status Properties pane displays the configuration settings and status of the EDFA3 and lasers.

Table B-24 Field Descriptions for the Config/Status Properties Pane

Field	Description
Control Mode	
Control Mode	Displays the amplifier control mode. Values are: • Constant Output Power • Constant Gain (Cisco default)
Gain	
Gain	Displays the gain value. Values are integers from 0 to 40 dB.
Gain Setpoint	Displays the gain setpoint. The range is from 5.0 to 38.5 dB; the Cisco default is 21 dB.
Power	
Laser 1 Output Power	Displays the amplifier output power related to laser 1. The range is from –60 to 25 dBm.
Power Setpoint	Displays the amplifier output power setpoint value. The range is from –7 to 17 dBm; the Cisco default is 10 dBm.
Amplifier Input Power	Displays the amplifier input power. The range is from –60 to 25 dBm.
Laser 2 Input Power	Displays the mid-stage access input power value related to laser 2. The range is from –60 to 25 dBm.
Amplifier Output Power	Displays the mid-stage access output power value. The range is from –60 to 25 dBm.
Power Offset	Displays the output power offset. The range is from –20 to 20 dBm; the Cisco default is 0.
Tilt	
Tilt	Displays the tilt value. The range is from –15 to 15 dB.
Tilt Setpoint	Displays the tilt setpoint. The range is from –15 to 15 dB; the Cisco default is 0 dB.
Tilt Offset	Displays the tilt offset. The range is from –20 to 20 dB; the Cisco default is 0 dB.
Laser	
Laser Status	Displays the automatic laser shutdown (ALS) status. Values are: • On—Lasers are on • APR—Lasers are in the automatic power reduction state • Off—Lasers are off
OSRI	Displays the OSRI. Values are: • On—Laser switch is locked on • Off—(Cisco default) There is no lock on the lasers
DC Power Bus Mode	
DC Power Bus Mode	Displays the power bus mode: Simplex or Duplex.

B.1.8.4 Diagnostics

The Diagnostics Properties pane displays diagnostics information for the EDFA3 and lasers.

Table B-25 Field Descriptions for the Diagnostics Properties Pane

Field	Description
DCU Insertion Loss	Displays the insertion loss of the DCU inserted in mid-stage. The range is from 0 to 20 dB.
VOA Value	Displays the variable optical attenuator (VOA) value. The range is from –100 to 100 dB.
Laser Bias	
Laser 1 Bias	Displays the laser 1 bias. The range is from 0 to 150 mA.
Laser 2 Bias	Displays the laser 2 bias. The range is from 0 to 150 mA.
Temperatures	
Case Temperature	Displays the case temperature. The range is from –100 to 150 degrees Celsius.
Fiber Temperature	Displays the fiber temperature. The range is from –100 to 150 degrees Celsius.
Pump 1 Temperature	Displays the pump 1 temperature. The range is from –100 to 150 degrees Celsius.
Pump 2 Temperature	Displays the pump 2 temperature. The range is from –100 to 150 degrees Celsius.
Bus Voltages	
Bus A Voltage	Displays the power bus A voltage. The range is from 0 to 999 V.
Bus B Voltage	Displays the power bus B voltage. The range is from 0 to 999 V.

B.1.8.5 Thresholds

The Thresholds Properties pane displays the threshold settings of the EDFA3.

Table B-26 Field Descriptions for the Thresholds Properties Pane

Field	Description
Gain	
Degrade High	Displays the degrade high threshold associated with the amplifier gain. The range is from 0 to 40 dB.
Degrade Low	Displays the degrade low threshold associated with the amplifier gain. The range is from 0 to 40 dB.
Gain	Displays the gain value. The range is from 0 to 40 dB.
Line 1 Tx Power	
Degrade High	Displays the degrade high threshold associated with the amplifier output power related to the Line 1 Tx port. The range is from 0 to 40 dB.
Degrade Low	Displays the degrade low threshold associated with the amplifier output power related to the Line 1 Tx port. The range is from 0 to 40 dB.
Line 1 Output Power	Displays the amplifier output power related to the Line 1 Tx port. The range is from –60 to 25 dBm.
Fail Low	Displays the fail low threshold associated with the output power value related to the Line 1 Tx port. The range is from –10 to 14 dBm; the Cisco default is –6 dBm.
Line 1 Rx Power	
Amplifier Input Power	Displays the amplifier input power value related to the Line 1 Rx port. The range is from –60 to 25 dBm.

Table B-26 Field Descriptions for the Thresholds Properties Pane (continued)

Field	Description
Fail Low	Displays the fail low threshold associated with the input power value related to the Line 1 Rx port. The range is from –49 to 13 dBm; the Cisco default is 10 dBm.
Line 2 Rx Power	
Laser 2 Input Power	Displays the mid-stage access input power value related to the Line 1 Rx port. The range is from –60 to 25 dBm.
Fail Low	Displays the fail low threshold associated with the mid-stage access input power related to the Line 2 Rx port. The range is from –49 to 15 dBm; the Cisco default is –33 dBm.
Gain Module Temperature	
Temperature Max	Displays the maximum allowable case temperature threshold. The range is from 60 to 100 degrees Celsius; the Cisco default is 65 degrees Celsius.
Temperature Min	Displays the minimum allowable case temperature threshold. The range is from –10 to 30 degrees Celsius; the Cisco default is –5 degrees Celsius.
Case Temperature	Displays the case temperature. The range is from –100 to 150.
Bus Voltage	
Bus Voltage Max	Displays the power bus A and B maximum voltage. The range is from 49 to 70 V; the Cisco default is 57 V.
Bus Voltage Min	Displays the power bus A and B minimum voltage. The range is from 0 to 47 V; the Cisco default is 40 V.
Bus A Voltage	Displays the power bus A voltage. The range is from 0.0 to 999.9 V.
Bus B Voltage	Displays the power bus B voltage. The range is from 0.0 to 999.9 V.

B.1.8.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to enter, save, view, and update NE fault management attributes.

Table B-27 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Probable Cause	Displays the possible causes of the alarm.
Severity	Displays the alarm severity (Critical, Major, Minor, or Not Alarmed) and whether the alarm is service affecting (SA) or nonservice affecting (NSA).

B.1.8.7 SNMP

The SNMP Properties pane displays information about the SNMP Trap Destination table. Click **Add Row** to create a new trap destination; click **Delete Row** to delete an existing trap destination.

Table B-28 Field Descriptions for the SNMP Properties Pane

Field	Description
IP Address	Displays the SNMP IP address.
UDP Port Number	Displays the trap destination UDP port.

Table B-28 Field Descriptions for the SNMP Properties Pane (continued)

Field	Description
Community Name	Displays the trap destination community name.
Version	Displays the SNMP version number.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.1.9 ONS 15216 Active OADM NE Explorer

The ONS 15216 OADM NE Explorer displays information about the ONS 15216 100-GHz OADM NE.

The ONS 15216 100-GHz OADM NE Explorer contains the following Properties panes:

- B.1.9.1 Identification
- B.1.9.2 Address, page B-22
- B.1.9.3 DWDM, page B-22
- B.1.9.4 Alarms, page B-23
- B.1.9.5 Thresholds, page B-23

B.1.9.1 Identification

The Identification Properties pane displays identification information for the ONS 15216 100-GHz OADM NE.

Table B-29 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
NE Type	Displays the type of NE.
NE Version	Displays the software version of the NE.
Wavelength(s)	Displays the number of wavelengths for this NE.
Product Name	Displays the name of the product.
CLEI Code	Displays the CLEI code.
Serial Number	Displays the serial number of the NE.
Location Name	Displays the name of the location where the NE is installed.
NE Date and Time	Displays the date and time when the NE was installed.

B.1.9.2 Address

The Address Properties pane displays information about the NE network address.

Table B-30 Field Descriptions for the Address Properties Pane

Field	Description
IP Address	Displays the IP address of the NE.
Subnet Mask	Displays the subnetwork mask ID of the NE. If the field does not apply to the NE, the label is grayed out and the value reads *Not Applicable*.
Gateway Address	Displays the gateway address of the NE. If the field does not apply to the NE, the label is grayed out and the value reads *Not Applicable*.
SNMP Community String	Displays the SNMP community string of the NE. If the field does not apply to the NE, the label is grayed out and the value reads *Not Applicable*.
GNE ID	Displays the GNE ID.
Subnetwork ID	Displays the ID of the subnetwork to which the NE belongs.
Network Partition ID	Displays the ID of the network partition associated with the selected NE.

B.1.9.3 DWDM

The DWDM Properties pane allows you to view, enter, update, and save the NE DWDM attributes.

Table B-31 Field Descriptions for the DWDM Properties Pane

Field	Description
Channel Number	Displays the channels that can be added or dropped. Values are: • 1-channel—West 1, East 1 • 2-channel—West 1, East 1, West 2, East 2 • 4-channel—West 1, East 1, West 2, East 2, West 3, East 3, West 4, East 4
Mode	Allows you to configure the NE DWDM mode. Values are: • Setpoint (Cisco default)—The add channel power is set to the value of the Default Add Channel Power. Although the Default Add Channel Power can be set in any configuration, the add channel power is only equal to the Default Add Channel Power value in this mode. • Off—To turn off an add channel, set the channel power to a very low value (for example, –35 dBm). No alarm will be triggered. • Disable—When an add/drop channel is not in use, the channel should be configured in DISBABLE mode where no alarms will be triggered.
Default Add Channel Power	Displays the default power of the added channel in dBm. It is available only if you select Setpoint as the mode. Values must be from –29.0 to 3.0 in increments of 0.1.
InsLossAdd	Shows the calculated insertion loss for the add channel.
InsLossDrop	Shows the calculated insertion loss for the drop channel.
InsLossXpress	Shows the calculated insertion loss for the express/through channels.

Table B-31 Field Descriptions for the DWDM Properties Pane (continued)

Field	Description
Calculated Setpoint (CALCSETP)	The CALCSETP feature of the ONS 15216 OADM is a calculated value, and represents the OADMs recommended optical power level setting for a particular add channel. Following this recommendation when selecting the setpoint value for a particular add channel will allow the composite outgoing signal (composed of express channels and newly added channels) to be as flat as possible. The formula used for this calculation is CALCSETP = PWRDROP + ILDROP - ILTHRU.
Passive Cards	Provides information about passive units provisioned in CTC. **Note** Passive units can be provisioned in CTC only.

B.1.9.4 Alarms

The Alarms Properties pane allows you to enter, save, view, and update NE dropped-channel, signal-loss alarm attributes.

Table B-32 Field Descriptions for the Alarms Properties Pane

Field	Description
Channel Number	Displays the channels that can be added or dropped. Values are: • 1-channel—West 1, East 1 • 2-channel—West 1, East 1, West 2, East 2 • 4-channel—West 1, East 1, West 2, East 2, West 3, East 3, West 4, East 4
Drop Channel Signal Loss Alarm	Displays the current condition of the drop channel signal loss alarm. Values are: • On—Enables the loss signal alarm of the drop channel. • Off—Disables the loss signal alarm of the drop channel.

B.1.9.5 Thresholds

The Thresholds Properties pane allows you to enter, save, view, and update NE loss-of-signal and add/drop channel-signal mismatch threshold attributes.

Table B-33 Field Descriptions for the Thresholds Properties Pane

Field	Description
Channel Number	Displays the channels that can be added or dropped. Values are: • 1-channel—West 1, East 1 • 2-channel—West 1, East 1, West 2, East 2 • 4-channel—West 1, East 1, West 2, East 2, West 3, East 3, West 4, East 4
Loss of Signal	Displays the signal loss threshold value. Valid values are –30.0 to 3.5 dBm in increments of 0.1 dBm.
Drop and Add Signal Mismatch	Displays the threshold value for the drop channel signal loss alarm. Valid values are 0.2 to 2.0 dB in increments of 0.1 dB. The Cisco default is 1.0 dB.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.1.10 ONS 15216 Passive OADM NE Explorer

The ONS 15216 Passive OADM NE Explorer displays information about the ONS 15216 passive OADM NE. It contains an Identification Properties pane.

B.1.10.1 Identification

The Identification Properties pane displays identification information for the ONS 15216 passive OADM NE.

Table B-34 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
NE Type	Displays the type of NE.
NE Version	Displays the software version of the NE.
Wavelength(s)	Displays the number of wavelengths for this NE.
Product Name	Displays the name of the product. Displays *15216-MD16-2-BLUE* for the blue version and *15216-MD16-2-RED* for the red version. Displays *Unknown* if the product name is not known. **Note** The information displayed in the Product Name field depends on the wavelength selected.
CLEI Code	Displays the CLEI code. Displays *WMMFD00BRA* for the blue version and *WMMFE00BRA* for the red version. Displays *Unknown* if the CLEI code is not known. **Note** The information displayed in the CLEI Code field depends on the wavelength selected.
Serial Number	Displays the serial number of the NE. You can edit this field.
Location Name	Displays the name of the location where the NE is installed. You can edit this field.
Subnetwork ID	Displays the ID of the subnetwork to which the NE belongs.
Network Partition ID	Displays the ID of the network partition to which the NE belongs.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.1.11 ONS 15216 OSC Passive NE Explorer

The ONS 15216 Passive OSC NE Explorer displays information about the ONS 15216 passive OSC NE. It contains an Identification Properties pane.

B.1.11.1 Identification

The Identification Properties pane displays the identification information for the ONS 15216 passive OSC NE.

Table B-35 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
NE Type	Displays the type of NE.
NE Version	Displays the software version of the NE.
Wavelength(s)	Displays the number of wavelengths for this NE.
Product Name	Displays the name of the product.
CLEI Code	Displays the CLEI code.
Serial Number	Displays the serial number of the NE. You can edit this field.
Location Name	Displays the name of the location where the NE is installed. You can edit this field.
Subnetwork ID	Displays the ID of the subnetwork to which the NE belongs.
Network Partition ID	Displays the ID of the network partition.

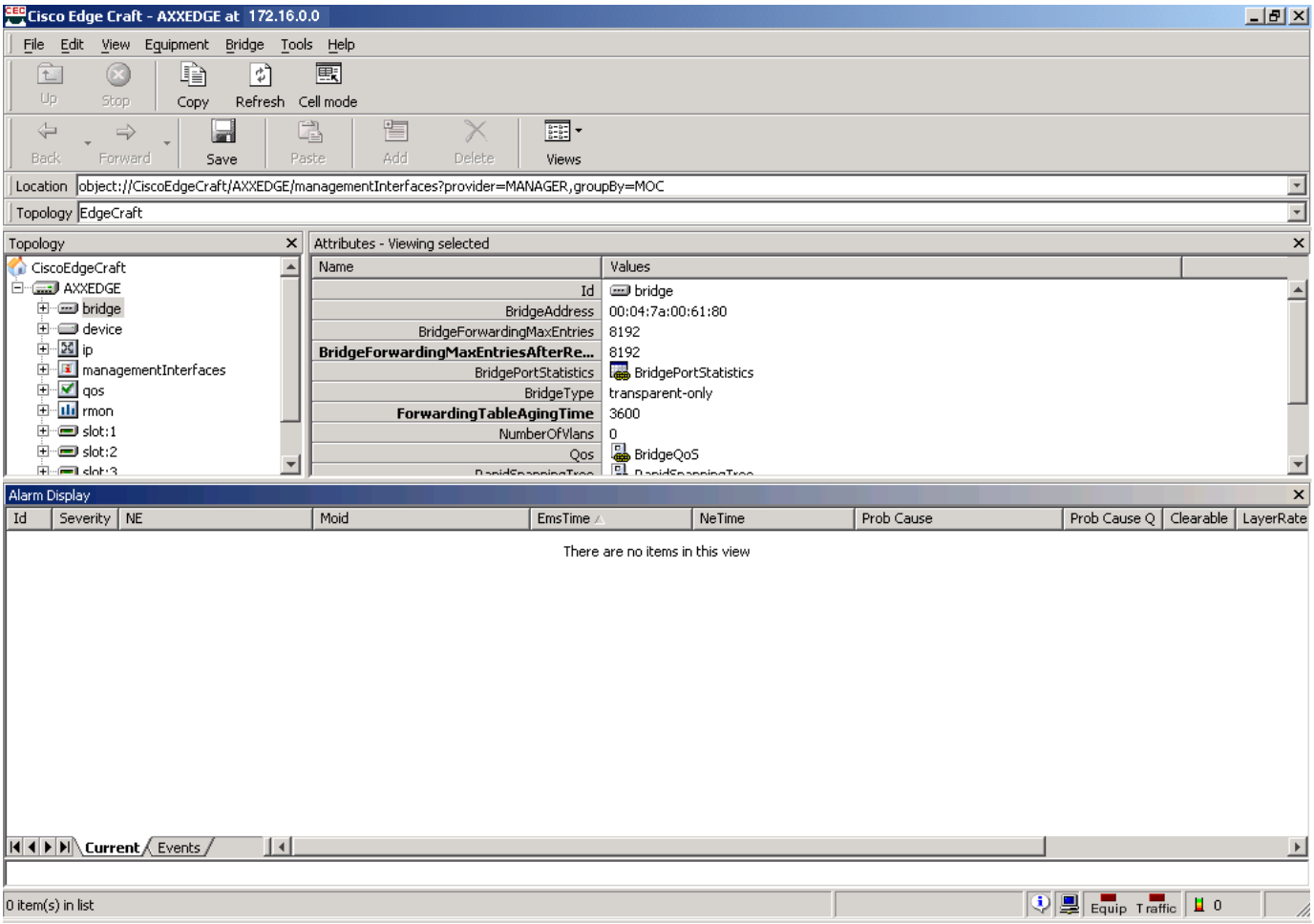
Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.2 ONS 15305

The NE Explorer is not available for the ONS 15305. You can get equivalent functionality by launching Cisco Edge Craft from Prime Optical; choose **Configuration > ONS 15305 > Launch Cisco Edge Craft**.

Note Cisco Edge Craft is not supported on Windows 7 client machine.

Figure B-1 Cisco Edge Craft for the ONS 15305



B.3 ONS 15305 CTC NE Explorer

When you choose **Configuration > NE Explorer** for the ONS 15305, the window that Prime Optical displays consists of a tree on the left side and a Properties pane on the right. The tree provides a hierarchical view and alarm status of the NE's physical shelves and slots. The Properties pane shows information about the selected entity. See B.3.1 Node Properties Pane—ONS 15305 CTC, page B-27 for more information.

Note If CTC is launched from the web browser for an ONS 15305 node, the CTC GUI might look different from when it is launched from Prime Optical. This discrepancy occurs because the latest version of CTC (for NE releases supported by Prime Optical) is packaged with Prime Optical. If launched from a browser, the CTC software is retrieved from the NE itself, which might be a version different from that packaged with Prime Optical.

When an NE Explorer is in autorefresh mode, all values of an entity that is being edited by the user are automatically refreshed. You will lose all of your changes unless you click the Apply button. To enable autorefresh, click the Refresh Data button in the NE Explorer.

B.3.1 Node Properties Pane—ONS 15305 CTC

The node properties pane displays information about the ONS 15305 CTC slot that is selected in the NE Explorer tree. The properties pane contains the following properties, some of which apply only to a specific NE version:

- B.3.1.1 Shelf View, page B-27
- B.3.1.2 Identification, page B-27
- B.3.1.3 Network, page B-28
- B.3.1.4 Protection, page B-30
- B.3.1.5 DCC, page B-31
- B.3.1.6 Alarm, page B-31

B.3.1.1 Shelf View

The Shelf View Properties pane displays a graphic of the ONS 15305 CTC that is selected in the NE Explorer tree. Moving the mouse pointer over the graphic of the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset or delete the card. For unprovisioned slots, the right-click menu allows you to add a card.

B.3.1.2 Identification

The Identification Properties pane displays information about the NE.

Table B-36 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name of the node contact person and the phone number.
System Description	Displays a description of the NE.
TP Settings	
Use TP Server	If checked, CTC uses a Simple Network Time Protocol (SNTP) server to set the date and time of the node. Using an SNTP server ensures that all ONS 15305 network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. If you check the **Use TP Server** check box, enter the server's IP address in the next field. If you do not use an SNTP server, complete the Time and Time Zone fields. The ONS 15305 CTC will use these fields for alarm dates and times.

Table B-36 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
TP Server	Displays the SNTP server IP address.
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.

B.3.1.3 Network

The Network Properties pane displays information about the NE network address. The Network Properties pane contains the following tabs:

- B.3.1.3.1 Address Tab, page B-28
- B.3.1.3.2 Static Routes Tab, page B-28
- B.3.1.3.3 OSPF Tab, page B-29
- B.3.1.3.4 SNMP Tab, page B-29

B.3.1.3.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-37 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.
MAC Address	Displays the ONS 15305 address as it is identified on the IEEE 802 MAC layer.

B.3.1.3.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and ONS 15305 CTC connectivity and create or delete static routes.

Table B-38 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.

Table B-38 Field Descriptions for the Static Routes Tab (continued)

Field	Description
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the ONS 15305 CTC and the computer.
Route Type	Displays the type of route (Other, Reject, Local, or Remote).
Protocol	Displays the protocol (OSPF or RIP).

B.3.1.3.3 OSPF Tab

The OSPF tab displays Open Shortest Path First (OSPF) information. OSPF is a link-state Internet routing protocol.

Table B-39 Field Descriptions for the OSPF Tab

Field	Description
Slot	Displays the slot number.
Port	Displays the port number.
DCC OSPF Area ID	Displays the number that identifies the ONS 15305 CTCs as a unique OSPF area. The OSPF area number can be from 0.0.0.0 to 255.255.255.255. The number must be unique to the LAN OSPF area.
LAN Port Area ID	Displays the OSPF area ID for the router port where the ONS 15305 CTC is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the designated router for a subnet.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.

B.3.1.3.4 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-40 Field Descriptions for the SNMP Tab

Field	Description
Allow SNMP Set	If checked, allows you to use SNMP management software with the ONS 15305 CTC.
IP Address	The IP address of the NMS.
Community Name	The SNMP community name. **Note** The SNMP community string cannot be blank in Prime Optical.

Table B-40 Field Descriptions for the SNMP Tab (continued)

Field	Description
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.
Relay A IP Address	The first ONS 15305 CTC to relay traps through. The IP address is appended to the base community string to tell the first NE the IP address and the port to forward the trap to. The second NE recognizes the IP address and strips it from the community string before forwarding the trap.
Relay A Community Name	The community name for the relay A node to use in the trap when forwarding it.
Relay B IP Address	The second ONS 15305 CTC to relay traps through.
Relay B Community Name	The community name for the relay B node to use in the trap when forwarding it.
Relay C IP Address	The third ONS 15305 CTC to relay traps through.
Relay C Community Name	The community name for the relay C node to use in the trap when forwarding it.

B.3.1.4 Protection

The Protection Properties pane contains the following tabs:

- B.3.1.4.1 Protection Groups Tab, page B-30
- B.3.1.4.2 Operations Tab, page B-31

B.3.1.4.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-41 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.	
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.
Type	View the protection type (1:1 [card], 1:N [card], Y Cable [port], or 1+1 [port]) of the selected protection group.
Protect Module	View the protect module if using 1+1 protection.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select the 1+1 (port) type.

Table B-41 Field Descriptions for the Protection Groups Tab (continued)

Field	Description
Revertive	If checked, the node reverts traffic to the working card or port after failure conditions for the amount of time entered in Reversion Time. This option is not available if you select the 1:N (card) type.
Reversion Time	If Revertive is checked, choose the amount of time following failure condition correction after which the node should switch back to the working card or port. Use half-minute increments. This option is available only if you select the 1:1 (card) type.

B.3.1.4.2 Operations Tab

The Operations tab displays the protection group operation information.

Table B-42 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock out switching, or lock on switching.

B.3.1.5 DCC

The DCC Properties pane allows you to configure the Data Communication Channel on the regeneration and multiplex sections.

Table B-43 Field Descriptions for the DCC Properties Pane

Field	Description
DccR	
DCC-R Terminations	Displays the DCC termination on the regeneration section configured. The slot and port on which this type of termination is configured are displayed.
Admin State	Allows you to check and set the administrative state of the DCC termination. Values are In Service (IS) or Out of Service (OOS).
DccM	
DCC-M Terminations	Displays the DCC termination on the multiplex section configured. The slot and port on which this type of termination is configured are displayed.
Admin State	Allows you to check and set the administrative state of the DCC termination. Values are IS or OOS.

B.3.1.6 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual nodes. The Alarm Properties pane contains the Alarm Behavior tab.

Note The Alarm Properties pane might contain default alarm profile entries for cards that are not supported by the ONS 15305 CTC. Therefore, you might see some alarms that do not apply to the NE type that you are provisioning.

B.3.1.6.1 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-44 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.4 ONS 15310 CL NE Explorer

When you choose **Configuration > NE Explorer** for the ONS 15310 CL, the window that Prime Optical displays consists of a tree on the left side and a properties pane on the right. The tree provides a hierarchical view and alarm status of the NE's physical shelves and slots. The properties pane shows information about the selected entity. See B.4.1 Node Properties Pane—ONS 15310 CL, page B-32 for more information.

Note If CTC is launched from the web browser for an ONS 15310 CL node, the CTC GUI might look different from when it is launched from Prime Optical. This discrepancy occurs because the latest version of CTC (for NE releases supported by Prime Optical) is packaged with Prime Optical. If launched from a browser, the CTC software is retrieved from the NE itself, which might be a version different from that packaged with Prime Optical.

When an NE Explorer is in autorefresh mode, all values of an entity that is being edited by the user are automatically refreshed. You will lose all of your changes unless you click the Apply button. To enable autorefresh, click the Refresh Data button in the NE Explorer.

B.4.1 Node Properties Pane—ONS 15310 CL

The node properties pane displays information about the ONS 15310 CL slot that is selected in the NE Explorer tree. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.4.1.1 Shelf View, page B-33

- B.4.1.2 General, page B-33
- B.4.1.3 Identification, page B-33
- B.4.1.4 Network, page B-34
- B.4.1.5 DCC, page B-41
- B.4.1.6 Timing, page B-43
- B.4.1.7 Protection, page B-46
- B.4.1.8 NE Defaults, page B-48
- B.4.1.9 Security, page B-48
- B.4.1.10 Alarm, page B-52
- B.4.1.11 XC Utilization, page B-53
- B.4.1.12 OSI, page B-54

B.4.1.1 Shelf View

The Shelf View Properties pane displays a graphic of the ONS 15310 CL that is selected in the NE Explorer tree. Moving the mouse pointer over the graphic of the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset or delete the card. For unprovisioned slots, the right-click menu allows you to add a card.

B.4.1.2 General

The General Properties pane displays identification information, voltage thresholds, and multishelf configurations for the ONS 15310 CL NE.

Table B-45 Field Descriptions for the General Properties Pane

Field	Description
Identification Tab	
NE ID	Displays the ID of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name and phone number of the node contact person.
Description	Enter a description of the NE.
System Description	Displays the NE type and the version of the system software.
Voltage/Temperature Tab	
Voltage	Displays the voltage (in millivolts) of the shelf that corresponds to the power supply.
Temperature	Displays the temperature (in degrees Celsius) of the shelf.

B.4.1.3 Identification

The Identification Properties pane displays information about the ONS 15310 CL NE.

Table B-46 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name of the node contact person and the phone number.
System Description	Displays a description of the NE.
SNTP Settings	
Use NTP/SNTP Server	If checked, CTC uses a Simple Network Time Protocol (SNTP) server to set the date and time of the node. Using an SNTP server ensures that all ONS 15310 CL network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. If you check the **Use NTP/SNTP Server** check box, enter the server's IP address in the next field. If you do not use an SNTP server, complete the Time and Time Zone fields. The ONS 15310 CL will use these fields for alarm dates and times.
SNTP Server	Displays the SNTP server IP address.
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.
Use Daylight Savings Time	If checked, Daylight Savings Time is observed.
AIS-V Insertion on STS-1 Signal Degrade - Path	
Insert AIS-V on STS-1 SD-P	If checked, the NE inserts an AIS-V signal when it detects an STS-1 signal degrade.
SD-P BER	Select the signal degrade path bit error rate for AIS-V insertion.

B.4.1.4 Network

The Network Properties pane displays information about the NE network address. The Network Properties pane contains the following tabs:

- B.4.1.4.1 Address Tab, page B-35
- B.4.1.4.2 Static Routes Tab, page B-35
- B.4.1.4.3 OSPF Tab, page B-36
- B.4.1.4.4 OSPF Area Range Tab, page B-36
- B.4.1.4.5 OSPF Virtual Links Tab, page B-37
- B.4.1.4.6 SNMP Tab, page B-37

- B.4.1.4.7 Firewall/Proxy Tab, page B-38
- B.4.1.4.8 RIP Routing Table Tab, page B-38
- B.4.1.4.9 RIP Tab, page B-39
- B.4.1.4.10 Routing Table Tab, page B-39
- B.4.1.4.11 Proxy Tunnels Tab, page B-40
- B.4.1.4.12 Firewall Tunnels Tab, page B-40
- B.4.1.4.13 FTP Hosts Tab, page B-41

B.4.1.4.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-47 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.
MAC Address	Displays the ONS 15310 CL address as it is identified on the IEEE 802 MAC layer.
Forward DHCP Requests	If checked, forwards Dynamic Host Configuration Protocol (DHCP) requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.
IPv6 Config	
Enable IPv6	If checked, allows you to configure the node to use the IPv6 protocol and to assign an IPv6 address to the node.
IPv6 Address	Enter the IPv6 address of the node.
Default IPv6 Router	Enter the IPv6 default router of the node.
IPv6 Subnet Mask	Enter the IPv6 subnetwork mask length.

B.4.1.4.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and ONS 15310 CL connectivity and create or delete static routes.

Table B-48 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the ONS 15310 CL and the computer.

B.4.1.4.3 OSPF Tab

The OSPF tab displays Open Shortest Path First (OSPF) information. OSPF is a link-state Internet routing protocol.

Table B-49 Field Descriptions for the OSPF Tab

Field	Description
Slot	Displays the slot number.
Port	Displays the port number.
DCC OSPF Area ID	Displays the number that identifies the ONS 15310 CL NE as a unique OSPF area. The OSPF area number can be from 0.0.0.0 to 255.255.255.255. The number must be unique to the LAN OSPF area.
SDCC Metric	Sets a cost for sending packets across the Section Data Communications Channel (SDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. The Cisco default metric is 100. This value is normally unchanged.
LDCC Metric	Sets a cost for sending packets across the Line Data Communications Channel (LDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
OSPF on LAN	
OSPF Active on LAN	If checked, enables ONS 15310 CL OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15310 CL NEs that directly connect to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the ONS 15310 CL is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the designated router for a subnet.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
OSPF Authentication	
Authentication Type	Displays Simple Password if the router where the ONS 15310 CL is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.4.1.4.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-50 Field Descriptions for the OSPF Area Range Tab

Field	Description
Range Address	Displays the area IP address for the ONS 15310 CL NE that resides within the OSPF area. For example, if the ONS 15310 CL OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the ONS 15310 CL NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF range table is advertised.

B.4.1.4.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-51 Field Descriptions for the OSPF Virtual Links Tab

Field	Description
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay (sec)	Displays the service speed. One second is the Cisco default.
Retransmit Interval (sec)	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval (sec)	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval (sec)	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.4.1.4.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-52 Field Descriptions for the SNMP Tab

Field	Description
Allow SNMP Set	If checked, allows you to use SNMP management software with the ONS 15310 CL.
Allow SNMP Proxy	If checked, allows you to configure the ONS 15310 CL to proxy SNMP calls.
IP Address	The IP address of the NMS.

Table B-52 Field Descriptions for the SNMP Tab (continued)

Field	Description
Community Name	The SNMP community name. **Note** The SNMP community string cannot be blank in Prime Optical.
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.
Relay A IP Address	The first ONS 15310 CL to relay traps through. The IP address is appended to the base community string to tell the first NE the IP address and the port to forward the trap to. The second NE recognizes the IP address and strips it from the community string before forwarding the trap.
Relay A Community Name	The community name for the relay A node to use in the trap when forwarding it.
Relay B IP Address	The second ONS 15310 CL to relay traps through.
Relay B Community Name	The community name for the relay B node to use in the trap when forwarding it.
Relay C IP Address	The third ONS 15310 CL to relay traps through.
Relay C Community Name	The community name for the relay C node to use in the trap when forwarding it.

B.4.1.4.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-53 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Gateway Settings	
Enable Proxy Server on Port	If checked, the ONS 15310 CL serves as a proxy for connections between the Prime Optical server and ONS 15310s that are DCC-connected to the proxy ONS 15310 CL. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server port number (display-only) is shown following the Enable Proxy Server on Port field. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Enables the ONS 15310 CL to proxy as an ENE. Note that an alternate expansion for ENE is *external network element*. • Gateway Network Element (GNE)—Enables the ONS 15310 CL to proxy as a GNE. • Proxy-only—Enables proxy only. If unchecked, the node does not proxy.

B.4.1.4.8 RIP Routing Table Tab

The RIP Routing Table tab allows you to view the Routing Information Protocol (RIP) routing table.

Table B-54 Field Descriptions for the RIP Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Cost	Displays the hop count metric. The valid range is from 1 to 15.

B.4.1.4.9 RIP Tab

The RIP tab allows you to view and configure RIP parameters.

Note

- When you enable RIP, you must wait for approximately one minute for the default RIP address summary to become visible.
- When you disable RIP on the NE, all summary address entries in the Summary Address table are deleted.

Table B-55 Field Descriptions for the RIP Tab

Field	Description
RIP Active	Check this check box to enable RIP. Uncheck it to disable RIP. **Note** Checking the RIP Active check box and clicking the **Apply** button does not enable RIP. Instead, you must check the RIP Active check box, click the **Create** button, and use the Create RIP Address Summary dialog box to create a new RIP address. For details, see 5.3.5 Using RIP, page 5-8.
RIP Type	Select RIP version 1.0 or RIP version 2.0.
Metric	Enter the hop count metric. The valid range is from 1 to 15.
Authentication Type	Select the authentication type.
Authentication Key	Enter the authentication key (password) if the authentication type is Simple Password.
Confirm Authentication Key	Retype the authentication key to confirm it.
RIP Address Summary	• Summary Address—Displays the summary address. • Mask Length—Displays the subnet mask length. • Cost—Displays the hop count metric. The valid range is from 1 to 15.
Create button	Click **Create** to create a new RIP address. See 5.3.5 Using RIP, page 5-8.
Delete button	Click **Delete** to delete an existing RIP address.

B.4.1.4.10 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-56 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Usage	Shows the number of times the listed route has been used.
Interface	Shows the ONS 15310 CL interface used to access the destination. Values are: • cpm0—The ONS 15310 CL Ethernet interface (that is, the RJ-45 jack on the TCC+/TCC2 and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface.

B.4.1.4.11 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-57 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.4.1.4.12 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-58 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.4.1.4.13 FTP Hosts Tab

The FTP Hosts tab allows you to configure database backup or restore and software download to an ENE when the firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which the FTP relay resumes blocking all FTP access for the ENEs.

Table B-59 Field Descriptions for the FTP Hosts Tab

Field	Description
Create button	Opens the Create New FTP Host dialog box, which allows you to create up to 12 new FTP hosts in a GNE/ENE firewall environment. See 5.3.10.1 Creating an FTP Host, page 5-22. **Note** You cannot create more than 12 FTP hosts.
Delete button	Deletes the selected FTP host.
FTP Host Address	Displays the FTP host IP address.
Prefix Length	Displays the FTP host subnet mask length.
Enable FTP Relay	Indicates whether FTP relay is enabled or disabled. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Displays the number of minutes that the FTP relay is configured to run, after which the FTP relay resumes blocking all FTP access for the ENEs.

B.4.1.5 DCC

The DCC Properties pane allows you to create, delete, and view SONET or SDH DCCs.

Table B-60 Field Descriptions for the DCC Properties Pane

Field	Description
SDCC	
SDCC Terminations	Displays the slot, port, and card type of an SDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.

Table B-60 Field Descriptions for the DCC Properties Pane (continued)

Field	Description
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the termination: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion. • UEQ—Unequipped; there is nothing in the slot. • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted. • SWDL—Software download in progress. • MT—Maintenance, as per the Admin State change. • AINS—Automatic in service. • DSBLD—Traffic is disabled on the entity. • LPBK—Port or connection has a loopback on it. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11 on page 11-15. See Table 11-11 on page 11-15 for the Service state-Secondary state possible values. **Note** If the NE release does not support the Service state, this field shows N/A.
LDCC	
LDCC Terminations	Displays the slot, port, and card type of an LDCC termination. Click **Create** to create a new LDCC termination; click **Delete** to delete the selected LDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.

Table B-60 Field Descriptions for the DCC Properties Pane (continued)

Field	Description
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the LDCC termination: • IS-NR—In Service–Normal • OOS-AU—Out of Service–Autonomous • OOS-MA—Out of Service–Management • OOS-AUMA—Out of Service–Autonomous and Management In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion • UEQ—Unequipped; there is nothing in the slot • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted • SWDL—Software download in progress • MT—Maintenance, as per the Admin State change • AINS—Automatic in service • DSBLD—Traffic is disabled on the entity • LPBK—Port or connection has a loopback on it
Create button	Allows you to create new terminations on SONET or SDH cards.
Edit button	Allows you to modify existing terminations on SONET or SDH cards.
Delete button	Allows you to delete the selected SDCC or LDCC.

B.4.1.6 Timing

The Timing Properties pane contains the following tabs:

- B.4.1.6.1 General Tab, page B-44
- B.4.1.6.2 Reference List Tab, page B-45

- B.4.1.6.3 Status Tab, page B-46
- B.4.1.6.4 Timing Report Tab, page B-46

B.4.1.6.1 General Tab

The General tab displays general timing information.

Note BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.

Table B-61 Field Descriptions for the General Tab

Field	Description
General Timing	
Timing Mode	Set the node timing mode: • External—The ONS 15310 CL derives its timing from a BITS source wired to the backplane pins. • Line—Timing is derived from an OC-N card (non-DWDM nodes) or OSC card (DWDM nodes) that is optically connected to the timing node. • Mixed—Timing is set to external and line timing references. **Caution** Mixed timing might cause timing loops. Use this mode with care.
SSM Message Set	Choose the synchronization status message (SSM) set level supported by your network. SSM is an SONET protocol that communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SONET Line layer. They enable SONET devices to automatically select the highest quality timing reference and to avoid timing loops. If a Generation 1 node receives a Generation 2 message, the message is mapped down to the next available Generation 1 node. For example, an ST3E message becomes an ST3.
Revertive	If checked, the ONS 15310 CL reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
Reversion Time	Use the Reversion Time field to specify the time in half-minute increments.
Quality of RES	If your timing source supports the reserved S1 byte, you set the timing quality here. (Most timing sources do not use RES.) Qualities are displayed in descending quality order as ranges. For example, ST3 < RES < ST2 means the timing reference is higher than a Stratum 3 and lower than a Stratum 2.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.
BITS IN Facilities	
In State	Set the BITS In state to In Service (IS) or Out of Service (OOS). If Timing Mode is set to External or Mixed, set the BITS In State for BITS-1 or BITS-2 to IS (In Service) depending on whether one or both BITS input pin pairs on the backplane are connected to the external timing source. If Timing Mode is set to Line, set the BITS In State to OOS.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either Extended Super Frame (ESF), or Super Frame (SF). SSM is not available with Super Frame.

Table B-61 Field Descriptions for the General Tab (continued)

Field	Description
Sync Messaging	If checked, enables the Synchronization Status Message (SSM) for BITS In. (SSM is not available if Framing is set to Super Frame.)
Admin SSM	If the Sync Messaging check box is not checked, you can choose the SSM Generation 2 type from the drop-down list.
BITS OUT Facilities	
Out State	Set the BITS reference to IS (In Service) or OOS (Out of Service). For nodes set to Line timing with no equipment timed through BITS Out, set the state to OOS. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to IS.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either ESF or SF (D4). SSM is not available with Super Frame.
AIS Threshold	If SSM is disabled or Super Frame is used, set the quality level where a node sends an alarm indication signal (AIS) from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
LBO	If you are timing an external device connected to the BITS Out pins, set the distance between it and the ONS 15310 CL. Options are 0-133 ft (Cisco default), 134-266 ft, 267-399 ft, 400-533 ft, and 534-655 ft.

B.4.1.6.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-62 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to the internal clock. This is the Stratum 3 clock provided on the TCC+. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal. • Timing Mode set to Line—Options are the node's working optical cards and Internal. **Note** For Timing Mode set to External and Timing Mode set to Line, select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1. • Timing Mode set to Mixed—Both BITS and optical cards are available, allowing you to set a mixture of external BITS and optical trunk cards as timing references.
BITS-1 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 Out is enabled as soon as BITS-1 facilities are placed in service.

B.4.1.6.3 Status Tab

The Status tab provides timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.
- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-63 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference. Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 out timing reference.
Operations	Execute a switch on the BITS-1 out timing reference. Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.

B.4.1.6.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

B.4.1.7 Protection

The Protection Properties pane contains the following tabs:

- B.4.1.7.1 Protection Groups Tab, page B-47
- B.4.1.7.2 Operations Tab, page B-47

B.4.1.7.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-64 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.	
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.
Type	View the protection type (1:1 [card], 1:N [card], Y Cable [port], or 1+1 [port]) of the selected protection group.
Protect Module	View the protect module if using 1+1 protection.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select the 1+1 (port) type.
Revertive	If checked, the node reverts traffic to the working card or port after failure conditions for the amount of time entered in Reversion Time. This option is not available if you select the 1:N (card) type.
Reversion Time	If Revertive is checked, choose the amount of time following failure condition correction after which the node should switch back to the working card or port. Use half-minute increments. This option is available only if you select the 1:1 (card) type.

B.4.1.7.2 Operations Tab

The Operations tab displays the protection group operation information.

Table B-65 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.

B.4.1.8 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the ONS 15310 CL NE. You can edit NE defaults for the ONS 15310 CL R5.0 and later.

Table B-66 Field Descriptions for the NE Defaults Properties Pane

Field	Description
Parameter	Lists the default NE parameter.
Value	Shows the default parameter value, and allows you to change the default.
Units	Lists the unit of measure that corresponds to the default NE parameter.
Range	Lists the possible range of values for the default NE parameter. **Note** This field applies to the ONS 15310 CL R6.0 and later.
Side Effects	Lists any side effects that could occur as a result of changing the default NE parameter. **Note** This field applies to the ONS 15310 CL R6.0 and later.

You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.4.1.9 Security

The Security Properties pane allows you to view and edit security features for the ONS 15310 CL NE. The Security Properties pane contains the following tabs:

- B.4.1.9.1 Policy Tab, page B-48
- B.4.1.9.2 Password Tab, page B-49
- B.4.1.9.3 Access Tab, page B-50
- B.4.1.9.4 RADIUS Server Tab, page B-51
- B.4.1.9.5 Legal Disclaimer Tab, page B-52

B.4.1.9.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-67 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	

Table B-67 Field Descriptions for the Policy Tab (continued)

Field	Description
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.
SuperUser	Set the idle user timeout for a CTC SuperUser user.
User Lockout	
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Sessions per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.
Disable Inactive User	If checked, inactive users are disabled automatically for the amount of time in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.4.1.9.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-68 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused. The range is from 1 to 10.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.

Table B-68 Field Descriptions for the Password Tab (continued)

Field	Description
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

B.4.1.9.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-69 Field Descriptions for the Access Tab

Field	Description
LAN Access	
LAN Access	Specify the type of LAN access allowed. Values allowed for the ONS 15310 CL are Front Only or No LAN Access. **Note** After the LAN access to the backplane is set, the Prime Optical client is unusable for 4 to 5 minutes.
Restore Timeout	This time period begins if *No LAN Access* is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Serial Craft Access (available for ONS 15310 CL NEs R6.0 and later)	
Enable Craft Port	Check this check box to enable the craft port.
Shell Access	
Shell Access on	Specify shell access on Telnet or SSH.
SSH Port	Indicates the SSH port number that will be used if the SSH radio button is selected.
Telnet Port	This is enabled if you selected the Telnet radio button. Enter the Telnet port number.
Use Standard Telnet Port	If checked, the standard Telnet port is used for Telnet access.
Shell Access (available for ONS 15310 CL NEs R6.0 and later)	
Access State	Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SSH Port	Indicates the SSH port number that will be used.
SFTP Port	Indicates the SFTP port number.
Telnet Port	This is enabled if you selected the Non-secure access state. Enter the Telnet port number that will be used.
Use Standard Telnet Port	Check this check box to indicate that the standard Telnet port will be used.
Enable Shell Password	Indicates whether or not the Shell password is enabled. **Note** You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.

Table B-69 Field Descriptions for the Access Tab (continued)

Field	Description
EMS Access (available for ONS 15310 CL NEs R6.0 and later)	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.
CORBA Listener Port	Select the port numbers for the CTX CORBA (IIOP) listener port and the CTX CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the CTX CORBA (IIOP) listener port is 683. The port number for the CTX CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.
TL1 Access (available for ONS 15310 CL NEs R6.0 and later)	
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access (available for ONS 15310 CL NEs R6.0 and later)	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.
Other	
PM Clearing Privilege	Select the users privilege that allows clearing PM statistics for the NE.

B.4.1.9.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for the ONS 15310 CL R6.0 and later.

Table B-70 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.

Table B-70 Field Descriptions for the RADIUS Server Tab (continued)

Field	Description
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.4.1.9.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-71 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.4.1.10 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual ONS 15310 CL nodes. The Alarm Properties pane contains the following tabs:

- B.4.1.10.1 Profile Tab, page B-53
- B.4.1.10.2 Alarm Behavior Tab, page B-53

Note The Alarm Properties pane might contain default alarm profile entries for cards that are not supported by the Cisco ONS 15310. Therefore, you might see some alarms that do not apply to the NE type that you are provisioning.

B.4.1.10.1 Profile Tab

The Profile tab allows you to select, create, or delete alarm profiles.

Table B-72 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list. Click **Create** to create a new alarm profile for the NE. Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.4.1.10.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-73 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.4.1.11 XC Utilization

The XC Utilization Properties pane allows you to view a summary of the percentage of XTC cross-connect resources used by circuits that traverse or terminate at an ONS 15310 CL.

Table B-74 Field Descriptions for the XC Utilization Properties Pane

Field	Description
STS-1 Matrix	Provides the percentage of the XC cross-connect STS-1 paths resources that are used.
VT1.5 Matrix Ports	Provides the percentage of the XTC cross-connect VT matrix ports that are used. Each port is one STS in size, and each can transport 28 VT1.5s. 24 VT matrix ports are available.
VT1.5 Matrix	Provides the percentage of the VT matrix resources that are used. 672 are available, which is the number of VT matrix ports (24) multiplied by the number of VT1.5s in an STS (28).

B.4.1.12 OSI

Note The OSI Properties pane is supported only for the ONS 15310 CL R6.0 and later.

The OSI Properties pane allows you to provision ONS 15310 CL Open System Interconnection (OSI) parameters. The Properties pane contains the following tabs:

- B.4.1.12.1 Main Setup Tab, page B-54
- B.4.1.12.2 TARP-Config Tab, page B-54
- B.4.1.12.3 TARP-TDC Tab, page B-56
- B.4.1.12.4 TARP-MAT Tab, page B-56
- B.4.1.12.5 Routers-Setup Tab, page B-57
- B.4.1.12.6 Subnets Tab, page B-57
- B.4.1.12.7 Tunnels Tab, page B-58
- B.4.1.12.8 IS-IS RIB Tab, page B-59
- B.4.1.12.9 ES-IS RIB Tab, page B-59

B.4.1.12.1 Main Setup Tab

The Main Setup tab allows you to provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-75 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI end system (ES). ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs. For the ONS 15310 CL, End System is the Cisco default.
Intermediate System Level 1	Provisions the node as an OSI intermediate system (IS). ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1/Level 2	The ONS 15310 CL performs all IS functions. It communicates with other IS and ES nodes within an OSI area and broadcasts ISHs to IS nodes in other areas to which it is connected.
Node Routing Mode	
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.4.1.12.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-76 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial ONS 15310 CL startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.
Timers	
LDB Entry	Sets the TARP LDB timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.

Table B-76 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.4.1.12.3 TARP-TDC Tab

Table B-77 Field Descriptions for the TARP-TDC Tab

Field	Description
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Selected Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.
Type	Indicates how the TARP data cache entry was created. It can be either: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.

B.4.1.12.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-78 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.

Table B-78 Field Descriptions for the TARP-MAT Tab (continued)

Field	Description
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.4.1.12.5 Routers-Setup Tab

The Routers-Setup tab allows you to view and manage OSI virtual routers.

Table B-79 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. Only one router is available on the ONS 15310 CL.
System ID	Displays the NSAP system ID of the virtual router. For the primary router (Router 1), $n = 0$.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Edit button	Click **Edit** to modify the address parameters.

B.4.1.12.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-80 Field Descriptions for the Subnets Tab

Field	Description
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.
Edit button	Click **Edit** to modify the subnet parameters.
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.
Slot/Port	The subnet slot and port.
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.

Table B-80 Field Descriptions for the Subnets Tab (continued)

Field	Description
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.

B.4.1.12.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-81 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.4.1.12.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-82 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. Only one router is available on the ONS 15310 CL.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.4.1.12.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-83 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. Only one router is available on the ONS 15310 CL.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.5 ONS 15310 MA SONET NE Explorer

When you choose **Configuration > NE Explorer** for the ONS 15310 MA SONET, the window that Prime Optical displays consists of a tree on the left side and a properties pane on the right. The tree provides a hierarchical view and alarm status of the NE's physical shelves and slots. The properties pane shows information about the selected entity. See B.5.1 Node Properties Pane—ONS 15310 MA SONET, page B-60 for more information.

Note If CTC is launched from the web browser for an ONS 15310 MA SONET node, the CTC GUI might look different from when it is launched from Prime Optical. This discrepancy occurs because the latest version of CTC (for NE releases supported by Prime Optical) is packaged with Prime Optical. If launched from a browser, the CTC software is retrieved from the NE itself, which might be a version different from that packaged with Prime Optical.

When an NE Explorer is in autorefresh mode, all values of an entity that is being edited by the user are automatically refreshed. You will lose all of your changes unless you click the Apply button. To enable autorefresh, click the Refresh Data button in the NE Explorer.

B.5.1 Node Properties Pane—ONS 15310 MA SONET

The node properties pane displays information about the ONS 15310 MA SONET slot that is selected in the NE Explorer tree. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.5.1.1 Shelf View, page B-60
- B.5.1.2 General, page B-61
- B.5.1.3 Identification, page B-61
- B.5.1.4 Network, page B-62
- B.5.1.5 DCC, page B-69
- B.5.1.6 Timing, page B-72
- B.5.1.7 Protection, page B-75
- B.5.1.8 NE Defaults, page B-76
- B.5.1.9 Security, page B-76
- B.5.1.10 Alarm, page B-81
- B.5.1.11 XC Utilization, page B-81
- B.5.1.12 OSI, page B-82
- B.5.1.13 Alarm Extenders, page B-87
- B.5.1.14 Orderwire, page B-89

B.5.1.1 Shelf View

The Shelf View Properties pane displays a graphic of the ONS 15310 MA SONET that is selected in the NE Explorer tree. Moving the mouse pointer over the graphic of the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset, delete, or change the card. For unprovisioned slots, the right-click menu allows you to add a card.

B.5.1.2 General

The General Properties pane displays identification information, voltage thresholds, and multishelf configurations for the ONS 15310 MA SONET NE.

Table B-84 Field Descriptions for the General Properties Pane

Field	Description
Identification Tab	
NE ID	Displays the ID of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name and phone number of the node contact person.
Description	Enter a description of the NE.
System Description	Displays the NE type and the version of the system software.
Voltage/Temperature Tab	
Voltage	Displays the voltage (in millivolts) of the shelf that corresponds to the power supply.
Temperature	Displays the temperature (in degrees Celsius) of the shelf.

B.5.1.3 Identification

The Identification Properties pane displays information about the NE.

Table B-85 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name of the node contact person and the phone number.
System Description	Displays a description of the NE.
SNTP Settings	
Use NTP/SNTP Server	If checked, CTC uses a Simple Network Time Protocol (SNTP) server to set the date and time of the node. Using an SNTP server ensures that all ONS 15310 MA SONET network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. If you check the **Use NTP/SNTP Server** check box, enter the server's IP address in the next field. If you do not use an SNTP server, complete the Time and Time Zone fields. The ONS 15310 MA SONET will use these fields for alarm dates and times.
SNTP Server	Displays the SNTP server IP address.

Table B-85 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.
Use Daylight Savings Time	If checked, Daylight Savings Time is observed.
AIS-V Insertion on STS-1 Signal Degrade - Path	
Insert AIS-V on STS-1 SD-P	If checked, the NE inserts an AIS-V signal when it detects an STS-1 signal degrade.
SD-P BER	Select the signal degrade path bit error rate for AIS-V insertion.

B.5.1.4 Network

The Network Properties pane displays information about the NE network address. The Network Properties pane contains the following tabs:

- B.5.1.4.1 Address Tab, page B-63
- B.5.1.4.2 Static Routes Tab, page B-63
- B.5.1.4.3 OSPF Tab, page B-63
- B.5.1.4.4 OSPF Area Range Tab, page B-64
- B.5.1.4.5 OSPF Virtual Links Tab, page B-65
- B.5.1.4.6 SNMP Tab, page B-65
- B.5.1.4.7 Firewall/Proxy Tab, page B-66
- B.5.1.4.8 RIP Routing Table Tab, page B-66
- B.5.1.4.9 RIP Tab, page B-67
- B.5.1.4.10 Routing Table Tab, page B-67
- B.5.1.4.11 Proxy Tunnels Tab, page B-68
- B.5.1.4.12 Firewall Tunnels Tab, page B-68
- B.5.1.4.13 FTP Hosts Tab, page B-69

B.5.1.4.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-86 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.
MAC Address	Displays the ONS 15310 MA SONET address as it is identified on the IEEE 802 MAC layer.
Forward DHCP Requests	If checked, forwards Dynamic Host Configuration Protocol (DHCP) requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.
IPv6 Config	
Enable IPv6	If checked, allows you to configure the node to use the IPv6 protocol and to assign an IPv6 address to the node.
IPv6 Address	Enter the IPv6 address of the node.
Default IPv6 Router	Enter the IPv6 default router of the node.
IPv6 Subnet Mask	Enter the IPv6 subnetwork mask length.

B.5.1.4.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and ONS 15310 MA SONET connectivity and create or delete static routes.

Table B-87 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the ONS 15310 MA SONET and the computer.

B.5.1.4.3 OSPF Tab

The OSPF tab displays Open Shortest Path First (OSPF) information. OSPF is a link-state Internet routing protocol.

Table B-88 Field Descriptions for the OSPF Tab

Field	Description
Slot	Displays the slot number.
Port	Displays the port number.

Table B-88 Field Descriptions for the OSPF Tab (continued)

Field	Description
DCC OSPF Area ID	Displays the number that identifies the ONS 15310 MA SONET as a unique OSPF area. The OSPF area number can be from 0.0.0.0 to 255.255.255.255. The number must be unique to the LAN OSPF area.
SDCC Metric	Sets a cost for sending packets across the Section Data Communications Channel (SDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. The Cisco default metric is 100. This value is normally unchanged.
LDCC Metric	Sets a cost for sending packets across the Line Data Communications Channel (LDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
OSPF on LAN	
OSPF Active on LAN	If checked, enables ONS 15310 MA SONET OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15310 MA SONET NEs that directly connect to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the ONS 15310 MA SONET is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the designated router for a subnet.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
OSPF Authentication	
Authentication Type	Displays Simple Password if the router where the ONS 15310 MA SONET is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.5.1.4.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-89 Field Descriptions for the OSPF Area Range Tab

Field	Description
Range Address	Displays the area IP address for the ONS 15310 MA SONET NEs that reside within the OSPF area. For example, if the ONS 15310 MA SONET OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the ONS 15310 MA SONET NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.

Table B-89 Field Descriptions for the OSPF Area Range Tab (continued)

Field	Description
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF range table is advertised.

B.5.1.4.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-90 Field Descriptions for the OSPF Virtual Links Tab

Field	Description
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay	Displays the service speed, in seconds. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.5.1.4.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-91 Field Descriptions for the SNMP Tab

Field	Description
Allow SNMP Set	If checked, allows you to use SNMP management software with the ONS 15310 MA SONET.
Allow SNMP Proxy	If checked, allows you to configure the ONS 15310 MA SONET to proxy SNMP calls.
IP Address	The IP address of the NMS.
Community Name	The SNMP community name.
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.

Table B-91 Field Descriptions for the SNMP Tab (continued)

Field	Description
Relay A IP Address	The first ONS 15310 MA SONET to relay traps through. The IP address is appended to the base community string to tell the first NE the IP address and the port to forward the trap to. The second NE recognizes the IP address and strips it from the community string before forwarding the trap.
Relay A Community Name	The community name for the relay A node to use in the trap when forwarding it.
Relay B IP Address	The second ONS 15310 MA SONET to relay traps through.
Relay B Community Name	The community name for the relay B node to use in the trap when forwarding it.
Relay C IP Address	The third ONS 15310 MA SONET to relay traps through.
Relay C Community Name	The community name for the relay C node to use in the trap when forwarding it.

B.5.1.4.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-92 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Gateway Settings	
Enable Proxy Server on Port	If checked, the ONS 15310 MA SONET serves as a proxy for connections between the Prime Optical server and ONS 15310s that are DCC-connected to the proxy ONS 15310 MA SONET. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server port number (display-only) is shown following the Enable Proxy Server on Port field. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Enables the ONS 15310 MA SONET to proxy as an ENE. Note that an alternate expansion for ENE is *external network element*. • Gateway Network Element (GNE)—Enables the ONS 15310 MA SONET to proxy as a GNE. • Proxy-only—Enables proxy only. If unchecked, the node does not proxy.

B.5.1.4.8 RIP Routing Table Tab

The RIP Routing Table tab allows you to view the Routing Information Protocol (RIP) routing table.

Table B-93 Field Descriptions for the RIP Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Cost	Displays the hop count metric. The valid range is from 1 to 15.

B.5.1.4.9 RIP Tab

The RIP tab allows you to view and configure RIP parameters.

Note

- When you enable RIP, you must wait for approximately one minute for the default RIP address summary to become visible.
- When you disable RIP on the NE, all summary address entries in the Summary Address table are deleted.

Table B-94 Field Descriptions for the RIP Tab

Field	Description
RIP Active	Check this check box to enable RIP. Uncheck it to disable RIP. **Note** Checking the RIP Active check box and clicking the **Apply** button does not enable RIP. Instead, you must check the RIP Active check box, click the **Create** button, and use the Create RIP Address Summary dialog box to create a new RIP address. For details, see 5.3.5 Using RIP, page 5-8.
RIP Type	Select RIP version 1.0 or RIP version 2.0.
Metric	Enter the hop count metric. The valid range is from 1 to 15.
Authentication Type	Select the authentication type.
Authentication Key	Enter the authentication key (password) if the authentication type is Simple Password.
Confirm Authentication Key	Retype the authentication key to confirm it.
RIP Address Summary	• Summary Address—Displays the summary address. • Mask Length—Displays the subnet mask length. • Cost—Displays the hop count metric. The valid range is from 1 to 15.
Create button	Click **Create** to create a new RIP address. See 5.3.5 Using RIP, page 5-8.
Delete button	Click **Delete** to delete an existing RIP address.

B.5.1.4.10 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-95 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.

Table B-95 Field Descriptions for the Routing Table Tab (continued)

Field	Description
Usage	Shows the number of times the listed route has been used.
Interface	Shows the ONS 15310 MA SONET interface used to access the destination. Values are: • cpm0—The ONS 15310 MA SONET Ethernet interface (that is, the RJ-45 jack on the TCC+/TCC2 and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface.

B.5.1.4.11 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-96 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.5.1.4.12 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-97 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.5.1.4.13 FTP Hosts Tab

The FTP Hosts tab allows you to configure database backup or restore and software download to an ENE when the firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which the FTP relay resumes blocking all FTP access for the ENEs.

Table B-98 Field Descriptions for the FTP Hosts Tab

Field	Description
Create button	Opens the Create New FTP Host dialog box, which allows you to create up to 12 new FTP hosts in a GNE/ENE firewall environment. See 5.3.10.1 Creating an FTP Host, page 5-22. **Note** You cannot create more than 12 FTP hosts.
Delete button	Deletes the selected FTP host.
FTP Host Address	Displays the FTP host IP address.
Prefix Length	Displays the FTP host subnet mask length.
Enable FTP Relay	Indicates whether FTP relay is enabled or disabled. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Displays the number of minutes that the FTP relay is configured to run, after which the FTP relay resumes blocking all FTP access for the ENEs.

B.5.1.5 DCC

The DCC Properties pane allows you to create, delete, and view SONET or SDH DCCs.

Table B-99 Field Descriptions for the DCC Properties Pane

Field	Description
SDCC	
SDCC Terminations	Displays the slot, port, and card type of an SDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.

Table B-99 Field Descriptions for the DCC Properties Pane (continued)

Field	Description
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the termination: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion. • UEQ—Unequipped; there is nothing in the slot. • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted. • SWDL—Software download in progress. • MT—Maintenance, as per the Admin State change. • AINS—Automatic in service. • DSBLD—Traffic is disabled on the entity. • LPBK—Port or connection has a loopback on it. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11 on page 11-15. See Table 11-11 on page 11-15 for the Service state-Secondary state possible values. **Note** If the NE release does not support the Service state, this field shows N/A.
LDCC	
LDCC Terminations	Displays the slot, port, and card type of an LDCC termination. Click **Create** to create a new LDCC termination; click **Delete** to delete the selected LDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.

Table B-99 Field Descriptions for the DCC Properties Pane (continued)

Field	Description
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the termination: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion. • UEQ—Unequipped; there is nothing in the slot. • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted. • SWDL—Software download in progress. • MT—Maintenance, as per the Admin State change. • AINS—Automatic in service. • DSBLD—Traffic is disabled on the entity. • LPBK—Port or connection has a loopback on it. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11 on page 11-15. See Table 11-11 on page 11-15 for the Service state-Secondary state possible values. **Note** If the NE release does not support the Service state, this field shows N/A.
Create button	Allows you to create new terminations on SONET or SDH cards.
Edit button	Allows you to modify existing terminations on SONET or SDH cards.
Delete button	Allows you to delete the selected SDCC or LDCC.

B.5.1.6 Timing

The Timing Properties pane contains the following tabs:

- B.5.1.6.1 General Tab, page B-72
- B.5.1.6.2 Reference List Tab, page B-73
- B.5.1.6.3 Status Tab, page B-74
- B.5.1.6.4 Timing Report Tab, page B-75

B.5.1.6.1 General Tab

The General tab displays general timing information.

Note BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.

Table B-100 Field Descriptions for the General Tab

Field	Description
General Timing	
Timing Mode	Set the node timing mode: • External—The ONS 15310 MA SONET derives its timing from a BITS source wired to the backplane pins. • Line—Timing is derived from an OC-N card (non-DWDM nodes) or OSC card (DWDM nodes) that is optically connected to the timing node. • Mixed—Timing is set to external and line timing references. **Caution** Mixed timing might cause timing loops. Use this mode with care.
SSM Message Set	Choose the synchronization status message (SSM) set level supported by your network. SSM is an SONET protocol that communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SONET Line layer. They enable SONET devices to automatically select the highest quality timing reference and to avoid timing loops. If a Generation 1 node receives a Generation 2 message, the message is mapped down to the next available Generation 1 node. For example, an ST3E message becomes an ST3.
Revertive	If checked, the ONS 15310 MA SONET reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
Reversion Time	Use the Reversion Time field to specify the time in half-minute increments.
Quality of RES	If your timing source supports the reserved S1 byte, you set the timing quality here. (Most timing sources do not use RES.) Qualities are displayed in descending quality order as ranges. For example, ST3 < RES < ST2 means the timing reference is higher than a Stratum 3 and lower than a Stratum 2.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.

Table B-100 Field Descriptions for the General Tab (continued)

Field	Description
BITS IN Facilities	
In State	Set the BITS In state to In Service (IS) or Out of Service (OOS). If Timing Mode is set to External or Mixed, set the BITS In State for BITS-1 or BITS-2 to IS (In Service) depending on whether one or both BITS input pin pairs on the backplane are connected to the external timing source. If Timing Mode is set to Line, set the BITS In State to OOS.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either Extended Super Frame (ESF), or Super Frame (SF). SSM is not available with Super Frame.
Sync Messaging	If checked, enables the SSM for BITS In. (SSM is not available if Framing is set to Super Frame.)
Admin SSM	If the Sync Messaging check box is not checked, you can choose the SSM Generation 2 type from the drop-down list.
BITS OUT Facilities	
Out State	Set the BITS reference to IS (In Service) or OOS (Out of Service). For nodes set to Line timing with no equipment timed through BITS Out, set the state to OOS. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to IS.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either ESF or SF (D4). SSM is not available with Super Frame.
AIS Thresh	If SSM is disabled or Super Frame is used, sets the quality level where a node sends an AIS from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
LBO	If you are timing an external device connected to the BITS Out pins, set the distance between it and the ONS 15327. Options are 0-133 ft (Cisco default), 134-266 ft, 267-399 ft, 400-533 ft, and 534-655 ft.

B.5.1.6.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-101 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to the internal clock. This is the Stratum 3 clock provided on the TCC+. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal. • Timing Mode set to Line—Options are the node's working optical cards and Internal. **Note** For Timing Mode set to External and Timing Mode set to Line, select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1. • Timing Mode set to Mixed—Both BITS and optical cards are available, allowing you to set a mixture of external BITS and optical trunk cards as timing references.
BITS-1 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 Out is enabled as soon as BITS-1 facilities are placed in service.
BITS-2 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.

B.5.1.6.3 Status Tab

The Status tab provides timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.
- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-102 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference. Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.

Table B-102 Field Descriptions for the Status Tab (continued)

Field	Description
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 Out timing reference.
Operations	Execute a switch on the BITS-1 Out timing reference. Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
BITS-2 Out	
BITS-2 Out	Set the BITS-2 out timing reference.
Status	Displays the status of the BITS-2 Out timing reference.
Operations	Executes a switch on the BITS-2 Out timing reference. Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.

B.5.1.6.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

B.5.1.7 Protection

The Protection Properties pane contains the following tabs:

- B.5.1.7.1 Protection Groups Tab, page B-75
- B.5.1.7.2 Operations Tab, page B-76

B.5.1.7.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-103 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.	
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.
Type	View the protection type (1:1 [card], 1:N [card], Y Cable [port], or 1+1 [port]) of the selected protection group.
Protect Card	View the protect card if using 1+1 protection.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.

Table B-103 Field Descriptions for the Protection Groups Tab (continued)

Field	Description
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select the 1+1 (port) type.
Revertive	If checked, the node reverts traffic to the working card or port after failure conditions for the amount of time entered in Reversion Time. This option is not available if you select the 1:N (card) type.

B.5.1.7.2 Operations Tab

The Operations tab displays the protection group operation information.

Table B-104 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock out switching, or lock on switching.

B.5.1.8 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the ONS 15310 MA SONET NE.

Table B-105 Field Descriptions for the NE Defaults Properties Pane

Field	Description
Parameter	Lists the default NE parameter.
Value	Shows the default parameter value, and allows you to change the default.
Units	Lists the unit of measure that corresponds to the default NE parameter.
Range	Lists the possible range of values for the default NE parameter.
Side Effects	Lists any side effects that could occur as a result of changing the default NE parameter.

You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.5.1.9 Security

The Security Properties pane allows you to view and edit security features for the ONS 15310 MA SONET NE. The Security Properties pane contains the following tabs:

- B.5.1.9.1 Policy Tab, page B-77
- B.5.1.9.2 Password Tab, page B-77

- B.5.1.9.3 Access Tab, page B-78
- B.5.1.9.4 RADIUS Server Tab, page B-79
- B.5.1.9.5 Legal Disclaimer Tab, page B-80

B.5.1.9.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-106 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.
SuperUser	Set the idle user timeout for a CTC SuperUser user.
User Lockout	
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Sessions per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.
Disable Inactive User	If checked, inactive users are disabled automatically for the amount of time in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.5.1.9.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-107 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused. The range is from 1 to 10.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

B.5.1.9.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-108 Field Descriptions for the Access Tab

Field	Description
Access	
LAN Access	Specify the type of LAN access allowed. Values allowed for the ONS 15310 MA SONET are Front Only, Backplane Only, Front and Backplane, or No LAN Access. **Note** After the LAN access to the backplane is set, the Prime Optical client is unusable for 4 to 5 minutes.
Restore Timeout	This time period begins if *No LAN Access* is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Serial Craft Access	
Enable Craft Port A	Check this check box to enable craft port A.
Enable Craft Port B	Check this check box to enable craft port B.
Shell Access	
Access State	Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.

Table B-108 Field Descriptions for the Access Tab (continued)

Field	Description
SSH Port	Indicates the SSH port number that will be used.
SFTP Port	Indicates the SFTP port number.
Telnet Port	This is enabled if you selected the Non-secure access state. Enter the Telnet port number that will be used.
Use Standard Telnet Port	Check this check box to indicate that the standard Telnet port will be used.
Enable Shell Password	Indicates whether or not the Shell password is enabled. **Note** You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
EMS Access	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.
CORBA Listener Port	Select the port numbers for the TSC CORBA (IIOP) listener port and the TSC CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the TSC CORBA (IIOP) listener port is 683. The port number for the TSC CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.
TL1 Access	
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.
Other	
PM Clearing Privilege	Select the users privilege that allows clearing PM statistics for the NE.

B.5.1.9.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for the ONS 15310 MA SONET.

Table B-109 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.

Table B-109 Field Descriptions for the RADIUS Server Tab (continued)

Field	Description
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.5.1.9.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-110 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.5.1.10 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual ONS 15310 MA SONET nodes. The Alarm Properties pane contains the following tabs:

- B.5.1.10.1 Profile Tab, page B-81
- B.5.1.10.2 Alarm Behavior Tab, page B-81

Note The Alarm Properties pane might contain default alarm profile entries for cards that are not supported by the ONS 15310 MA SONET. Therefore, you might see some alarms that do not apply to the NE type that you are provisioning.

B.5.1.10.1 Profile Tab

The Profile tab allows you to select, create, or delete alarm profiles.

Table B-111 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list. Click **Create** to create a new alarm profile for the NE. Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.5.1.10.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-112 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.5.1.11 XC Utilization

The XC Utilization Properties pane allows you to view a summary of the percentage of XTC cross-connect resources used by circuits that traverse or terminate at an ONS 15310 MA SONET.

Table B-113 Field Descriptions for the XC Utilization Properties Pane

Field	Description
STS-1 Matrix	Provides the percentage of the XC cross-connect STS-1 paths resources that are used.
VT1.5 Matrix Ports	Provides the percentage of the XTC cross-connect VT matrix ports that are used. Each port is one STS in size, and each can transport 28 VT1.5s. 24 VT matrix ports are available.
VT1.5 Matrix	Provides the percentage of the VT matrix resources that are used. 672 are available, which is the number of VT matrix ports (24) multiplied by the number of VT1.5s in an STS (28).

B.5.1.12 OSI

The OSI Properties pane allows you to provision ONS 15310 MA SONET Open System Interconnection (OSI) parameters. The Properties pane contains the following tabs:

- B.5.1.12.1 Main Setup Tab, page B-82
- B.5.1.12.2 TARP-Config Tab, page B-83
- B.5.1.12.3 TARP-TDC Tab, page B-84
- B.5.1.12.4 TARP-MAT Tab, page B-84
- B.5.1.12.5 Routers-Setup Tab, page B-85
- B.5.1.12.6 Subnets Tab, page B-85
- B.5.1.12.7 Tunnels Tab, page B-86
- B.5.1.12.8 IS-IS RIB Tab, page B-87
- B.5.1.12.9 ES-IS RIB Tab, page B-87

B.5.1.12.1 Main Setup Tab

The Main Setup tab allows you to provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-114 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI end system (ES). ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs. For the ONS 15310 MA SONET, End System is the Cisco default.
Intermediate System Level 1	Provisions the node as an OSI intermediate system (IS). ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1/Level 2	The ONS 15310 MA SONET performs all IS functions. It communicates with other IS and ES nodes within an OSI area and broadcasts ISHs to IS nodes in other areas to which it is connected.
Node Routing Mode	
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.5.1.12.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-115 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial ONS 15310 MA SONET startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.

Table B-115 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
Timers	
LDB Entry	Sets the TARP LDB timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.5.1.12.3 TARP-TDC Tab

Table B-116 Field Descriptions for the TARP-TDC Tab

Field	Description
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Selected Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.
Type	Indicates how the TARP data cache entry was created. It can be either: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.

B.5.1.12.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-117 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.5.1.12.5 Routers-Setup Tab

The Routers-Setup tab allows you to view and manage OSI virtual routers.

Table B-118 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. Only one router is available on the ONS 15310 MA SONET.
System ID	Displays the NSAP system ID of the virtual router. For the primary router (Router 1), $n = 0$.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Edit button	Click **Edit** to modify the address parameters.

B.5.1.12.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-119 Field Descriptions for the Subnets Tab

Field	Description
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.
Edit button	Click **Edit** to modify the subnet parameters.

Table B-119 Field Descriptions for the Subnets Tab (continued)

Field	Description
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.
Slot/Port	The subnet slot and port.
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.

B.5.1.12.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-120 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.

Table B-120 Field Descriptions for the Tunnels Tab (continued)

Field	Description
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.5.1.12.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-121 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. Only one router is available on the ONS 15310 MA SONET.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.5.1.12.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-122 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. Only one router is available on the ONS 15310 MA SONET.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.5.1.13 Alarm Extenders

The Alarm Extenders Properties pane allows you to view external alarm information and create custom alarm types. The Alarm Extenders Properties pane contains the following tabs:

- B.5.1.13.1 External Alarms Tab, page B-88
- B.5.1.13.2 External Controls Tab, page B-88

- B.5.1.13.3 User-Defined Alarms Tab, page B-88

B.5.1.13.1 External Alarms Tab

The External Alarms tab allows you to view and update external alarm information.

Table B-123 Field Descriptions for the External Alarms Tab

Field	Description
Input Number	The alarm input number.
Enabled	Check to activate the fields for the alarm input number.
Alarm Type	Choose an alarm type from the provided list.
Severity	Choose a severity from the list.
Raised When	Choose the contact condition that will trigger the alarm in CTC.
Virtual Wire	To assign the external device to a virtual wire, choose a virtual wire from the list, or choose None if no assignment is required.
Description	Displays a default description for every external alarm that is enabled.
Raised	Indicates whether an alarm has been raised.
Contact Status	Indicates the current status of the contact.

B.5.1.13.2 External Controls Tab

The External Controls tab allows you to view and update external controls.

Table B-124 Field Descriptions for the External Controls Tab

Field	Description
Control Number	The control number.
Enabled	Check to activate the fields for the control number.
Control Type	Choose a control type from the provided list.
Trigger Type	Choose a trigger type: a local minor, major, or critical alarm; a remote minor, major, or critical alarm; or a virtual wire activation.
Description	Enter a description.
Current State	The current state of the control.
Auto State	The auto state of the control.
Contact Setting	The current contact setting.

B.5.1.13.3 User-Defined Alarms Tab

The User-Defined Alarms tab allows you to view, add, and delete custom alarm types on the ONS 15310 MA SONET.

Table B-125 Field Descriptions for the User-Defined Alarms Tab

Field	Descriptions
Alarm Types	Lists the user-defined alarm types that have been created on the ONS 15310 MA SONET. You can create up to 50 custom environmental alarms, which are reported in the Condition column in the Alarm Log and Alarm Browser windows.
Add	Click the **Add** button to add a new custom alarm type. Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).
Delete	Click the **Delete** button to delete an existing alarm type.

B.5.1.14 Orderwire

Orderwire allows you to plug a phoneset into a node and communicate with others working at other nodes or other facility equipment. The orderwire is a pulse code modulation (PCM) encoded voice channel that uses E1 or E2 bytes in section/line overhead. The AIC allows simultaneous use of both local (section overhead signal) and express (line overhead channel) orderwire channels on a SONET ring or particular optics facility. Local orderwire also allows communication at regeneration sites when the regenerator is not a Cisco device.

Table B-126 Field Descriptions for the Orderwire Properties Pane

Field	Description
Buzzer	
Buzzer	The Alarm Interface Controller (AIC) supports a call button on the module front panel which, when pressed, causes all AICs on the orderwire subnetwork to ring. The ringer/buzzer resides on the AIC. The AIC also has a ring LED that mimics the AIC ringer. It flashes when any call button is pressed on the orderwire subnetwork. The call button and ringer LED allow a remote craftsperson to get the attention of craftspeople across the network. To enable the audible alert (buzzer) for the orderwire, check the **Buzzer** check box.
2-Wire Level	
RX (dBm)	If needed, adjust the RX dBm by moving the slider to the right or left for the two-wire headset that you will use. In general, you should not need to adjust the dBm.
TX (dBm)	If needed, adjust the TX dBm by moving the slider to the right or left for the two-wire headset that you will use. In general, you should not need to adjust the dBm.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.6 ONS 15310 MA SDH NE Explorer

When you choose **Configuration > NE Explorer** for the ONS 15310 MA SDH, the window that Prime Optical displays consists of a tree on the left side and a properties pane on the right. The tree provides a hierarchical view and alarm status of the NE's physical shelves and slots. The properties pane shows information about the selected entity. See B.6.1 Node Properties Pane—ONS 15310 MA SDH, page B-90 for more information.

Note If CTC is launched from the web browser for an ONS 15310 MA SDH node, the CTC GUI might look different from when it is launched from Prime Optical. This discrepancy occurs because the latest version of CTC (for NE releases supported by Prime Optical) is packaged with Prime Optical. If launched from a browser, the CTC software is retrieved from the NE itself, which might be a version different from that packaged with Prime Optical.

When an NE Explorer is in autorefresh mode, all entity values that you are editing are automatically refreshed. To enable autorefresh, click the Refresh Data button in the NE Explorer.

Caution You will lose all of your changes unless you click the Apply button.

B.6.1 Node Properties Pane—ONS 15310 MA SDH

The node properties pane displays information about the ONS 15310 MA SDH slot that is selected in the NE Explorer tree. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.6.1.1 Shelf View, page B-90
- B.6.1.2 General, page B-91
- B.6.1.3 Identification, page B-91
- B.6.1.4 Network, page B-92
- B.6.1.5 DCC, page B-99
- B.6.1.6 Timing, page B-103
- B.6.1.7 Protection, page B-106
- B.6.1.8 NE Defaults, page B-107
- B.6.1.9 Security, page B-107
- B.6.1.10 Alarm, page B-111
- B.6.1.11 XC Utilization, page B-112
- B.6.1.12 OSI, page B-113
- B.6.1.13 Alarm Extenders, page B-118
- B.6.1.14 Orderwire, page B-120

B.6.1.1 Shelf View

The Shelf View Properties pane displays a graphic of the ONS 15310 MA SDH that is selected in the NE Explorer tree. Moving the mouse pointer over the graphic of the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset, delete, or change the card. For unprovisioned slots, the right-click menu allows you to add a card.

B.6.1.2 General

The General Properties pane displays identification information, voltage thresholds, and multishelf configurations for the ONS 15310 MA SDH NE.

Table B-127 Field Descriptions for the General Properties Pane

Field	Description
Identification Tab	
NE ID	Displays the ID of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name and phone number of the node contact person.
Description	Enter a description of the NE.
System Description	Displays the NE type and the version of the system software.
Voltage/Temperature Tab	
Voltage	Displays the voltage (in millivolts) of the shelf that corresponds to the power supply.
Temperature	Displays the temperature (in degrees Celsius) of the shelf.

B.6.1.3 Identification

The Identification Properties pane displays information about the NE.

Table B-128 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name of the node contact person and the phone number.
System Description	Displays a description of the NE.
SNTP Settings	
Use NTP/SNTP Server	If checked, CTC uses a Simple Network Time Protocol (SNTP) server to set the date and time of the node. Using an SNTP server ensures that all ONS 15310 MA SDH network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. If you check the **Use NTP/SNTP Server** check box, enter the server's IP address in the next field. If you do not use an SNTP server, complete the Time and Time Zone fields. The ONS 15310 MA SDH will use these fields for alarm dates and times.
SNTP Server	Displays the SNTP server IP address.
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).

Table B-128 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.
Use Daylight Savings Time	If checked, Daylight Savings Time is observed.
AIS-V Insertion on STS-1 Signal Degrade - Path	
Insert AIS-V on STS-1 SD-P	If checked, the NE inserts an AIS-V signal when it detects an STS-1 signal degrade.
SD-P BER	Select the signal degrade path bit error rate for AIS-V insertion.

B.6.1.4 Network

The Network Properties pane displays information about the NE network address. The Network Properties pane contains the following tabs:

- B.6.1.4.1 Address Tab, page B-92
- B.6.1.4.2 Static Routes Tab, page B-93
- B.6.1.4.3 OSPF Tab, page B-93
- B.6.1.4.4 OSPF Area Range Tab, page B-94
- B.6.1.4.5 OSPF Virtual Links Tab, page B-95
- B.6.1.4.6 SNMP Tab, page B-95
- B.6.1.4.7 Firewall/Proxy Tab, page B-96
- B.6.1.4.8 RIP Routing Table Tab, page B-96
- B.6.1.4.9 RIP Tab, page B-96
- B.6.1.4.10 Routing Table Tab, page B-97
- B.6.1.4.11 Proxy Tunnels Tab, page B-97
- B.6.1.4.12 Firewall Tunnels Tab, page B-98
- B.6.1.4.13 FTP Hosts Tab, page B-98

B.6.1.4.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-129 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.

Table B-129 Field Descriptions for the Address Tab (continued)

Field	Description
MAC Address	Displays the ONS 15310 MA SDH address as it is identified on the IEEE 802 MAC layer.
Forward DHCP Requests	If checked, forwards Dynamic Host Configuration Protocol (DHCP) requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.
IPv6 Config	
Enable IPv6	If checked, allows you to configure the node to use the IPv6 protocol and to assign an IPv6 address to the node.
IPv6 Address	Enter the IPv6 address of the node.
Default IPv6 Router	Enter the IPv6 default router of the node.
IPv6 Subnet Mask	Enter the IPv6 subnetwork mask length.

B.6.1.4.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and ONS 15310 MA SDH connectivity and create or delete static routes.

Table B-130 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the ONS 15310 MA SDH and the computer.

B.6.1.4.3 OSPF Tab

The OSPF tab displays OSPF information. OSPF is a link-state Internet routing protocol.

Table B-131 Field Descriptions for the OSPF Tab

Field	Description
Slot	Displays the slot number.
Port	Displays the port number.
DCC OSPF Area ID	Displays the number that identifies the ONS 15310 MA SDH as a unique OSPF area. The OSPF area number can be from 0.0.0.0 to 255.255.255.255. The number must be unique to the LAN OSPF area.
RS-DCC Metric	Sets a cost for sending packets across the Regenerator Section Data Communications Channel (RS-DCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.

Table B-131 Field Descriptions for the OSPF Tab (continued)

Field	Description
MS-DCC Metric	Sets a cost for sending packets across the Multiplex Section Data Communications Channel (MS-DCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
OSPF on LAN	
OSPF Active on LAN	If checked, enables ONS 15310 MA SDH OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15310 MA SDH NEs that directly connect to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the ONS 15310 MA SDH is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the designated router for a subnet.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
OSPF Authentication	
Authentication Type	Displays Simple Password if the router where the ONS 15310 MA SDH is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.6.1.4.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-132 Field Descriptions for the OSPF Area Range Tab

Field	Description
Range Address	Displays the area IP address for the ONS 15310 MA SDH NEs that reside within the OSPF area. For example, if the ONS 15310 MA SDH OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the ONS 15310 MA SDH NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF range table is advertised.

B.6.1.4.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-133 Field Descriptions for the OSPF Virtual Links Tab

Field	Description
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay	Displays the service speed, in seconds. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.6.1.4.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-134 Field Descriptions for the SNMP Tab

Field	Description
Allow SNMP Set	If checked, allows you to use SNMP management software with the ONS 15310 MA SDH.
Allow SNMP Proxy	If checked, allows you to configure the ONS 15310 MA SDH to proxy SNMP calls.
IP Address	The IP address of the NMS.
Community Name	The SNMP community name.
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.
Relay A IP Address	The first ONS 15310 MA SDH to relay traps through. The IP address is appended to the base community string to tell the first NE the IP address and the port to forward the trap to. The second NE recognizes the IP address and strips it from the community string before forwarding the trap.
Relay A Community Name	The community name for the relay A node to use in the trap when forwarding it.
Relay B IP Address	The second ONS 15310 MA SDH to relay traps through.
Relay B Community Name	The community name for the relay B node to use in the trap when forwarding it.
Relay C IP Address	The third ONS 15310 MA SDH to relay traps through.
Relay C Community Name	The community name for the relay C node to use in the trap when forwarding it.

B.6.1.4.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-135 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Gateway Settings	
Enable Proxy Server on Port	If checked, the ONS 15310 MA SDH serves as a proxy for connections between the Prime Optical server and ONS 15310s that are DCC-connected to the proxy ONS 15310 MA SDH. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server port number (display-only) is shown following the Enable Proxy Server on Port field. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Enables the ONS 15310 MA SDH to proxy as an ENE. Note that an alternate expansion for ENE is *external network element*. • Gateway Network Element (GNE)—Enables the ONS 15310 MA SDH to proxy as a GNE. • Proxy-only—Enables proxy only. If unchecked, the node does not proxy.

B.6.1.4.8 RIP Routing Table Tab

The RIP Routing Table tab allows you to view the Routing Information Protocol (RIP) routing table.

Table B-136 Field Descriptions for the RIP Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Cost	Displays the hop count metric. The valid range is from 1 to 15.

B.6.1.4.9 RIP Tab

The RIP tab allows you to view and configure RIP parameters.

Note
- When you enable RIP, you must wait for approximately one minute for the default RIP address summary to become visible.
- When you disable RIP on the NE, all summary address entries in the Summary Address table are deleted.

Table B-137 Field Descriptions for the RIP Tab

Field	Description
RIP Active	Check this check box to enable RIP. Uncheck it to disable RIP. **Note** Checking the RIP Active check box and clicking the **Apply** button does not enable RIP. Instead, you must check the RIP Active check box, click the **Create** button, and use the Create RIP Address Summary dialog box to create a new RIP address. For details, see 5.3.5 Using RIP, page 5-8.
RIP Type	Select RIP version 1.0 or RIP version 2.0.
Metric	Enter the hop count metric. The valid range is from 1 to 15.
Authentication Type	Select the authentication type.
Authentication Key	Enter the authentication key (password) if the authentication type is Simple Password.
Confirm Authentication Key	Retype the authentication key to confirm it.
RIP Address Summary	• Summary Address—Displays the summary address. • Mask Length—Displays the subnet mask length. • Cost—Displays the hop count metric. The valid range is from 1 to 15.
Create button	Click **Create** to create a new RIP address. See 5.3.5 Using RIP, page 5-8.
Delete button	Click **Delete** to delete an existing RIP address.

B.6.1.4.10 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-138 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Usage	Shows the number of times the listed route has been used.
Interface	Shows the ONS 15310 MA SDH interface used to access the destination. Values are: • cpm0—The ONS 15310 MA SDH Ethernet interface (that is, the RJ-45 jack on the TCC+/TCC2 and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface. • motfcc0—An Ethernet interface (that is, the RJ-45 jack on the TCC2/TCC2P and the LAN 1 pins on the backplane).

B.6.1.4.11 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-139 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.6.1.4.12 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-140 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.6.1.4.13 FTP Hosts Tab

The FTP Hosts tab allows you to configure database backup or restore and software download to an ENE when the firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which the FTP relay resumes blocking all FTP access for the ENEs.

Table B-141 Field Descriptions for the FTP Hosts Tab

Field	Description
Create button	Opens the Create New FTP Host dialog box, which allows you to create up to 12 new FTP hosts in a GNE/ENE firewall environment. See 5.3.10.1 Creating an FTP Host, page 5-22. **Note** You cannot create more than 12 FTP hosts.
Delete button	Deletes the selected FTP host.
FTP Host Address	Displays the FTP host IP address.
Prefix Length	Displays the FTP host subnet mask length.

Table B-141 Field Descriptions for the FTP Hosts Tab (continued)

Field	Description
Enable FTP Relay	Indicates whether FTP relay is enabled or disabled. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Displays the number of minutes that the FTP relay is configured to run, after which the FTP relay resumes blocking all FTP access for the ENEs.

B.6.1.5 DCC

The DCC Properties pane allows you to create, delete, and view SONET or SDH DCCs.

Table B-142 Field Descriptions for the DCC Properties Pane

Field	Description
SDCC	
SDCC Terminations	Displays the slot, port, and card type of an SDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.

Table B-142 Field Descriptions for the DCC Properties Pane (continued)

Field	Description
Service State	Includes an administrative-operational state and secondary state. Administrative-operational states are used to manage service states and use a status attribute to specify the change in service state. The following are valid administrative-operational states: • Unlocked-enabled—The NE is fully operational and performs as provisioned. • Unlocked-disabled—The NE is not operational because of an autonomous event. • Locked-disabled—The NE is not operational because of an autonomous event; it has also been manually removed from service. • Locked-enabled—The NE has been manually removed from service. The following are valid secondary states: • AutomaticInService—Transitioning to the Unlocked-enabled service state is delayed. The transition to Unlocked-enabled state depends on correction of conditions, or on a soak timer. Alarm reporting is suppressed, but traffic is carried. Raised fault conditions, whether or not their alarms are reported, can be retrieved by using the TL1 **RTRV-COND** command. • Disabled—The NE has been manually removed from service and does not provide its provisioned functions. All services are disrupted; the entity is unable to carry traffic. • Failed—The NE has a raised alarm or condition. • Loopback—The NE is in loopback mode. • MismatchOfEquipment—An improper card is installed, a cross-connect card does not support an installed card, or an incompatible backplane is installed. For example, an installed card is not compatible with the card preprovisioning or the slot. This secondary state applies only to cards. • Maintenance—The NE has been manually removed from service for a maintenance activity but still performs its provisioned functions. Alarm reporting is suppressed, but traffic is carried. You can use the TL1 **RTRV-COND** command to retrieve raised fault conditions even if alarms have not been reported. • OutOfGroup—The virtual concatenation (VCAT) member cross-connect is not used to carry VCAT group traffic. This state is used to put a member circuit out of the group and to stop sending traffic. Locked-enabled,outOfGroup applies only to the cross-connects on an end node where VCAT resides. The cross-connects on intermediate nodes are in the Locked-enabled,maintenance service state. • SoftwareDownload—A card is involved in a software download. This secondary state applies only to cards. • Unassigned—A card is not provisioned in the database. This secondary state applies only to cards. • NotInstalled—A card is not physically present (that is, the slot is empty). This secondary state applies only to cards. **Note** If the NE release does not support the Service state, this field shows N/A.
LDCC	
LDCC Terminations	Displays the slot, port, and card type of an LDCC termination. Click **Create** to create a new LDCC termination; click **Delete** to delete the selected LDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.

Table B-142 Field Descriptions for the DCC Properties Pane (continued)

Field	Description
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.

Table B-142 Field Descriptions for the DCC Properties Pane (continued)

Field	Description
Service State	Includes an administrative-operational state and secondary state. Administrative-operational states are used to manage service states and use a status attribute to specify the change in service state. The following are valid administrative-operational states: • Unlocked-enabled—The NE is fully operational and performs as provisioned. • Unlocked-disabled—The NE is not operational because of an autonomous event. • Locked-disabled—The NE is not operational because of an autonomous event; it has also been manually removed from service. • Locked-enabled—The NE has been manually removed from service. The following are valid secondary states: • AutomaticInService—Transitioning to the Unlocked-enabled service state is delayed. The transition to Unlocked-enabled state depends on correction of conditions, or on a soak timer. Alarm reporting is suppressed, but traffic is carried. Raised fault conditions, whether or not their alarms are reported, can be retrieved by using the TL1 **RTRV-COND** command. • Disabled—The NE has been manually removed from service and does not provide its provisioned functions. All services are disrupted; the entity is unable to carry traffic. • Failed—The NE has a raised alarm or condition. • Loopback—The NE is in loopback mode. • MismatchOfEquipment—An improper card is installed, a cross-connect card does not support an installed card, or an incompatible backplane is installed. For example, an installed card is not compatible with the card preprovisioning or the slot. This secondary state applies only to cards. • Maintenance—The NE has been manually removed from service for a maintenance activity but still performs its provisioned functions. Alarm reporting is suppressed, but traffic is carried. You can use the TL1 **RTRV-COND** command to retrieve raised fault conditions even if alarms have not been reported. • OutOfGroup—The virtual concatenation (VCAT) member cross-connect is not used to carry VCAT group traffic. This state is used to put a member circuit out of the group and to stop sending traffic. Locked-enabled,outOfGroup applies only to the cross-connects on an end node where VCAT resides. The cross-connects on intermediate nodes are in the Locked-enabled,maintenance service state. • SoftwareDownload—A card is involved in a software download. This secondary state applies only to cards. • Unassigned—A card is not provisioned in the database. This secondary state applies only to cards. • NotInstalled—A card is not physically present (that is, the slot is empty). This secondary state applies only to cards. **Note** If the NE release does not support the Service state, this field shows N/A.
Create button	Allows you to create new terminations on SONET or SDH cards.
Edit button	Allows you to modify existing terminations on SONET or SDH cards.
Delete button	Allows you to delete the selected SDCC or LDCC.

B.6.1.6 Timing

The Timing Properties pane contains the following tabs:

- B.6.1.6.1 General Tab, page B-103
- B.6.1.6.2 Reference List Tab, page B-104
- B.6.1.6.3 Status Tab, page B-105
- B.6.1.6.4 Timing Report Tab, page B-105

B.6.1.6.1 General Tab

The General tab displays general timing information.

Note BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.

Table B-143 Field Descriptions for the General Tab

Field	Description
General Timing	
Timing Mode	Set to External if the ONS 15310 MA SDH derives its timing from a BITS source wired to the backplane pins; set to Line if timing is derived from an OC-N card that is optically connected to the timing node. A third option, Mixed, allows you to set external and line timing references. **Caution** Mixed timing might cause timing loops. Use this mode with care.
Revertive	If checked, the ONS 15310 MA SDH reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
Reversion Time	Specify the reversion time in half-minute increments.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.
BITS IN Facilities	
In State	Set the BITS reference to Locked or Unlocked. For nodes set to Line timing with no equipment timed through BITS Out, set the state to Locked. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to Unlocked.
Coding	Set to the coding used by your BITS reference, either AMI or HDB3.
Framing	Set to the framing used by your BITS reference.
Sync Messaging	If checked, enables the SSM for BITS In. (SSM is not available if Framing is set to Super Frame.)
Admin SSM	If the Sync Messaging check box is not checked, you can choose the SSM Generation 2 type from the drop-down list.
Sa Bit	The Sa Bit field is used to transmit the SSM message. The five available Sa bits are Sa4, Sa5, Sa6, Sa7, and Sa8.
Cable Type	Type of cable. Values are 75 ohm or 120 ohm.
BITS OUT Facilities	

Table B-143 Field Descriptions for the General Tab (continued)

Field	Description
Out State	Set the BITS reference to Locked or Unlocked. For nodes set to Line timing with no equipment timed through BITS Out, set the state to Locked. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to Unlocked.
Coding	Set to the coding used by your BITS reference, either AMI or HDB3.
Framing	Set to the framing used by your BITS reference. Valid values are: • Unframed • FAS • FAS+CRC • FAS+CAS • FAS+CAS+CRC
AIS Threshold	If SSM is disabled or Super Frame is used, sets the quality level where a node sends an AIS from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
Sa Bit	The Sa Bit field is used to transmit the SSM message. The five available Sa bits are Sa4, Sa5, Sa6, Sa7, and Sa8.
Cable Type	Type of cable. Values are 75 ohm or 120 ohm.

B.6.1.6.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-144 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to Internal Clock. This is the Stratum 3 clock provided on the TCC+. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal Clock. • Timing Mode set to Line—Options are the node's working optical cards and Internal Clock. **Note** For Timing Mode set to External and Timing Mode set to Line, select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1. • Timing Mode set to Mixed—Both BITS and optical cards are available, allowing you to set a mixture of external BITS and optical trunk cards as timing references.

Table B-144 Field Descriptions for the Reference List Tab (continued)

Field	Description
BITS-1 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for the equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.
BITS-2 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for the equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.

B.6.1.6.3 Status Tab

The Status tab displays timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.
- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-145 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference.
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 out timing reference.
Operations	Execute a switch on the BITS-1 out timing reference.
BITS-2 Out	
BITS-2 Out	Set the BITS-2 out timing reference.
Status	Displays the status of the BITS-2 out timing reference.
Operations	Execute a switch on the BITS-2 out timing reference.

B.6.1.6.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

B.6.1.7 Protection

The Protection Properties pane contains the following tabs:

- B.6.1.7.1 Protection Groups Tab, page B-106
- B.6.1.7.2 Operations Tab, page B-106

B.6.1.7.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-146 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.	
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.
Type	View the protection type (1:1 [card], 1:N [card], Y Cable [port], or 1+1 [port]) of the selected protection group.
Protect Card	View the protect card if using 1+1 protection.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select the 1+1 (port) type.
Revertive	If checked, the node reverts traffic to the working card or port after failure conditions for the amount of time entered in Reversion Time. This option is not available if you select the 1:N (card) type.

B.6.1.7.2 Operations Tab

The Operations tab displays the protection group operation information.

Table B-147 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock out switching, or lock on switching.

B.6.1.8 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the ONS 15310 MA SDH NE.

Table B-148 Field Descriptions for the NE Defaults Properties Pane

Field	Description
Parameter	Lists the default NE parameter.
Value	Shows the default parameter value, and allows you to change the default.
Units	Lists the unit of measure that corresponds to the default NE parameter.
Range	Lists the possible range of values for the default NE parameter.
Side Effects	Lists any side effects that could occur as a result of changing the default NE parameter.

You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.6.1.9 Security

The Security Properties pane allows you to view and edit security features for the ONS 15310 MA SDH NE. The Security Properties pane contains the following tabs:

- B.6.1.9.1 Policy Tab, page B-107
- B.6.1.9.2 Password Tab, page B-108
- B.6.1.9.3 Access Tab, page B-109
- B.6.1.9.4 RADIUS Server Tab, page B-110
- B.6.1.9.5 Legal Disclaimer Tab, page B-111

B.6.1.9.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-149 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.

Table B-149 Field Descriptions for the Policy Tab (continued)

Field	Description
SuperUser	Set the idle user timeout for a CTC SuperUser user.
User Lockout	
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Session per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.
Disable Inactive User	If checked, inactive users are disabled automatically for the amount of time in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.6.1.9.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-150 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused. The range is from 1 to 10.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.

Table B-150 Field Descriptions for the Password Tab (continued)

Field	Description
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

B.6.1.9.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-151 Field Descriptions for the Access Tab

Field	Description
Access	
LAN Access	Specify the type of LAN access allowed. Values allowed for the ONS 15310 MA SDH are Front Only, Backplane Only, Front and Backplane, or No LAN Access. **Note** After the LAN access to the backplane is set, the Prime Optical client is unusable for 4 to 5 minutes.
Restore Timeout	This time period begins if *No LAN Access* is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Serial Craft Access	
Enable Craft Port A	Check this check box to enable craft port A.
Enable Craft Port B	Check this check box to enable craft port B.
Shell Access	
Access State	Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SSH Port	Indicates the SSH port number that will be used.
SFTP Port	Indicates the SFTP port number.
Telnet Port	This is enabled if you selected the Non-secure access state. Enter the Telnet port number that will be used.
Use Standard Telnet Port	Check this check box to indicate that the standard Telnet port will be used.
Enable Shell Password	Indicates whether or not the Shell password is enabled. **Note** You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
EMS Access	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.

Table B-151 Field Descriptions for the Access Tab (continued)

Field	Description
CORBA Listener Port	Select the port numbers for the TSC CORBA (IIOP) listener port and the TSC CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the TSC CORBA (IIOP) listener port is 683. The port number for the TSC CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.
TL1 Access	
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.
Other	
PM Clearing Privilege	Select the users privilege that allows clearing PM statistics for the NE.

B.6.1.9.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for the ONS 15310 MA SDH.

Table B-152 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.

Table B-152 Field Descriptions for the RADIUS Server Tab (continued)

Field	Description
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.6.1.9.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-153 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.6.1.10 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual ONS 15310 MA SDH nodes. The Alarm Properties pane contains the following tabs:

- B.6.1.10.1 Profile Tab, page B-112
- B.6.1.10.2 Alarm Behavior Tab, page B-112

Note The Alarm Properties pane might contain default alarm profile entries for cards that are not supported by the ONS 15310 MA SDH. Therefore, you might see some alarms that do not apply to the NE type that you are provisioning.

B.6.1.10.1 Profile Tab

The Profile tab allows you to select, create, or delete alarm profiles.

Table B-154 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list. Click **Create** to create a new alarm profile for the NE. Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.6.1.10.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-155 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.6.1.11 XC Utilization

The XC Utilization Properties pane allows you to view a summary of the percentage of XTC cross-connect resources used by circuits that traverse or terminate at an ONS 15310 MA SDH.

Table B-156 Field Descriptions for the XC Utilization Properties Pane

Field	Description
VC4 Matrix	Provides the percentage of the XTC cross-connect VC-4 path resources that are used.
TUG3 Matrix Ports	Provides the percentage of the XTC cross-connect TUG3 matrix ports that are used.
TUG3 Matrix	Provides the percentage of the TUG3 matrix resources that are used.
VC12 Matrix Ports	Provides the percentage of the XTC cross-connect VC12 matrix ports that are used.
VC12 Matrix	Provides the percentage of the VC12 matrix resources that are used.

B.6.1.12 OSI

The OSI Properties pane allows you to provision ONS 15310 MA SDH OSI parameters. The Properties pane contains the following tabs:

- B.6.1.12.1 Main Setup Tab, page B-113
- B.6.1.12.2 TARP-Config Tab, page B-113
- B.6.1.12.3 TARP-TDC Tab, page B-115
- B.6.1.12.4 TARP-MAT Tab, page B-115
- B.6.1.12.5 Routers-Setup Tab, page B-116
- B.6.1.12.6 Subnets Tab, page B-116
- B.6.1.12.7 Tunnels Tab, page B-117
- B.6.1.12.8 IS-IS RIB Tab, page B-118
- B.6.1.12.9 ES-IS RIB Tab, page B-118

B.6.1.12.1 Main Setup Tab

The Main Setup tab allows you to provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-157 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI end system (ES). ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs. For the ONS 15310 MA SDH, End System is the Cisco default.
Intermediate System Level 1	Provisions the node as an OSI intermediate system (IS). ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs.
Node Routing Mode	
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.6.1.12.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-158 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial ONS 15310 MA SDH startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.
Timers	
LDB Entry	Sets the TARP LDB timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.

Table B-158 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.6.1.12.3 TARP-TDC Tab

Table B-159 Field Descriptions for the TARP-TDC Tab

Field	Description
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Selected Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.
Type	Indicates how the TARP data cache entry was created. It can be either: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.

B.6.1.12.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-160 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.

Table B-160 Field Descriptions for the TARP-MAT Tab (continued)

Field	Description
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.6.1.12.5 Routers-Setup Tab

The Routers-Setup tab allows you to view and manage OSI virtual routers.

Table B-161 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. Only one router is available on the ONS 15310 MA SDH.
System ID	Displays the NSAP system ID of the virtual router. For the primary router (Router 1), $n = 0$.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Edit button	Click **Edit** to modify the address parameters.

B.6.1.12.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-162 Field Descriptions for the Subnets Tab

Field	Description
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.
Edit button	Click **Edit** to modify the subnet parameters.
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.
Slot/Port	The subnet slot and port.
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.

Table B-162 Field Descriptions for the Subnets Tab (continued)

Field	Description
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.

B.6.1.12.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-163 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.6.1.12.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-164 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. Only one router is available on the ONS 15310 MA SDH.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.6.1.12.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-165 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. Only one router is available on the ONS 15310 MA SDH.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.6.1.13 Alarm Extenders

The Alarm Extenders Properties pane allows you to view external alarm information. The Alarm Extenders Properties pane contains the following tabs:

- B.6.1.13.1 External Alarms Tab, page B-118
- B.6.1.13.2 External Controls Tab, page B-119
- B.6.1.13.3 User-Defined Alarms Tab, page B-119

B.6.1.13.1 External Alarms Tab

The External Alarms tab allows you to view and update external alarm information.

Table B-166 Field Descriptions for the External Alarms Tab

Field	Description
Input Number	The alarm input number.
Enabled	Check to activate the fields for the alarm input number.
Alarm Type	Choose an alarm type from the provided list.
Severity	Choose a severity from the list.
Raised When	Choose the contact condition that will trigger the alarm in CTC.
Virtual Wire	To assign the external device to a virtual wire, choose a virtual wire from the list, or choose None if no assignment is required.
Description	Displays a default description for every external alarm that is enabled.
Raised	Indicates whether an alarm has been raised.
Contact Status	Indicates the current status of the contact.

B.6.1.13.2 External Controls Tab

The External Controls tab allows you to view and update external controls.

Table B-167 Field Descriptions for the External Controls Tab

Field	Description
Control Number	The control number.
Enabled	Check to activate the fields for the control number.
Control Type	Choose a control type from the provided list.
Trigger Type	Choose a trigger type: a local minor, major, or critical alarm; a remote minor, major, or critical alarm; or a virtual wire activation.
Description	Enter a description.
Current State	The current state of the control.
Auto State	The auto state of the control.
Contact Setting	The current contact setting.

B.6.1.13.3 User-Defined Alarms Tab

The User-Defined Alarms tab allows you to view, add, and delete custom alarm types on the ONS 15310 MA SDH.

Table B-168 Field Descriptions for the User-Defined Alarms Tab

Field	Descriptions
Alarm Types	Lists the user-defined alarm types that have been created on the ONS 15310 MA SDH. You can create up to 50 custom environmental alarms, which are reported in the Condition column in the Alarm Log and Alarm Browser windows.

Table B-168 Field Descriptions for the User-Defined Alarms Tab (continued)

Field	Descriptions
Add	Click the **Add** button to add a new custom alarm type. Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).
Delete	Click the **Delete** button to delete an existing alarm type.

B.6.1.14 Orderwire

Orderwire allows you to plug a phoneset into a node and communicate with others working at other nodes or other facility equipment. The orderwire is a pulse code modulation (PCM) encoded voice channel that uses E1 or E2 bytes in section/line overhead. The AIC allows simultaneous use of both local (section overhead signal) and express (line overhead channel) orderwire channels on a SONET ring or particular optics facility. Local orderwire also allows communication at regeneration sites when the regenerator is not a Cisco device.

Table B-169 Field Descriptions for the Orderwire Properties Pane

Field	Description
Buzzer	
Buzzer	The AIC supports a call button on the module front panel which, when pressed, causes all AICs on the orderwire subnetwork to ring. The ringer/buzzer resides on the AIC. The AIC also has a ring LED that mimics the AIC ringer. It flashes when any call button is pressed on the orderwire subnetwork. The call button and ringer LED allow a remote craftsperson to get the attention of craftspeople across the network. To turn on the audible alert (buzzer) for the orderwire, check the **Buzzer** check box.
2-Wire Level	
RX (dBm)	If needed, adjust the RX dBm by moving the slider to the right or left for the two-wire headset that you will use. In general, you should not need to adjust the dBm.
TX (dBm)	If needed, adjust the TX dBm by moving the slider to the right or left for the two-wire headset that you will use. In general, you should not need to adjust the dBm.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.7 ONS 15327 NE Explorer

When you choose **Configuration > NE Explorer** for the ONS 15327, the window that Prime Optical displays consists of a tree on the left side and a properties pane on the right. The tree provides a hierarchical view and alarm status of the NE's physical shelves and slots. The properties pane shows information about the selected entity. See B.7.1 Node Properties Pane—ONS 15327, page B-121 for more information.

Note If CTC is launched from the web browser for an ONS 15327 node, the CTC GUI might look different from when it is launched from Prime Optical. This discrepancy occurs because the latest version of CTC (for NE releases supported by Prime Optical) is packaged with Prime Optical. If launched from a browser, the CTC software is retrieved from the NE itself, which might be a version different from that packaged with Prime Optical.

When an NE Explorer is in autorefresh mode, all values of an entity that is being edited by the user are automatically refreshed. You will lose all of your changes unless you click the Apply button. To enable autorefresh, click the Refresh Data button in the NE Explorer.

B.7.1 Node Properties Pane—ONS 15327

The node properties pane displays information about the ONS 15327 NE. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.7.1.1 Shelf View, page B-121
- B.7.1.2 Identification, page B-121
- B.7.1.3 Network, page B-122
- B.7.1.4 DCC, page B-129
- B.7.1.5 Timing, page B-130
- B.7.1.6 Protection, page B-133
- B.7.1.7 Ether Bridge, page B-134
- B.7.1.8 NE Defaults, page B-135
- B.7.1.9 Security, page B-136
- B.7.1.10 Alarm, page B-140
- B.7.1.11 XC Utilization, page B-141
- B.7.1.12 BLSR, page B-141
- B.7.1.13 OSI, page B-142

B.7.1.1 Shelf View

The Shelf View Properties pane displays a graphic of the ONS 15327 that is selected in the NE Explorer tree. Moving the mouse pointer over the graphic of the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset, delete, or change the card. For unprovisioned slots, the right-click menu allows you to add a card.

B.7.1.2 Identification

The Identification Properties pane displays identification information about the ONS 15327 NE.

Table B-170 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name of the node contact person and the phone number.
System Description	Displays a description of the NE.
SNTP Settings	
Use NTP/SNTP Server	If checked, CTC uses an SNTP server to set the date and time of the node. Using an SNTP server ensures that all ONS 15327 network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. If you check the **Use NTP/SNTP Server** check box, enter the server's IP address in the next field. If you do not use an SNTP server, complete the Time and Time Zone fields. The ONS 15327 will use these fields for alarm dates and times.
SNTP Server	Displays the SNTP server IP address.
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.
Use Daylight Savings Time	If checked, Daylight Savings Time is observed.
AIS-V Insertion on STS-1 Signal Degrade - Path	
Insert AIS-V on STS-1 SD-P	If checked, the NE inserts an AIS-V signal when it detects an STS-1 signal degrade.
SD-P BER	Select the signal degrade path bit error rate for AIS-V insertion.

B.7.1.3 Network

The Network Properties pane displays information about the NE network address. The Network Properties pane contains the following tabs:

- B.7.1.3.1 Address Tab, page B-123
- B.7.1.3.2 Static Routes Tab, page B-123
- B.7.1.3.3 OSPF Tab, page B-123
- B.7.1.3.4 OSPF Area Range Tab, page B-124
- B.7.1.3.5 OSPF Virtual Links Tab, page B-125
- B.7.1.3.6 SNMP Tab, page B-125

- B.7.1.3.7 Firewall/Proxy Tab, page B-126
- B.7.1.3.8 RIP Routing Table Tab, page B-126
- B.7.1.3.9 RIP Tab, page B-127
- B.7.1.3.10 Routing Table Tab, page B-127
- B.7.1.3.11 Proxy Tunnels Tab, page B-128
- B.7.1.3.12 Firewall Tunnels Tab, page B-128

B.7.1.3.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-171 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.
MAC Address	Displays the ONS 15327 address as it is identified on the IEEE 802 MAC layer.
Forward DHCP Requests	If checked, forwards Dynamic Host Configuration Protocol (DHCP) requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.

B.7.1.3.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and ONS 15327 connectivity and create or delete static routes.

Table B-172 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the ONS 15327 and the computer.

B.7.1.3.3 OSPF Tab

The OSPF tab displays OSPF information. OSPF is a link-state Internet routing protocol.

Table B-173 Field Descriptions for the OSPF Tab

Field	Description
Slot	Displays the slot number.
Port	Displays the port number.

Table B-173 Field Descriptions for the OSPF Tab (continued)

Field	Description
DCC OSPF Area ID	Displays the number that identifies the ONS 15327 as a unique OSPF area. The OSPF area number can be from 0.0.0.0 to 255.255.255.255. The number must be unique to the LAN OSPF area.
SDCC Metric	Sets a cost for sending packets across the Section Data Communications Channel (SDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. The Cisco default DCC metric is 100. This value is normally unchanged.
OSPF Active on LAN	If checked, enables the ONS 15327 OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15327s that connect directly to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the ONS 15327 is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the designated router for a subnet.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
Authentication Type	Displays Simple Password if the router where the ONS 15327 is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.7.1.3.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-174 Field Descriptions for the OSPF Area Range Tab

Field	Description
Range Address	Displays the area IP address for the ONS 15327s that reside within the OSPF area. For example, if the ONS 15327 OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the ONS 15327 NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF range table is advertised.

B.7.1.3.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-175 Field Descriptions for the OSPF Virtual Links Tab

Field	Description
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.7.1.3.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-176 Field Descriptions for the SNMP Tab

Field	Description
Allow SNMP Set	If checked, allows you to use SNMP management software with the ONS 15327.
Allow SNMP Proxy	If checked, allows you to configure the ONS 15327 to proxy SNMP calls.
IP Address	The IP address of the NMS.
Community Name	The SNMP community name. **Note** The SNMP community string cannot be blank in Prime Optical. If a blank community string is required in CTC builds earlier than R4.6, you must set the blank community string in CTC.
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.
Relay A IP Address	The first ONS 15327 to relay traps through. The IP address is appended to the base community string to tell the first NE the IP address and the port to forward the trap to. The second NE recognizes the IP address and strips it from the community string before forwarding the trap.
Relay A Community Name	The community name for the relay A node to use in the trap when forwarding it.
Relay B IP Address	The second ONS 15327 to relay traps through.
Relay B Community Name	The community name for the relay B node to use in the trap when forwarding it.

Table B-176 Field Descriptions for the SNMP Tab (continued)

Field	Description
Relay C IP Address	The third ONS 15327 to relay traps through.
Relay C Community Name	The community name for the relay C node to use in the trap when forwarding it.

B.7.1.3.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-177 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Craft Access Only	If checked, only allows CTC to access the firewall and proxy settings of the NE. Check this item only if the LAN port is used for direct workstation-to-network element connections, and not connected to a LAN. Disabling craft-only access allows the installation of a route to the LAN. Disable this only if the LAN port is actually connected to the LAN. **Note** This field applies only to ONS 15327 releases earlier than R4.6.
Enable Firewall	If checked, blocks packets routed between the local area and DCC networks. This causes a loss of connectivity to DCC-only connected NEs. Prime Optical cannot reestablish the connection unless the proxy is enabled. Additionally, all NEs connected to the LAN must also have their firewall enabled, or connectivity problems will result. **Note** This field applies only to ONS 15327 releases earlier than R4.6.
Gateway Settings	
Enable Proxy Server on Port	If checked, the ONS 15327 serves as a proxy for connections between the Prime Optical server and ONS 15310s that are DCC-connected to the proxy ONS 15327. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server port number (display-only) is shown following the Enable Proxy Server on Port field. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Enables the ONS 15327 to proxy as an ENE. Note that an alternate expansion for ENE is *external network element*. • Gateway Network Element (GNE)—Enables the ONS 15327 to proxy as a GNE. • Proxy-only—Enables proxy only. If unchecked, the node does not proxy.

B.7.1.3.8 RIP Routing Table Tab

The RIP Routing Table tab allows you to view the RIP routing table.

Table B-178 Field Descriptions for the RIP Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.

Table B-178 Field Descriptions for the RIP Routing Table Tab (continued)

Field	Description
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Cost	Displays the hop count metric. The valid range is from 1 to 15.

B.7.1.3.9 RIP Tab

The RIP tab allows you to view and configure RIP parameters.

Note

- When you enable RIP, you must wait for approximately one minute for the default RIP address summary to become visible.
- When you disable RIP on the NE, all summary address entries in the Summary Address table are deleted.

Table B-179 Field Descriptions for the RIP Tab

Field	Description
RIP Active	Check this check box to enable RIP. Uncheck it to disable RIP. **Note** Checking the RIP Active check box and clicking the **Apply** button does not enable RIP. Instead, you must check the RIP Active check box, click the **Create** button, and use the Create RIP Address Summary dialog box to create a new RIP address. For details, see 5.3.5 Using RIP, page 5-8.
RIP Type	Select RIP version 1.0 or RIP version 2.0.
Metric	Enter the hop count metric. The valid range is from 1 to 15.
Authentication Type	Select the authentication type.
Authentication Key	Enter the authentication key (password) if the authentication type is Simple Password.
Confirm Authentication Key	Retype the authentication key to confirm it.
RIP Address Summary	• Summary Address—Displays the summary address. • Mask Length—Displays the subnet mask length. • Cost—Displays the hop count metric. The valid range is from 1 to 15.
Create button	Click **Create** to create a new RIP address. See 5.3.5 Using RIP, page 5-8.
Delete button	Click **Delete** to delete an existing RIP address.

B.7.1.3.10 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-180 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.

Table B-180 Field Descriptions for the Routing Table Tab (continued)

Field	Description
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Usage	Shows the number of times the listed route has been used.
Interface	Shows the ONS 15327 interface used to access the destination. Values are: • cpm0—The ONS 15327 Ethernet interface (that is, the RJ-45 jack on the TCC+/TCC2 and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface.

B.7.1.3.11 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-181 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.7.1.3.12 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-182 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.7.1.4 DCC

The DCC Properties pane allows you to create, delete, and view SONET or SDH DCCs.

Table B-183 Field Descriptions for the DCC Properties Pane

Field	Description
SDCC Terminations	Displays the slot, port, and card type of an SDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.

Table B-183 Field Descriptions for the DCC Properties Pane (continued)

Field	Description
Service State	Select the state of the termination: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion. • UEQ—Unequipped; there is nothing in the slot. • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted. • SWDL—Software download in progress. • MT—Maintenance, as per the Admin State change. • AINS—Automatic in service. • DSBLD—Traffic is disabled on the entity. • LPBK—Port or connection has a loopback on it. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11 on page 11-15. See Table 11-11 on page 11-15 for the Service state-Secondary state possible values. **Note** If the NE release does not support the Service state, this field shows N/A.
Create button	Allows you to create new terminations on SONET or SDH cards.
Delete button	Allows you to delete the selected termination.

B.7.1.5 Timing

The Timing Properties pane contains the following tabs:

- B.7.1.5.1 General Tab, page B-130
- B.7.1.5.2 Reference List Tab, page B-132
- B.7.1.5.3 Status Tab, page B-132
- B.7.1.5.4 Timing Report Tab, page B-133

B.7.1.5.1 General Tab

The General tab displays general timing information.

Note BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.

Table B-184 Field Descriptions for the General Tab

Field	Description
General	
Timing Mode	Set to External if the ONS 15327 derives its timing from a BITS source wired to the backplane pins; set to Line if timing is derived from an OC-N card that is optically connected to the timing node. A third option, Mixed, allows you to set external and line timing references. **Caution** Mixed timing may cause timing loops. Use this mode with care.
SSM Message Set	Choose the SSM set level supported by your network. SSM is an SONET protocol that communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SONET Line layer. They enable SONET devices to automatically select the highest quality timing reference and to avoid timing loops. If a Generation 1 node receives a Generation 2 message, the message is mapped down to the next available Generation 1 node. For example, an ST3E message becomes an ST3.
Revertive	If checked, the ONS 15327 reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
Reversion Time	Specify the reversion time in half-minute increments.
Quality of RES	If your timing source supports the reserved S1 byte, you set the timing quality here. (Most timing sources do not use RES.) Qualities are displayed in descending quality order as ranges. For example, ST3 < RES < ST2 means the timing reference is higher than a Stratum 3 and lower than a Stratum 2.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.
BITS IN Facilities	
In State	Set the BITS reference to IS (In Service) or OOS (Out of Service). For nodes set to Line timing with no equipment timed through BITS Out, set the state to OOS. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to IS.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either ESF or SF (D4). SSM is not available with Super Frame.
Sync Messaging	If checked, enables the SSM for BITS In. (SSM is not available if Framing is set to Super Frame.)
Admin SSM	If the Sync Messaging check box is not checked, you can choose the SSM Generation 2 type from the drop-down list.
BITS OUT Facilities	
Out State	Set the BITS reference to IS (In Service) or OOS (Out of Service). For nodes set to Line timing with no equipment timed through BITS Out, set the state to OOS. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to IS.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either ESF or SF (D4). SSM is not available with Super Frame.

Table B-184 Field Descriptions for the General Tab (continued)

Field	Description
AIS Threshold	If SSM is disabled or Super Frame is used, sets the quality level where a node sends an AIS from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
LBO	If you are timing an external device connected to the BITS Out pins, set the distance between it and the ONS 15327. Options are 0-133 ft (Cisco default), 134-266 ft, 267-399 ft, 400-533 ft, and 534-655 ft.

B.7.1.5.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-185 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to Internal Clock. This is the Stratum 3 clock provided on the TCC+. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal Clock. • Timing Mode set to Line—Options are the node's working optical cards and Internal Clock. **Note** For Timing Mode set to External and Timing Mode set to Line, select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1. • Timing Mode set to Mixed—Both BITS and optical cards are available, allowing you to set a mixture of external BITS and optical trunk cards as timing references.
BITS-1 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.
BITS-2 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.

B.7.1.5.3 Status Tab

The Status tab displays timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.

- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-186 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference.
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 out timing reference.
Operations	Execute a switch on the BITS-1 out timing reference.
BITS-2 Out	
BITS-2 Out	Set the BITS-2 out timing reference.
Status	Displays the status of the BITS-2 out timing reference.
Operations	Execute a switch on the BITS-2 out timing reference.

B.7.1.5.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

B.7.1.6 Protection

The Protection Properties pane contains the following tabs:

- B.7.1.6.1 Protection Groups Tab, page B-133
- B.7.1.6.2 Operations Tab, page B-134

B.7.1.6.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-187 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.	
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.

Table B-187 Field Descriptions for the Protection Groups Tab (continued)

Field	Description
Type	View the protection type (1:1 [card], 1:N [card], Y Cable [port], or 1+1 [port]) of the selected protection group.
Protect Card	View the protect module if using 1:1 or 1:N protection.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select the 1+1 (port) type.
Revertive	If checked, the node reverts traffic to the working card or port after failure conditions for the amount of time entered in Reversion Time. This option is not available if you select the 1:N (card) type.
Reversion Time	If Revertive is checked, choose the amount of time following failure condition correction after which the node should switch back to the working card or port. Use half-minute increments. This option is available only if you select the 1:1 (card) type.

B.7.1.6.2 Operations Tab

The Operations tab displays protection group operation information.

Table B-188 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.

B.7.1.7 Ether Bridge

The Ether Bridge Properties pane contains the following tabs:

- B.7.1.7.1 Spanning Tree Config Tab, page B-134
- B.7.1.7.2 Spanning Tree Status, page B-135

B.7.1.7.1 Spanning Tree Config Tab

The Spanning Tree Config tab displays spanning tree configuration information for the ONS 15327.

Table B-189 Field Descriptions for the Spanning Tree Config Tab

Field	Description
Index Number	Unique number that identifies the spanning tree.
Priority	Incoming traffic queue. Priority can be either high or low.
Bridge Max Age	Maximum amount of time that received-protocol information is retained before it is discarded.
Bridge Hello Time	Time interval, in seconds, between the transmission of configuration bridge protocol data units (BPDUs) by a bridge that is the spanning-tree root or is attempting to become the spanning-tree root.
Bridge Forward Delay	Time spent by a port in the listening state and the learning state.

B.7.1.7.2 Spanning Tree Status

The Spanning Tree Status Properties pane displays spanning tree status information for the ONS 15327.

Table B-190 Field Descriptions for the Spanning Tree Status

Field	Description
Index Number	Unique number that identifies the spanning tree.
Bridge ID	ONS 15327 unique identifier that transmits the BPDU; the bridge ID is a combination of the bridge priority and the ONS 15327 MAC address.
Topology Age	Amount of time, in seconds, since the last topology change.
Topology Changes	Number of times the spanning-tree topology has been changed since the node booted up.
Designated Root	Spanning tree's designated root for a particular spanning-tree instance.
Root Cost	Total path cost to the designated root.
Root Port	Port used to reach the root.
Max Age	Maximum amount of time that received-protocol information is retained before it is discarded.
Hello Time	Time interval, in seconds, between the transmission of configuration BPDUs by a bridge that is the spanning-tree root or is attempting to become the spanning-tree root.
Hold Time	Minimum time period, in seconds, that elapses during the transmission of configuration information on a given port.
Forward Delay	Time spent by a port in the listening state and the learning state.

B.7.1.8 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the ONS 15327 NE. You can edit NE defaults for the ONS 15327 R5.0 and later.

Table B-191 Field Descriptions for the NE Defaults Properties Pane

Field	Description
Parameter	Lists the default NE parameter.
Value	Shows the default parameter value, and allows you to change the default.
Units	Lists the unit of measure that corresponds to the default NE parameter.
Range	Lists the possible range of values for the default NE parameter. **Note** This field applies to the ONS 15327 R6.0 and later.
Side Effects	Lists any side effects that could occur as a result of changing the default NE parameter. **Note** This field applies to the ONS 15327 R6.0 and later.

You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.7.1.9 Security

The Security Properties pane allows you to view and edit security features for the ONS 15327 NE. The Security Properties pane contains the following tabs:

- B.7.1.9.1 Policy Tab, page B-136
- B.7.1.9.2 Password Tab, page B-137
- B.7.1.9.3 Access Tab, page B-137
- B.7.1.9.4 RADIUS Server Tab, page B-139
- B.7.1.9.5 Legal Disclaimer Tab, page B-139

B.7.1.9.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-192 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.
SuperUser	Set the idle user timeout for a CTC SuperUser user.
User Lockout	
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Sessions per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.

Table B-192 Field Descriptions for the Policy Tab (continued)

Field	Description
Disable Inactive User	If checked, inactive users are disabled automatically for the amount of time in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.7.1.9.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-193 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

B.7.1.9.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-194 Field Descriptions for the Access Tab

Field	Description
Access	
LAN Access	Specify the type of LAN access allowed. Values are Backplane Only, No LAN Access, Front and Backplane, or Front Only (for ONS 15454 SONET NEs only). **Note** After the LAN access to the backplane is set, the Prime Optical client is unusable for 4 to 5 minutes.

Table B-194 Field Descriptions for the Access Tab (continued)

Field	Description
Restore Timeout	This time period begins if LAN Access is NO and all DCC connections are lost. If the time expires before a DCC is restored, LAN Access is restored so that the node is not isolated. When the DCC comes back, LAN Access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Shell Craft Access (available for ONS 15327 NEs R6.0 and later)	
Enable Craft Port	Check this check box to enable the craft port.
Shell Access	
Shell Access on	Specify shell access on Telnet or SSH.
SSH Port	Indicates the SSH port number that will be used if the SSH radio button is selected.
Telnet Port	This is enabled if you selected the Telnet radio button. Enter the Telnet port number.
Use Standard Telnet Port	If checked, the standard Telnet port is used for Telnet access.
Shell Access (available for ONS 15327 NEs R6.0 and later)	
Access State	Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SSH Port	Indicates the SSH port number that will be used.
Telnet Port	This is enabled if you selected the Non-secure access state. Enter the Telnet port number that will be used.
Use Standard Telnet Port	Check this check box to indicate that the standard Telnet port will be used.
Enable Shell Password	Indicates whether or not the Shell password is enabled. **Note** You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
EMS Access (available for ONS 15327 NEs R6.0 and later)	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.
CORBA Listener Port	Select the port numbers for the XTC CORBA (IIOP) listener port and the XTC CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the XTC CORBA (IIOP) listener port is 683. The port number for the XTC CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.
TL1 Access (available for ONS 15327 NEs R6.0 and later)	
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access (available for ONS 15327 NEs R6.0 and later)	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.
Other	
PM Clearing Privilege	Select the users privilege that allows clearing PM statistics for the NE.

B.7.1.9.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for the ONS 15327 R6.0 and later.

Table B-195 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.7.1.9.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-196 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.7.1.10 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual ONS 15327 nodes. The Alarm Properties pane contains the following tabs:

- B.7.1.10.1 Profile Tab, page B-140
- B.7.1.10.2 Alarm Behavior Tab, page B-141

Note The Alarm Properties pane might contain default alarm profile entries for cards that are not supported by the ONS 15327. Therefore, you might see some alarms that do not apply to the NE type that you are provisioning.

B.7.1.10.1 Profile Tab

The Profile tab allows you to select, create, or delete alarm profiles.

Table B-197 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list. Click **Create** to create a new alarm profile for the NE. Click **Delete** to delete an alarm profile from the NE.

Table B-197 Field Descriptions for the Profile Tab (continued)

Field	Description
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.7.1.10.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-198 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.7.1.11 XC Utilization

The XC Utilization Properties pane allows you to view a summary of the percentage of XTC cross-connect resources used by circuits that traverse or terminate at an ONS 15327.

Table B-199 Field Descriptions for the XC Utilization Properties Pane

Field	Description
STS-1 Matrix	Provides the percentage of the XC cross-connect STS-1 paths resources that are used.
VT Matrix Ports	Provides the percentage of the XTC cross-connect VT matrix ports that are used. Each port is one STS in size, and each can transport 28 VT1.5s. 24 VT matrix ports are available.
VT Matrix	Provides the percentage of the VT matrix resources that are used. 672 are available, which is the number of VT matrix ports (24) multiplied by the number of VT1.5s in an STS (28).

B.7.1.12 BLSR

The BLSR Properties pane allows you to view BLSR information and create or delete BLSRs.

Table B-200 Field Descriptions for the BLSR Properties Pane

Field	Description
Fiber Type	Indicates whether the fiber type is 2-fiber or 4-fiber.
Rate	Select the BLSR rate.
Ring Name	Assign a six-digit alphanumeric ring name. Nodes in the same BLSR must have the same ring name.

Table B-200 Field Descriptions for the BLSR Properties Pane (continued)

Field	Description
Node ID	Assign a node ID. The node ID identifies the node to the BLSR. Nodes in the same BLSR must have unique node IDs.
Ring Reversion	Set the amount of time that will pass before the traffic reverts to the original working path. The Cisco default is 5 minutes. All nodes in a BLSR ring should have the same ring reversion setting, particularly if *never* (nonrevertive) is selected.
East Line	Assign the east BLSR port.
East Switch	Displays a list of switch commands for the east port.
West Line	Assign the west BLSR port.
West Switch	Displays a list of switch commands for the west port.

B.7.1.13 OSI

The OSI Properties pane allows you to provision ONS 15327 Open System Interconnection (OSI) parameters. The Properties pane contains the following tabs:

- B.7.1.13.1 Main Setup Tab, page B-142
- B.7.1.13.2 TARP-Config Tab, page B-143
- B.7.1.13.3 TARP-TDC Tab, page B-144
- B.7.1.13.4 TARP-MAT Tab, page B-144
- B.7.1.13.5 Routers-Setup Tab, page B-145
- B.7.1.13.6 Subnets Tab, page B-145
- B.7.1.13.7 Tunnels Tab, page B-146
- B.7.1.13.8 IS-IS RIB Tab, page B-147
- B.7.1.13.9 ES-IS RIB Tab, page B-147

B.7.1.13.1 Main Setup Tab

The Main Setup tab allows you to provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-201 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI end system (ES). ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs. For the ONS 15327, End System is the default.
Intermediate System Level 1	Provisions the node as an OSI intermediate system (IS). ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1/Level 2	The ONS 15327 performs all IS functions. It communicates with other IS and ES nodes within an OSI area and broadcasts ISHs to IS nodes in other areas to which it is connected.
Node Routing Mode	

Table B-201 Field Descriptions for the Main Setup Tab (continued)

Field	Description
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.7.1.13.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-202 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.
MAT 2	Lists the static manual area table entries.
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).
MAT 1	Lists the static manual area table entries.

Table B-202 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial ONS 15327 startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.
Timers	
LDB Entry	Sets the TARP LDB timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.7.1.13.3 TARP-TDC Tab

Table B-203 Field Descriptions for the TARP-TDC Tab

Field	Description
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.
Type	Indicates how the TARP data cache entry was created. It can be either: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Static Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.

B.7.1.13.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-204 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.7.1.13.5 Routers-Setup Tab

The Routers-Setup tab allows you to view and manage the OSI virtual routers.

Table B-205 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. Only one router is available on the ONS 15327.
System ID	Displays the NSAP system ID of the virtual router. For the primary router (Router 1), $n = 0$.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Edit button	Click **Edit** to modify the address parameters.

B.7.1.13.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-206 Field Descriptions for the Subnets Tab

Field	Description
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Slot/Port	The subnet slot and port.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.

Table B-206 Field Descriptions for the Subnets Tab (continued)

Field	Description
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.
Edit button	Click **Edit** to modify the subnet parameters.
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.

B.7.1.13.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-207 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.

Table B-207 Field Descriptions for the Tunnels Tab (continued)

Field	Description
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.7.1.13.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-208 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. Only one router is available on the ONS 15327.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.7.1.13.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-209 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. Only one router is available on the ONS 15327.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.8 ONS 15454 MSTP NE Explorer

When you choose **Configuration > NE Explorer** for the ONS 15454 Multiservice Transport Platform (MSTP), the window that Prime Optical displays consists of a tree on the left side and a node properties pane on the right. The tree provides a hierarchical view and alarm status of the multishelf NE's physical racks, shelves, and slots. The properties pane shows information about the selected entity (multishelf NE, rack, shelf, or slot). See B.8.1 Node Properties Pane—ONS 15454 MSTP, page B-148 for more information.

Note Refer to the Cisco ONS 15454 SONET, SDH, and DWDM components' installation documents for precautions, guidelines, and procedures for converting single-shelf NEs to multishelf NEs. Incorrect procedures for converting single-shelf NEs to multishelf NEs can result in nodes not being properly discovered and managed by Prime Optical.

Caution If a shelf is added to a node that is managed by Prime Optical, force a Refresh from NE operation to correctly update the node inventory. Inconsistencies in the node inventory can occur if the operation is not performed. Those inconsistencies are reflected in all Prime Optical user interfaces, including the gateways.

B.8.1 Node Properties Pane—ONS 15454 MSTP

The node properties pane displays information about the ONS 15454 MSTP NE. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.8.1.1 Node View, page B-148
- B.8.1.2 General, page B-149
- B.8.1.3 Network, page B-150
- B.8.1.4 DCC/GCC/OSC, page B-159
- B.8.1.5 NE Defaults, page B-161
- B.8.1.6 Security, page B-162
- B.8.1.7 Alarm, page B-166
- B.8.1.8 Alarm Conditions, page B-167
- B.8.1.9 DWDM, page B-168
- B.8.1.10 OSI, page B-175

B.8.1.1 Node View

The Node View Properties pane displays a graphic of the ONS 15454 MSTP that is selected in the NE Explorer tree. Moving the mouse pointer over the NE, its racks, shelves, slots, or cards displays the current alarms for the highlighted item.

B.8.1.2 General

The General Properties pane displays information about the ONS 15454 MSTP NE. The General Properties pane contains the following tabs:

- B.8.1.2.1 Identification Tab, page B-149
- B.8.1.2.2 Multishelf Config Tab, page B-150

B.8.1.2.1 Identification Tab

The Identification tab displays information about the ONS 15454 MSTP NE.

Table B-210 Field Descriptions for the Identification Tab

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name and phone number of the node contact person.
Description	Enter a description of the NE.
System Description	Displays the NE type and the version of the system software.
SNTP Settings	
Use NTP/SNTP Server	If checked, CTC uses an SNTP server to set the date and time of the node. Using an SNTP server ensures that all ONS 15454 network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. If you check the **Use NTP/SNTP Server** check box, enter the server's IP address in the next field. If you do not use an SNTP server, complete the Time and Time Zone fields. The ONS 15454 will use these fields for alarm dates and times.
SNTP Server	Displays the SNTP server IP address.
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.
Use Daylight Savings Time	If checked, Daylight Savings Time is observed.
AIS-V Insertion on STS-1 Signal Degrade - Path	
Insert AIS-V on STS-1 SD-P	If checked, the NE inserts an AIS-V signal when it detects an STS-1 signal degrade.
SD-P BER	Select the signal degrade path bit error rate for AIS-V insertion.
APC State	

Table B-210 Field Descriptions for the Identification Tab (continued)

Field	Description
Side	Lists all the NEs and their sides that belong to the automatic power control (APC) domain.
APC State	Displays the actual state of the APC. Values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.

B.8.1.2.2 Multishelf Config Tab

The Multishelf Config tab displays information about the ONS 15454 MSTP NE's shelves and racks.

Table B-211 Field Descriptions for the Multishelf Config Tab

Field	Description
Shelf ID	Displays the Shelf ID number.
Rack Number	Select the rack number.
Position in Rack	Select the position number in the rack.

B.8.1.3 Network

The Network Properties pane displays information about the NE network address. The Network Properties pane contains the following tabs:

- B.8.1.3.1 Address Tab, page B-151
- B.8.1.3.2 Static Routes Tab, page B-151
- B.8.1.3.3 OSPF Tab, page B-151
- B.8.1.3.4 OSPF Area Range Tab, page B-152
- B.8.1.3.5 OSPF Virtual Links Tab, page B-153
- B.8.1.3.6 SNMP Tab, page B-154
- B.8.1.3.7 Firewall/Proxy Tab, page B-155
- B.8.1.3.8 Routing Table Tab, page B-155
- B.8.1.3.9 RIP Routing Table Tab, page B-156
- B.8.1.3.10 RIP Tab, page B-156
- B.8.1.3.11 Proxy Tunnels Tab, page B-156
- B.8.1.3.12 Firewall Tunnels Tab, page B-157
- B.8.1.3.13 Secure Config Mode Tab, page B-157
- B.8.1.3.14 FTP Hosts Tab, page B-158

B.8.1.3.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-212 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.
MAC Address	Displays the ONS 15454 address as it is identified on the IEEE 802 MAC layer.
LCD IP Setting	Allows you to configure the LCD screen. Select from the following values: • Allow Configuration—Enables shelf IP address changing from the LCD. • Display Only—Prevents users from changing the shelf IP address from the LCD screen. • Suppress Display—Makes the LCD screen blank.
Forward DHCP Requests	If checked, forwards DHCP requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.

B.8.1.3.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and ONS 15454 MSTP connectivity and create or delete static routes.

Table B-213 Field Descriptions for the Static Routes Tab

Field	Description
Create	Click the **Create** button to create a new static route. See 5.3.3 Creating Static Routes for CTC-Based NEs, page 5-3.
Delete	Click the **Delete** button to delete an existing static route.
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the ONS 15454 and the computer.

B.8.1.3.3 OSPF Tab

The OSPF tab displays OSPF information. OSPF is a link-state Internet routing protocol.

Table B-214 Field Descriptions for the OSPF Tab

Field	Description
Shelf	Displays the shelf number.
Slot	Displays the slot number.

Table B-214 Field Descriptions for the OSPF Tab (continued)

Field	Description
Port	Displays the port number.
DCC OSPF Area ID	Displays the number that identifies the ONS 15454 as a unique OSPF area. The OSPF area number can be from 0.0.0.0 to 255.255.255.255. The number must be unique to the LAN OSPF area.
SDCC Metric	Sets a cost for sending packets across the Section Data Communications Channel (SDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
LDCC Metric	Sets a cost for sending packets across the Line Data Communications Channel (LDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
OSPF Active on LAN	If checked, enables the ONS 15454 OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15454s that directly connect to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the ONS 15454 is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the value used for this NE in designated router election. The Cisco default value is zero (0). A router that has Router Priority set to 0 is ineligible to become a designated router on the attached network.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
Authentication Type	Displays Simple Password if the router where the ONS 15454 is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.8.1.3.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-215 Field Descriptions for the OSPF Area Range Tab

Field	Description
Create	Click the **Create** button to create a new OSPF area range. See 5.3.4.1 Creating an OSPF Area Range, page 5-5.
Delete	Click the **Delete** button to delete an existing OSPF area range.

Table B-215 Field Descriptions for the OSPF Area Range Tab (continued)

Field	Description
Range Address	Displays the area IP address for the ONS 15454s that reside within the OSPF area. For example, if the ONS 15454 OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the ONS 15454 NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF routing table is advertised.

B.8.1.3.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create, edit, or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-216 Field Descriptions for the OSPF Virtual Links Tab

Field	Description
Create	Click the **Create** button to create a new OSPF virtual link. See 5.3.4.3.2 Creating an OSPF Virtual Link, page 5-6.
Edit	Click the **Edit** button to modify an existing OSPF virtual link. See 5.3.4.3.3 Modifying an OSPF Virtual Link, page 5-7.
Delete	Click the **Delete** button to delete the selected OSPF virtual link.
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.8.1.3.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-217 Field Descriptions for the SNMP Tab

Field	Description
Allow SNMP Set	If checked, allows you to use SNMP management software with the ONS 15454.
Allow SNMP Proxy	If checked, allows you to configure the ONS 15454 to proxy SNMP calls.
Use Generic MIB	If checked, allows you to transfer traps to a local MIB browser or server.
Create	Click the **Create** button to create a new SNMP trap destination. See 5.3.9.2 Configuring SNMP for CTC-Based NEs, page 5-15.
Delete	Click the **Delete** button to delete the selected SNMP trap destination.
IP Address	The IP address of the NMS.
Community Name	The SNMP community name. **Note** The SNMP community string cannot be blank in Prime Optical. If a blank community string is required in CTC builds earlier than R4.6, you must set the blank community string in CTC.
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.
Relay A IP Address	The first ONS 15454 to relay traps through. The IP address is appended to the base community string to tell the first NE the IP address and the port to forward the trap to. The second NE recognizes the IP address and strips it from the community string before forwarding the trap.
Relay A Community Name	The community name for the relay A node to use in the trap when forwarding it.
Relay B IP Address	The second ONS 15454 to relay traps through.
Relay B Community Name	The community name for the relay B node to use in the trap when forwarding it.
Relay C IP Address	The third ONS 15454 to relay traps through.
Relay C Community Name	The community name for the relay C node to use in the trap when forwarding it.

B.8.1.3.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-218 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Gateway Settings	
Enable Proxy Server on Port	If checked, the ONS 15454 serves as a proxy for connections between the Prime Optical server and ONS 15454s that are DCC-connected to the proxy ONS 15454. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server port number (display-only) is shown following the Enable Proxy Server on Port field. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Configures the ONS 15454 to proxy as an ENE, meaning the NE supports craft access only, supports firewall, and acts as a proxy. • Gateway Network Element (GNE)—Configures the ONS 15454 to proxy as a GNE, meaning the NE supports firewall and acts as a proxy. • Proxy-only—Configures the ONS 15454 to act as a proxy. If unchecked, the node does not proxy; instead, it acts as a LAN-connected NE (LNE).

B.8.1.3.8 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-219 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Usage	Shows the number of times the listed route has been used.
Interface	Shows the ONS 15454 interface used to access the destination. Values are: • cpm0—The ONS 15454 Ethernet interface (that is, the RJ-45 jack on the TCC+/TCC2 and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface.

B.8.1.3.9 RIP Routing Table Tab

The RIP Routing Table tab allows you to view the RIP routing table.

Table B-220 Field Descriptions for the RIP Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Cost	Displays the hop count metric. The valid range is from 1 to 15.

B.8.1.3.10 RIP Tab

The RIP tab allows you to view and configure RIP parameters.

Note

- When you enable RIP, you must wait for approximately one minute for the default RIP address summary to become visible.
- When you disable RIP on the NE, all summary address entries in the Summary Address table are deleted.

Table B-221 Field Descriptions for the RIP Tab

Field	Description
RIP Active	Check this check box to enable RIP. Uncheck it to disable RIP. **Note** Checking the RIP Active check box and clicking the **Apply** button does not enable RIP. Instead, you must check the RIP Active check box, click the **Create** button, and use the Create RIP Address Summary dialog box to create a new RIP address. For details, see 5.3.5 Using RIP, page 5-8.
RIP Type	Select RIP version 1.0 or RIP version 2.0.
Metric	Enter the hop count metric. The valid range is from 1 to 15.
Authentication Type	Select the authentication type.
Authentication Key	Enter the authentication key (password) if the authentication type is Simple Password.
Confirm Authentication Key	Retype the authentication key to confirm it.
RIP Address Summary	• Summary Address—Displays the summary address. • Mask Length—Displays the subnet mask length. • Cost—Displays the hop count metric. The valid range is from 1 to 15.
Create button	Click **Create** to create a new RIP address. See 5.3.5 Using RIP, page 5-8.
Delete button	Click **Delete** to delete an existing RIP address.

B.8.1.3.11 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-222 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Create	Click the **Create** button to create a new proxy tunnel. See 4.4.4.5 Creating a New Proxy Tunnel, page 4-52.
Delete	Click the **Delete** button to delete the selected proxy tunnel.
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.8.1.3.12 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-223 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Create	Click the **Create** button to create a new firewall tunnel. See 4.4.4.6 Creating a New Firewall Tunnel, page 4-53.
Delete	Click the **Delete** button to delete an existing firewall tunnel.
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.8.1.3.13 Secure Config Mode Tab

The TCC2P card supports secure config mode. When the secure mode is on, the NE has two IP addresses, one for the backplane and one for the front port. The front port IP address is used by the DCC-connected NEs.

Note When there is no TCC2P card present, the fields in the following table cannot be configured.

The Secure Config Mode tab allows you to configure the secure config mode. The fields shown depend on whether the NE is in secure mode. For example, the backplane Ethernet port values are displayed only when the NE is in secure mode.

Table B-224 Field Descriptions for the Secure Config Mode Tab

Field	Description
TCP/IP Mode	
Normal	When this text is visible, the NE is not in secure mode. There is one IP address shared by TCC and backplane Ethernet ports, with full connectivity between ports.
Secure	When this text is visible, the NE is in secure mode. There are separate IP addresses for TCC and backplane Ethernet ports, with no connectivity between ports.
Mode not locked	When this text is visible, you can change the secure mode.
Mode permanently locked and cannot be unlocked	When this text is visible, the NE is in secure mode, and the secure mode is locked and cannot be changed.
Change Mode	
Change Mode button	Opens the Change Secure Mode dialog box, which allows you to change the mode of the NE from secure to unsecure, and vice versa. This button is enabled only if an active TCC2P card exists on the NE.
Lock	
Lock button	When the NE is in secure mode, the Lock button locks the secure mode on the NE/TCC so that it cannot be changed.

B.8.1.3.14 FTP Hosts Tab

The FTP Hosts tab allows you to configure database backup or restore and software download to an ENE when the firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which the FTP relay resumes blocking all FTP access for the ENEs.

Table B-225 Field Descriptions for the FTP Hosts Tab

Field	Description
Create	Click the **Create** button to open the Create New FTP Host dialog box, which allows you to create up to 12 new FTP hosts in a GNE/ENE firewall environment. See 5.3.10.1 Creating an FTP Host, page 5-22. **Note** You cannot create more than 12 FTP hosts.
Delete	Click the **Delete** button to delete the selected FTP host.
FTP Host Address	Displays the FTP host IP address.
Prefix Length	Displays the FTP host subnet mask length.
Enable FTP Relay	Indicates whether FTP relay is enabled or disabled. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Displays the number of minutes that the FTP relay is configured to run, after which the FTP relay resumes blocking all FTP access for the ENEs.

B.8.1.4 DCC/GCC/OSC

The DCC/GCC/OSC Properties pane allows you to create, delete, and view SDCCs, LDCCs, Generic Communications Channels (GCCs), Optical Service Channels (OSCs), and DWDM ring IDs.

Table B-226 Field Descriptions for the DCC/GCC/OSC Properties Pane

Field	Description
Create	Click the **Create** button to create new terminations on SONET or SDH cards.
Edit	Click the **Edit** button to modify existing terminations on SONET or SDH cards.
Delete	Click the **Delete** button to delete the selected SDCC, LDCC, GCC, OSC, or DWDM ring ID.
RS-DCC/SDCC	
SDCC Terminations	Displays the slot, port, and card type of an SDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.

Table B-226 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
Service State	Select the state of the termination: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion. • UEQ—Unequipped; there is nothing in the slot. • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted. • SWDL—Software download in progress. • MT—Maintenance, as per the Admin State change. • AINS—Automatic in service. • DSBLD—Traffic is disabled on the entity. • LPBK—Port or connection has a loopback on it. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11 on page 11-15. See Table 11-11 on page 11-15 for the Service state-Secondary state possible values. **Note** If the NE release does not support the Service state, this field shows N/A.
MS-DCC/LDCC	
LDCC Terminations	Displays the slot, port, and card type of an LDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only. For GCCs, this column is always N/A.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the LDCC termination (IS-NR, OOS-AU, OOS-MA, OOS-AUMA) plus the secondary state (MEA, UEQ, UAS, SWDL, MT, AINS, DSBLD, LPBK).
GCC	
GCC Terminations	Displays the slot, port, and card type of a GCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
GCC Rate	Displays the GCC rate.
Foreign	A check mark indicates that the far-end node is a non-ONS node.

Table B-226 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only. For GCCs, this column is always N/A.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and SNPA address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the GCC termination (IS-NR, OOS-AU, OOS-MA, OOS-AUMA) plus the secondary state (MEA, UEQ, UAS, SWDL, MT, AINS, DSBLD, LPBK).
OSC	
OSC Terminations	Displays the slot, port, and card type of an OSC termination.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only.
OSI SNPA	If the OSC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Displays the state of the OSC termination.
DWDM Ring ID	
Ring ID	Displays the ring ID.
West Direction	Lists the OSCM or OSC-CSM port that supports the ring in the west direction. The value is N/A if there are no ports in the west direction.
East Direction	Lists the OSCM or OSC-CSM port that supports the ring in the east direction. The value is N/A if there are no ports in the east direction.

B.8.1.5 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the ONS 15454 MSTP NE.

Table B-227 Field Descriptions for the NE Defaults Properties Pane

Field	Description
Parameter	Lists the default NE parameter.
Value	Shows the default parameter value, and allows you to change the default.
Units	Lists the unit of measure that corresponds to the default NE parameter.
Range	Lists the possible range of values for the default NE parameter. **Note** This field applies to the ONS 15454 SONET R6.0 and later.
Side Effects	Lists any side effects that could occur as a result of changing the default NE parameter.

You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.8.1.6 Security

The Security Properties pane allows you to view and edit security features for the ONS 15454 MSTP NE. The Security Properties pane contains the following tabs:

- B.8.1.6.1 Policy Tab, page B-162
- B.8.1.6.2 Password Tab, page B-163
- B.8.1.6.3 Access Tab, page B-163
- B.8.1.6.4 RADIUS Server Tab, page B-165
- B.8.1.6.5 Legal Disclaimer Tab, page B-166

B.8.1.6.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-228 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.
SuperUser	Set the idle user timeout for a CTC SuperUser user.
User Lockout	
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Sessions per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.

Table B-228 Field Descriptions for the Policy Tab (continued)

Field	Description
Disable Inactive User	If checked, inactive users are disabled automatically. Specify the duration in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.8.1.6.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-229 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which a user's new password must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

B.8.1.6.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-230 Field Descriptions for the Access Tab

Field	Description
Access	
LAN Access	Specify the type of LAN access allowed. Values are Backplane Only, No LAN Access, Front and Backplane, or Front Only (for ONS 15454 SONET NEs only). **Note** After the LAN access to the backplane is set, the Prime Optical client is unusable for 4 to 5 minutes.

Table B-230 Field Descriptions for the Access Tab (continued)

Field	Description
Restore Timeout	This time period begins if *No LAN Access* is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Serial Craft Access	
Enable Craft Port	Check this check box to enable the craft port.
Shell Access	
Access State	Select one of the following shell access states: • Disable • Non-secure • Secure
SSH Port	Indicates the SSH port number that will be used if the SSH radio button is selected.
SFTP Port	Indicates the SFTP port number.
Telnet Port	This is enabled if you selected the Telnet radio button. Enter the Telnet port number.
Use Standard Telnet Port	If checked, the standard Telnet port is used for Telnet access.
Enable Shell Password	Indicates whether or not the Shell password is enabled. You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
EMS Access	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.
CORBA Listener Port	Select the port numbers for the TCC CORBA (IIOP) listener port and the TCC CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the TCC CORBA (IIOP) listener port is 683. The port number for the TCC CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.
TL1 Access	
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.
Pseudo-IOS Access (available for ONS 15454 MSTP R9.2)	
Access State	Pseudo CLI is a command-line interface on the NE that simulates a Cisco IOS connection. Select the pseudo-IOS access state from the drop-down list. You can select Disable, Non-secure, or Secure. If you choose Disable, the port is not configurable, which means that the node does not listen for pseudo-CLI connections. **Note** Pseudo-IOS functionality is available only if the node contains 10GE_XP or GE_XP cards in L2 mode.

Table B-230 Field Descriptions for the Access Tab (continued)

Field	Description
Port	Enter the port number for pseudo-IOS access. If the Access State field is set to Disable, you cannot configure this field.
Other	
PM Clearing Privilege	Select the user privilege that allows clearing PM statistics for the NE.

B.8.1.6.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for the ONS 15454 MSTP.

Table B-231 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.8.1.6.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-232 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.8.1.7 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual ONS 15454 MSTP nodes. The Alarm Properties pane contains Profile and Alarm Behavior tabs.

B.8.1.7.1 Profile Tab

The Profile tab allows you to view, create, or delete alarm profiles.

Table B-233 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list.
Create button	Click **Create** to create a new alarm profile for the NE.
Delete button	Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.8.1.7.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-234 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot No.	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.8.1.8 Alarm Conditions

The Alarm Conditions Properties pane allows you to view all NE conditions (events with a Not Reported [NR] severity) at the node level. Alarm Conditions Properties pane gives a clear record of changes or events that do not result in alarms.

Note The Alarm Conditions tab is not updated when conditions change; therefore, you must click **Retrieve** to see any changes.

Table B-235 Field Descriptions for the Alarm Conditions Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Retrieve button	Click the **Retrieve** button. The Retrieve button requests the current set of fault conditions from the node, card, or network. Conditions include all fault conditions raised on the node, whether or not they are reported. The time stamp of the condition request is also reported next to the **Retrieve** button.
Perceived Severity	Perceived severity of the selected alarm (critical, major, minor, or warning). The background color also indicates the severity, where: • Red = Critical • Orange = Major • Yellow = Minor • Blue = Warning • Green = Cleared **Note** For the ONS 15530 and ONS 15540, alarms that are shown in the command-line interface (CLI) as informational are shown in Prime Optical as warnings.
Probable Cause	Probable cause of the selected alarm. Some possible values include: • Not Applicable/Unknown—If no additional information is available • Mismatch of equipment and attributes (MEA) alarm—For misconfigured pluggable port modules (PPMs) • Link Layer Keep-Alive Failure—When the keepalive frame on the POS port is disabled and the port is shut down • Bad Packet Count Exceeds Threshold—When the packets through the front port have CRC errored frames • Auto-Negotiation Remote Failure Indication—When a remote Gigabit Ethernet port is shut down from a local port
Condition	Error message or condition name that is associated with the alarm or event.
Affected Object	Name of the object where the selected alarm occurred.
Module Name	Name of the module where the selected alarm occurred.
Physical Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.
NE Alarm Time	Date and time when the alarm occurred on the NE.
Service Affecting	Whether the alarm or event is service affecting (SA). Values are: • True—The alarm is service affecting • False—The alarm is not service affecting

B.8.1.9 DWDM

The DWDM Properties pane allows you to manage and provision DWDM connections. The DWDM Properties pane contains the following tabs:

- B.8.1.9.1 Provisioning Tab, page B-169

- B.8.1.9.2 Connections Tab, page B-170
- B.8.1.9.3 Span Check Tab, page B-171
- B.8.1.9.4 APC Tab, page B-171
- B.8.1.9.5 Node Setup Tab, page B-172
- B.8.1.9.6 Side Tab, page B-172
- B.8.1.9.7 All Facilities Tab, page B-172
- B.8.1.9.8 Passive Cards Tab, page B-173
- B.8.1.9.9 Alien Wavelength Tab, page B-173
- B.8.1.9.10 Fiber Attribute Tab, page B-174

B.8.1.9.1 Provisioning Tab

The Provisioning tab allows you to view and change the optical parameters for the ONS 15454 MSTP. The optical parameters might have already been provisioned manually or by automatic node setup (ANS).

Table B-236 Field Descriptions for the Provisioning Tab

Field	Description
Attribute Name	Displays the Properties pane name that is imported from or exported to the Cisco MetroPlanner configuration file.
Value	Displays the default value of the corresponding Properties pane name imported from or exported to the Cisco MetroPlanner configuration file.

Table B-236 Field Descriptions for the Provisioning Tab (continued)

Field	Description
Origin (*Available in ONS 15454 R8.0 and later*)	Shows how the parameter is set. Possible values are: • Default • Automatic • Provisioned • Imported
Note (*Available in ONS 15454 R8.0 and later*)	Displays error details if ANS fails to set the parameter. Possible errors are: • Error during NE board navigation; value is not calculated • Cannot send the parameter request to far-end node; value is not calculated • No response from far-end node; value is not calculated • Configuration is not supported; value is not calculated • Far-end node configuration is not supported; value is not calculated • OSC far-end launch power is not available; value is not calculated • Far-end launch power is not available; value is not calculated • Span loss value is not available; value is not calculated • Fiber stage insertion loss is not available; value is not calculated • Preamplifier tilt is not available; value is not calculated • Add/drop output power is not available; value is not calculated • NE node launch power is not available; value is not calculated • WXC degree is not available; value is not calculated • Value is out of range • Read-only attribute; value is not calculated

B.8.1.9.2 Connections Tab

The Connections tab allows you retrieve internal patchcords and calculate DWDM connections.

Table B-237 Field Descriptions for the Connections Tab

Field	Description
ONS 15454 MSTP R7.2 and Earlier	
Slot-From	The slot from which the DWDM connection originates.
Unit-From	The unit from which the DWDM connection originates.
Port-From	The port from which the DWDM connection originates.
Slot-To	The slot at which the DWDM connection terminates.
Unit-To	The unit at which the DWDM connection terminates.
Port-To	The port at which the DWDM connection terminates.
State	The state of the DWDM connection.
ONS 15454 MSTP R8.0 and Later	

Table B-237 Field Descriptions for the Connections Tab (continued)

Field	Description
From	The unit or port from which the internal patchcord originates.
To	The unit or port at which the internal patchcord terminates.
Wavelength	Shows the wavelength value if the internal patchcord is between two channel ports. Otherwise, it shows *N/A*.

B.8.1.9.3 Span Check Tab

The Span Check tab allows you to check the span loss between the selected node and the previous node in the chain. The span check is always in reception.

Note If the Measured Span Loss value crosses the Min or Max Expected Span Loss threshold, a condition is raised.

Table B-238 Field Descriptions for the Span Check Tab

Field	Description
Retrieve Span Loss Values button	Runs the span loss verification function and retrieves values for the Measure Span Loss column.
Side	Specifies the side for which span loss information is displayed (east-to-west or west-to-east).
Min Exp. Span Loss	Specifies the minimum expected span loss (in dBm) for the incoming span. This value is imported from MetroPlanner, but can be modified manually.
Max Exp. Span Loss	Specifies the maximum expected span loss (in dBm) for the incoming span.
Meas. Span Loss	The measured span loss value.
Resolution	The resolution or accuracy of the span loss measurement.

B.8.1.9.4 APC Tab

The APC tab allows you to view the automatic power control (APC) parameters.

Table B-239 Field Descriptions for the APC Tab

Field	Description
Port	Port number.
Last Modification	Date and time the power control setpoint was last modified.
Param	All the APC parameters associated with the port.
Last Check	Date and time the power control setpoint was last verified.

Table B-239 Field Descriptions for the APC Tab (continued)

Field	Description
Side	Lists all the NEs and their sides that belong to the APC domain.
APC State	Displays the actual state of the APC. Values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.

B.8.1.9.5 Node Setup Tab

The Node Setup tab allows you to automatically preprovision NEs from a selected XML configuration file.

Table B-240 Field Descriptions for the Node Setup Tab

Field	Description
XML Settings	
Select XML File	Click **Browse** to select an XML file (generated by the MetroPlanner application). Prime Optical parses the XML file selected by the operator and checks the accuracy of its content.
Log Settings	
Select Log File	Click **Browse** to select a log file to which the results of the operations you perform will be saved.
Launch ANS Wizard button	Click the **Launch ANS Wizard** button to launch the Automatic Node Setup wizard. See 7.12.11 Configuring Automatic Node Setup, page 7-340 for more information.

B.8.1.9.6 Side Tab

The Side tab allows you to view, edit, and delete sides defined for an ONS 15454 MSTP NE.

Table B-241 Field Descriptions for the Side Tab

Field	Description
Create button	Allows you to create side objects for the NE.
Modify button	Allows you to modify the side ID of an existing side object.
Delete button	Allows you to delete side objects.
Side	Displays the NE's side ID.
Line In	Displays the index of the receive side of the OTS port.
Line Out	Displays the index of the transmit side of the OTS port.

B.8.1.9.7 All Facilities Tab

The All Facilities tab allows you to view the DWDM and optical ports for the ONS 15454 MSTP NE.

Table B-242 Field Descriptions for the All Facilities Tab

Field	Description
Port	Displays the card port number, shelf ID, and slot number.
Power	Displays the current power for the port.
State	Displays the administrative state of the port.
Service State	Displays the service state of the port.
Retain Selected	Displays only the ports that you selected.
Show All	Retrieves and displays all the optical and DWDM ports for the NE.

B.8.1.9.8 Passive Cards Tab

The Passive Cards tab allows you to view information about passive units provisioned in CTC.

Note Passive units can be provisioned in CTC only.

Table B-243 Field Descriptions for the Passive Cards Tab

Field	Description
Passive Cards	
ID	Displays the passive card shelf ID.
Equipment Name	Displays the general card type/name.
Location	Displays the location of the passive card.
Description	Displays the passive card description.
Optical Ports	
Port	Displays the port number.
Type	Displays the port type.
MPO	Displays any physical multifiber push connectors.
Wavelength	Displays the port wavelength.

B.8.1.9.9 Alien Wavelength Tab

The Alien Wavelength tab allows you to view and edit the port and wavelength parameters defined for an ONS 15454 MSTP NE. Click the **Refresh** button to refresh the Alien Wavelength table.

Note Alien Wavelength is applicable to ONS 15454 NEs that support WSON nodes.

Table B-244 Field Descriptions for the Alien Wavelength Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Create button	Allows you to create alien wavelengths for the NE. See 7.12.15 Creating Alien Wavelength for more information.
Edit button	Allows you to modify the existing alien wavelength value. See 7.12.16 Editing Alien Wavelength for more information.
Position	Displays information about the shelf, slot, and port on which the alien wavelength is configured.
Alien Wavelength	Displays the alien wavelength class.
Lambda	Displays the alien wavelength value.
FEC	Displays the FEC mode.

B.8.1.9.10 Fiber Attribute Tab

The Fiber Attribute tab allows you to view the fiber parameters defined for an ONS 15454 MSTP NE.

Note Fiber Attribute is applicable to ONS 15454 NEs that support WSON node.

Table B-245 Field Descriptions for the Fiber Attribute Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Toggle button	Click the **Toggle** button to select the unit of measure.
Optical Side	Displays the name of the optical side to which the fiber is connected.
Fiber Type	Choose the fiber type from the drop-down list.
Fiber Number	Displays the number of the fiber associated to the optical side. Useful when different types of fiber are present on the span.
Fiber Length	Allows you to edit the fiber length.

B.8.1.9.11 WSON Tab

The WSON tab allows you to view and acknowledge the unverified alarms at the circuit level.

Table B-246 Field Descriptions for the WSON Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Acknowledge WSON Alarm button	Click the **Acknowledge WSON Alarm** button to acknowledge a WSON alarm.
Affected Circuits button	Click the **Affected Circuits** button to view the affected circuits. If there are circuits affected by the selected alarm, the new circuit report is displayed. See 7.2.28.2 Working with Circuit Reports for more information. **Note** The Affected Circuits button is enabled only when an alarm condition is selected.

Table B-246 Field Descriptions for the WSON Tab (continued)

Field	Description
ID	Displays the ID of the NE from the Domain Explorer.
PS	Perceived severity of the selected alarm (critical, major, minor, or warning). The background color also indicates the severity, where: • Red = Critical • Orange = Major • Yellow = Minor • Blue = Warning • Green = Cleared **Note** For the ONS 15530 and ONS 15540, alarms that are shown in the command-line interface (CLI) as informational are shown in Prime Optical as warnings.
Probable Cause	Probable cause of the selected alarm. Some possible values include: • Not Applicable/Unknown—If no additional information is available • Mismatch of equipment and attributes (MEA) alarm—For misconfigured pluggable port modules (PPMs) • Link Layer Keep-Alive Failure—When the keepalive frame on the POS port is disabled and the port is shut down • Bad Packet Count Exceeds Threshold—When the packets through the front port have CRC errored frames • Auto-Negotiation Remote Failure Indication—When a remote Gigabit Ethernet port is shut down from a local port
Condition	Error message or condition name that is associated with the alarm or event.
Affected Object	Name of the object where the selected alarm occurred.
Module Name	Name of the module where the selected alarm occurred.
Physical Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.
NE Alarm Time	Date and time when the alarm occurred on the NE.
SA	Whether the alarm or event is service affecting (SA). Values are: • Yes—The alarm is service affecting • No—The alarm is not service affecting • N/A—No information is provided by the NE

B.8.1.10 OSI

The OSI Properties pane allows you to provision ONS 15454 MSTP Open System Interconnection (OSI) parameters. The Properties pane contains the following tabs:

- B.8.1.10.1 Main Setup Tab, page B-176
- B.8.1.10.2 TARP-Config Tab, page B-176
- B.8.1.10.3 TARP-TDC Tab, page B-178
- B.8.1.10.4 TARP-MAT Tab, page B-178

- B.8.1.10.5 Routers-Setup Tab, page B-179
- B.8.1.10.6 Subnets Tab, page B-179
- B.8.1.10.7 Tunnels Tab, page B-180
- B.8.1.10.8 IS-IS RIB Tab, page B-181
- B.8.1.10.9 ES-IS RIB Tab, page B-181

B.8.1.10.1 Main Setup Tab

The Main Setup tab allows you to view and provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-247 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI ES. ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1	Provisions the node as an OSI IS. The ONS 15454 SONET performs all IS functions, including routing data between ISs and ESs, between networks, and between parts of a network. ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs. For the ONS 15454 SONET, Intermediate System Level 1 is the Cisco default.
Intermediate System Level 1/Level 2	The ONS 15454 SONET performs all IS functions. It communicates with other IS and ES nodes within an OSI area and broadcasts ISHs to IS nodes in other areas to which it is connected.
Node Routing Mode	
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.8.1.10.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-248 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial ONS 15454 SONET startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.
Timers	
LDB Entry	Sets the TARP loop detection buffer (LDB) timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.

Table B-248 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.8.1.10.3 TARP-TDC Tab

Table B-249 Field Descriptions for the TARP-TDC Tab

Field	Description
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.
Type	Indicates how the TARP data cache entry was created. It can be either of the following: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Selected Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.

B.8.1.10.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-250 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.

Table B-250 Field Descriptions for the TARP-MAT Tab (continued)

Field	Description
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.8.1.10.5 Routers-Setup Tab

The Routers-Setup tab allows you to view and manage OSI virtual routers.

Table B-251 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. The ONS 15454 SONET provides three virtual routers, numbered 1 through 3.
System ID	Displays the NSAP system ID of the virtual router. The NSAP system identifier is set to the node's first IEEE 802.3 MAC address + *n*, where *n* = 0 through 2. For the primary router (Router 1), *n* = 0.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Edit button	Click **Edit** to modify the address parameters.

B.8.1.10.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-252 Field Descriptions for the Subnets Tab

Field	Description
Slot/Port	The subnet slot and port.
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets

Table B-252 Field Descriptions for the Subnets Tab (continued)

Field	Description
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64. For the ONS 15454 LAN subnet, the default DIS priority is 63. This priority should not be changed.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.
Edit button	Click **Edit** to modify the subnet parameters.
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.

B.8.1.10.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-253 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.8.1.10.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-254 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the OSI router number. The ONS 15454 SONET provides three virtual routers, numbered 1 through 3.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.8.1.10.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-255 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the OSI router number. The ONS 15454 SONET provides three virtual routers, numbered 1 through 3.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.8.2 Rack Properties Pane—ONS 15454 MSTP

The Rack Properties pane displays a graphic of the ONS 15454 MSTP rack that is selected in the NE Explorer tree.

The following table lists the number of shelves and racks supported for Multishelf NEs across Prime Optical releases:

Prime Optical Release	Number of racks and shelves supported
9.6	Up to 50
9.2	Up to 30
9.1	Up to 12
9.0	Up to 12

Prime Optical Release	Number of racks and shelves supported
8.5.x	Up to 12
8.0.x	Up to 8
7.0.x	Up to 8

Moving the mouse pointer over the rack, shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a shelf displays the shelf in the properties pane.

B.8.3 Shelf Properties Pane—ONS 15454 MSTP

The Shelf Properties pane displays information about the shelf that contains the ONS 15454 MSTP cards and modules.

The following table lists the number of shelves and racks supported for Multishelf NEs across Prime Optical releases:

Prime Optical Release	Number of racks and shelves supported
9.6	Up to 50
9.2	Up to 30
9.1	Up to 12
9.0	Up to 12
8.5.x	Up to 12
8.0.x	Up to 8
7.0.x	Up to 8

The shelf properties pane contains the following tabs:

- B.8.3.1 Shelf View, page B-182
- B.8.3.2 General, page B-183
- B.8.3.3 Alarm, page B-183
- B.8.3.4 Protection, page B-184
- B.8.3.5 Timing, page B-185

B.8.3.1 Shelf View

The Shelf View Properties pane displays a graphic of the ONS 15454 MSTP shelf that is selected in the NE Explorer tree. Moving the mouse pointer over the shelves, slots, or cards displays the current state and alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset, delete, or change a card. For unprovisioned slots, the right-click menu allows you to add a card.

B.8.3.2 General

The General Properties pane contains information about voltage thresholds and multishelf configurations for the ONS 15454 MSTP. The General Properties pane contains Power Monitor and Multishelf Config tabs.

B.8.3.2.1 Power Monitor Tab

Table B-256 Field Descriptions for the Power Monitor Tab

Field	Description
ELWBATVG	Allows you to set the monitor value for extreme low battery voltage (ELWBATVG) in volts direct current (VDC).
LWBATVG	Allows you to set the monitor value for low battery voltage (LWBATVG) in VDC.
HIBATVG	Allows you to set the monitor value for high battery voltage (HIBATVG) in VDC.
EHIBATVG	Allows you to set the monitor value for extreme high battery voltage (EHIBATVG) in VDC.
Current Voltage Environment	Shows the current voltage environment.

B.8.3.2.2 Multishelf Config Tab

Table B-257 Field Descriptions for the Multishelf Config Tab

Field	Description
Shelf Role	Specify the configuration for multishelf NEs, where the primary NE is configured to take care of other NEs in the shelf. Select one of the following radio buttons: • Disable Multishelf • Enable as Subtended Shelf • Enable as Node Controller
Shelf ID	Unique number that identifies the shelf. Shelf ID #1 is reserved for the node controller.
LAN Config	Used to specify the LAN configuration that is used for the multishelf NE. A change in this attribute will force an automatic TCC reboot.

B.8.3.3 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual ONS 15454 MSTP shelves. The Alarm Properties pane contains Profile and Alarm Behavior tabs.

B.8.3.3.1 Profile Tab

The Profile tab allows you to view, create, or delete alarm profiles.

Table B-258 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list.
Create button	Click **Create** to create a new alarm profile for the NE.
Delete button	Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.8.3.3.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-259 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot No.	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.8.3.4 Protection

The Protection Properties pane contains Protection Groups and Operations tabs.

B.8.3.4.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-260 Field Descriptions for the Protection Groups Tab

Field	Descriptions
Protection Groups	
Protection Groups	Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.

Table B-260 Field Descriptions for the Protection Groups Tab (continued)

Field	Descriptions
Type	View the protection type (1:1 [card], 1:N [card], Y Cable [port], 1+1 [port], or 1+1 Optimized [port]) of the selected protection group.
Protect Module	View the protect module if using 1:1 or 1:N protection.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select the 1+1 (port) type.
Revertive	If checked, the node reverts traffic to the working card or port after failure conditions for the amount of time entered in Reversion Time. This option is not available if you select the 1:N (card) type.
Reversion Time	If Revertive is checked, choose the amount of time following failure condition correction after which the node should switch back to the working card or port. Use half-minute increments. This option is available only if you select the 1:1 (card) type.

B.8.3.4.2 Operations Tab

The Operations tab displays protection group operation information.

Table B-261 Field Descriptions for the Operations Tab

Field	Descriptions
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock out switching, or lock on switching.

B.8.3.5 Timing

The Timing Properties pane contains General, Reference List, Status, and Timing Report tabs.

B.8.3.5.1 General Tab

The General tab displays general timing information.

Table B-262 Field Descriptions for the General Tab

Field	Description
General Timing Area	
Timing Mode	Set to External if the ONS 15454 derives its timing from a BITS source wired to the backplane pins; set to Line if timing is derived from an OC-N card that is optically connected to the timing node. A third option, Mixed, allows you to set external and line timing references. ⚠ **Caution** Mixed timing might cause timing loops. Use this mode with care.
SSM Message Set	Choose the SSM set level supported by your network. SSM is an SONET protocol that communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SONET Line layer. They enable SONET devices to automatically select the highest quality timing reference and to avoid timing loops. If a Generation 1 node receives a Generation 2 message, the message is mapped down to the next available Generation 1 node. For example, an ST3E message becomes an ST3.
Revertive	If checked, the ONS 15454 reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected. Use the Reversion Time field to specify the time in half-minute increments.
Reversion Time	Specify the reversion time in half-minute increments.
Quality of RES	If your timing source supports the reserved S1 byte, set the timing quality here. (Most timing sources do not use RES.) Qualities are displayed in descending quality order as ranges. For example, ST3 < RES < ST2 means the timing reference is higher than a Stratum 3 and lower than a Stratum 2.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.
BITS IN Facilities and BITS OUT Facilities	
In State/Out State	Set the BITS reference to IS (In Service) or OOS (Out of Service). For nodes set to Line timing with no equipment timed through BITS Out, set the state to OOS. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to IS. **Note** BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either ESF or SF (D4). SSM is not available with Super Frame.
Sync Messaging	If checked, enables the SSM for BITS In. (SSM is not available if Framing is set to Super Frame.)
Admin. SSM	If the Sync Messaging check box is not checked, you can choose the SSM Generation 2 type from the drop-down list.
AIS Threshold	If SSM is disabled or Super Frame is used, sets the quality level where a node sends an AIS from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
LBO	If you are timing an external device connected to the BITS Out pins, set the distance between it and the ONS 15454. Options are 0-133 ft (Cisco default), 134-266 ft, 267-399 ft, 400-533 ft, and 534-655 ft.

B.8.3.5.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-263 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to the internal clock. This is the Stratum 3 clock provided on the TCC+. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal. • Timing Mode set to Line—Options are the node's working optical cards and Internal. **Note** For Timing Mode set to External and Timing Mode set to Line, select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1. • Timing Mode set to Mixed—Both BITS and optical cards are available, allowing you to set a mixture of external BITS and optical trunk cards as timing references.
BITS-1 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.
BITS-2 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.

B.8.3.5.3 Status Tab

The Status tab displays timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.
- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-264 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.

Table B-264 Field Descriptions for the Status Tab (continued)

Field	Description
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference.
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 out timing reference.
Operations	Execute a switch on the BITS-1 out timing reference.
BITS-2 Out	
BITS-2 Out	Set the BITS-2 out timing reference.
Status	Displays the status of the BITS-2 out timing reference.
Operations	Execute a switch on the BITS-2 out timing reference.

B.8.3.5.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.9 ONS 15454 SONET NE Explorer

When you choose **Configuration > NE Explorer** for the ONS 15454 SONET, the window that Prime Optical displays consists of a tree on the left side and a node properties pane on the right. The tree provides a hierarchical view and alarm status of the NE's physical shelves and slots. The properties pane shows information about the selected entity. See B.9.1 Node Properties Pane—ONS 15454 SONET, page B-189 for more information.

Note If CTC is launched from the web browser for an ONS 15454 SONET node, the CTC GUI might look different from when it is launched from Prime Optical. This discrepancy occurs because the latest version of CTC (for NE releases supported by Prime Optical) is packaged with Prime Optical. If launched from a browser, the CTC software is retrieved from the NE itself, which might be a version different from that packaged with Prime Optical.

When an NE Explorer is in autorefresh mode, all values of an entity that is being edited by the user are automatically refreshed. You will lose all of your changes unless you click the Apply button. To enable autorefresh, click the Refresh Data button in the NE Explorer.

B.9.1 Node Properties Pane—ONS 15454 SONET

The node properties pane displays information about the ONS 15454 SONET NE. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.9.1.1 Shelf View, page B-189
- B.9.1.2 General, page B-189
- B.9.1.3 Network, page B-191
- B.9.1.4 DCC/GCC/OSC, page B-200
- B.9.1.5 Timing, page B-202
- B.9.1.6 Protection, page B-205
- B.9.1.7 Ether Bridge, page B-206
- B.9.1.8 NE Defaults, page B-207
- B.9.1.9 Security, page B-208
- B.9.1.10 Alarm, page B-212
- B.9.1.11 Alarm Conditions, page B-213
- B.9.1.12 XC Utilization, page B-215
- B.9.1.13 BLSR, page B-215
- B.9.1.14 DWDM, page B-216
- B.9.1.15 OSI, page B-226

B.9.1.1 Shelf View

The Shelf View Properties pane displays a graphic of the ONS 15454 SONET that is selected in the NE Explorer tree. Moving the mouse pointer over the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset, delete, or change a card. For unprovisioned slots, the right-click menu allows you to add a card.

B.9.1.2 General

The General Properties pane displays identification information, voltage thresholds, and multishelf configurations for the ONS 15454 SONET NE.

Table B-265 Field Descriptions for the General Properties Pane

Field	Description
Identification Tab	
NE ID	Displays the ID of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name and phone number of the node contact person.
Description	Enter a description of the NE.
System Description	Displays the NE type and the version of the system software.

Table B-265 Field Descriptions for the General Properties Pane (continued)

Field	Description
SNTP Settings	
Use NTP/SNTP Server	If checked, CTC uses an SNTP server to set the date and time of the node. Using an SNTP server ensures that all ONS 15454 network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. If you check the **Use NTP/SNTP Server** check box, enter the server's IP address in the next field. If you do not use an SNTP server, complete the Time and Time Zone fields. The ONS 15454 will use these fields for alarm dates and times.
SNTP Server	Displays the SNTP server IP address.
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.
Use Daylight Savings Time	If checked, Daylight Savings Time is observed.
AIS-V Insertion on STS-1 Signal Degrade - Path	
Insert AIS-V on STS-1 SD-P	If checked, the NE inserts an AIS-V signal when it detects an STS-1 signal degrade.
SD-P BER	Select the signal degrade path bit error rate for AIS-V insertion.
APC State	
Side	Lists all the NEs and their sides that belong to the automatic power control (APC) domain.
APC State	Displays the actual state of the APC. Values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.
Power Monitor Tab	
ELWBATVG	Allows you to set the monitor value for extreme low battery voltage (ELWBATVG) in volts direct current (VDC).
LWBATVG	Allows you to set the monitor value for low battery voltage (LWBATVG) in VDC.
HIBATVG	Allows you to set the monitor value for high battery voltage (HIBATVG) in VDC.
EHIBATVG	Allows you to set the monitor value for extreme high battery voltage (EHIBATVG) in VDC.
Current Voltage Environment	Shows the current voltage environment (48 volts for SONET; 60 volts for SDH).

Table B-265 Field Descriptions for the General Properties Pane (continued)

Field	Description
Multishelf Config Tab	
Shelf Role	Specify the configuration for multishelf NEs, where the primary NE is configured to take care of other NEs in the shelf. Select one of the following radio buttons: • Disable Multishelf • Enable as Subtended Shelf • Enable as Node Controller
Shelf ID	Unique number that identifies the shelf. Shelf ID #1 is reserved for the node controller.
LAN Config	Used to specify the LAN configuration that is used for the multishelf NE. A change in this attribute will force an automatic TCC reboot.
Voltage/Temperature Tab	
Voltage	Displays the voltage (in millivolts) of the shelf that corresponds to the power supply.
Temperature	Displays the temperature (in degrees Celsius) of the shelf.

B.9.1.3 Network

The Network Properties pane displays information about the NE network address. The Network Properties pane contains the following tabs:

B.9.1.3.1 Address Tab, page B-192
B.9.1.3.2 Static Routes Tab, page B-192
B.9.1.3.3 OSPF Tab, page B-192
B.9.1.3.4 OSPF Area Range Tab, page B-194
B.9.1.3.5 OSPF Virtual Links Tab, page B-194
B.9.1.3.6 SNMP Tab, page B-195
B.9.1.3.7 Firewall/Proxy Tab, page B-195
B.9.1.3.8 Routing Table Tab, page B-196
B.9.1.3.9 RIP Routing Table Tab, page B-196
B.9.1.3.10 RIP Tab, page B-197
B.9.1.3.11 Proxy Tunnels Tab, page B-197
B.9.1.3.12 Firewall Tunnels Tab, page B-198
B.9.1.3.13 Secure Config Mode Tab, page B-198
B.9.1.3.14 FTP Hosts Tab, page B-199

B.9.1.3.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-266 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.
MAC Address	Displays the ONS 15454 address as it is identified on the IEEE 802 MAC layer.
LCD IP Setting	Allows you to configure the LCD screen. Select from the following values: • Allow Configuration—Enables shelf address changing from the LCD. • Display Only—Prevents users from changing the shelf IP address from the LCD screen. • Suppress Display—Makes the LCD screen blank.
Forward DHCP Requests	If checked, forwards DHCP requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.
IPv6 Config	
Enable IPv6	If checked, allows you to configure the node to use the IPv6 protocol and to assign an IPv6 address to the node.
IPv6 Address	Enter the IPv6 address of the node.
Default IPv6 Router	Enter the IPv6 default router of the node.
IPv6 Subnet Mask	Enter the IPv6 subnetwork mask length.

B.9.1.3.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and ONS 15454 SONET connectivity and create or delete static routes.

Table B-267 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the ONS 15454 and the computer.

B.9.1.3.3 OSPF Tab

The OSPF tab displays OSPF information. OSPF is a link-state Internet routing protocol.

Table B-268 Field Descriptions for the OSPF Tab

Field	Description
Slot	Displays the slot number.
Port	Displays the port number.
DCC OSPF Area ID	Displays the number that identifies the ONS 15454 as a unique OSPF area. The OSPF area number can be from 0.0.0.0 to 255.255.255.255. The number must be unique to the LAN OSPF area.
SDCC Metric	Sets a cost for sending packets across the Section Data Communications Channel (SDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
LDCC Metric	Sets a cost for sending packets across the Line Data Communications Channel (LDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
OSPF on LAN	
OSPF Active on LAN	If checked, enables the ONS 15454 OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15454s that directly connect to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the ONS 15454 is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the value used for this NE in designated router election. The Cisco default value is zero (0). A router that has Router Priority set to 0 is ineligible to become a designated router on the attached network.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
OSPF Authentication	
Authentication Type	Displays Simple Password if the router where the ONS 15454 is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.9.1.3.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-269 Field Descriptions for the OSPF Area Range Tab

Field	Description
Range Address	Displays the area IP address for the ONS 15454s that reside within the OSPF area. For example, if the ONS 15454 OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the ONS 15454 NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF routing table is advertised.

B.9.1.3.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create, edit, or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-270 Field Descriptions for the OSPF Virtual Links Tab

Field	Description
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.9.1.3.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-271 Field Descriptions for the SNMP Tab

Field	Description
Allow SNMP Set	If checked, allows you to use SNMP management software with the ONS 15454 SONET.
Allow SNMP Proxy	If checked, allows you to configure the ONS 15454 SONET to proxy SNMP calls.
Use Generic MIB	If checked, allows you to transfer traps to a local MIB browser or server.
IP Address	The IP address of the NMS.
Community Name	The SNMP community name. **Note** The SNMP community string cannot be blank in Prime Optical. If a blank community string is required in CTC builds earlier than R4.6, you must set the blank community string in CTC.
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.
Relay A IP Address	The first ONS 15454 to relay traps through. The IP address is appended to the base community string to tell the first NE the IP address and the port to forward the trap to. The second NE recognizes the IP address and strips it from the community string before forwarding the trap.
Relay A Community Name	The community name for the relay A node to use in the trap when forwarding it.
Relay B IP Address	The second ONS 15454 to relay traps through.
Relay B Community Name	The community name for the relay B node to use in the trap when forwarding it.
Relay C IP Address	The third ONS 15454 to relay traps through.
Relay C Community Name	The community name for the relay C node to use in the trap when forwarding it.

B.9.1.3.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-272 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Craft Access Only	If checked, only allows CTC to access the firewall and proxy settings of the NE. Check this item only if the LAN port is used for direct workstation-to-NE connections, and not connected to a LAN. Disabling craft-only access allows the installation of a route to the LAN. Disable this only if the LAN port is actually connected to the LAN. **Note** This field applies only to ONS 15454 SONET releases earlier than R4.6.
Enable Firewall	If checked, blocks packets routed between the local area and DCC networks. This causes a loss of connectivity to DCC-only connected NEs. Prime Optical cannot reestablish the connection unless the proxy is enabled. Additionally, all NEs connected to the LAN must also have their firewall enabled, or connectivity problems will result. **Note** This field applies only to ONS 15454 SONET releases earlier than R4.6.

Table B-272 Field Descriptions for the Firewall/Proxy Tab (continued)

Field	Description
Gateway Settings	
Enable Proxy Server on Port	If checked, the ONS 15454 serves as a proxy for connections between the Prime Optical server and ONS 15454s that are DCC-connected to the proxy ONS 15454. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server port number (display-only) is shown following the Enable Proxy Server on Port field. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Configures the ONS 15454 to proxy as an ENE, meaning the NE supports craft access only, supports firewall, and acts as a proxy. Note that an alternate expansion for ENE is *external network element*. • Gateway Network Element (GNE)—Configures the ONS 15454 to proxy as a GNE, meaning the NE supports firewall and acts as a proxy. • Proxy-only—Configures the ONS 15454 to act as a proxy. If unchecked, the node does not proxy; instead, it acts as a LAN-connected NE (LNE).

B.9.1.3.8 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-273 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Usage	Shows the number of times the listed route has been used.
Interface	Shows the ONS 15454 SONET interface used to access the destination. Values are: • cpm0—The ONS 15454 Ethernet interface (that is, the RJ-45 jack on the TCC+/TCC2 and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface.

B.9.1.3.9 RIP Routing Table Tab

The RIP Routing Table tab allows you to view the RIP routing table.

Table B-274 Field Descriptions for the RIP Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.

Table B-274 Field Descriptions for the RIP Routing Table Tab (continued)

Field	Description
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Cost	Displays the hop count metric. The valid range is from 1 to 15.

B.9.1.3.10 RIP Tab

The RIP tab allows you to view and configure RIP parameters.

Note

- When you enable RIP, you must wait for approximately one minute for the default RIP address summary to become visible.
- When you disable RIP on the NE, all summary address entries in the Summary Address table are deleted.

Table B-275 Field Descriptions for the RIP Tab

Field	Description
RIP Active	Check this check box to enable RIP. Uncheck it to disable RIP. **Note** Checking the RIP Active check box and clicking the **Apply** button does not enable RIP. Instead, you must check the RIP Active check box, click the **Create** button, and use the Create RIP Address Summary dialog box to create a new RIP address. For details, see 5.3.5 Using RIP, page 5-8.
RIP Type	Select RIP version 1.0 or RIP version 2.0.
Metric	Enter the hop count metric. The valid range is from 1 to 15.
Authentication Type	Select the authentication type.
Authentication Key	Enter the authentication key (password) if the authentication type is Simple Password.
Confirm Authentication Key	Retype the authentication key to confirm it.
RIP Address Summary	• Summary Address—Displays the summary address. • Mask Length—Displays the subnet mask length. • Cost—Displays the hop count metric. The valid range is from 1 to 15.
Create button	Click **Create** to create a new RIP address. See 5.3.5 Using RIP, page 5-8.
Delete button	Click **Delete** to delete an existing RIP address.

B.9.1.3.11 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-276 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.9.1.3.12 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-277 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.9.1.3.13 Secure Config Mode Tab

The TCC2P card supports secure config mode. When the secure mode is on, the NE has two IP addresses, one for the backplane and one for the front port. The front port IP address is used by the DCC-connected NEs. The secure config mode feature applies to the ONS 15454 SONET R5.0 and later.

Note When there is no TCC2P card present, the fields in the following table cannot be configured.

The Secure Config Mode tab allows you to configure the secure config mode. The fields shown depend on whether the NE is in secure mode. For example, the Backplane Ethernet Port values are displayed only when the NE is in secure mode.

Table B-278 Field Descriptions for the Secure Config Mode Tab

Field	Description
TCP/IP Mode	
Normal	When this text is visible, the NE is not in secure mode. There is one IP address shared by TCC and backplane Ethernet ports, with full connectivity between ports.

Table B-278 Field Descriptions for the Secure Config Mode Tab (continued)

Field	Description
Secure	When this text is visible, the NE is in secure mode. There are separate IP addresses for TCC and backplane Ethernet ports, with no connectivity between ports.
Mode not locked	When this text is visible, you can change the secure mode.
Mode permanently locked and cannot be unlocked	When this text is visible, the NE is in secure mode, and the secure mode is locked and cannot be changed.
Backplane Ethernet Port	
IP Address	Displays the IP address of the NE.
Secure IP Address	Displays the backplane IP address.
Secure Subnet Mask Length	Displays the mask length of the secure IP address. Use the up or down arrows to change the mask length.
Default Router	Displays the address of the default router for this NE.
Secure MAC Address	Displays the MAC/Ethernet address for the backplane.
Secure LCD IP Setting	Displays the setting value applicable for the secure mode. Select from the following values: • Allow Configuration—Enables shelf address changing from the LCD. • Display Only—Prevents users from changing the shelf IP address from the LCD screen. • Suppress Display—Makes the LCD screen blank.
Change Mode	
Change Mode button	Opens the Change Secure Mode dialog box, which allows you to change the mode of the NE from secure to unsecure, and vice versa. This button is enabled only if an active TCC2P card exists on the NE.
Lock	
Lock button	When the NE is in secure mode, the Lock button locks the secure mode on the NE/TCC so that it cannot be changed.

B.9.1.3.14 FTP Hosts Tab

The FTP Hosts tab allows you to configure database backup or restore and software download to an ENE when the firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which the FTP relay resumes blocking all FTP access for the ENEs.

Table B-279 Field Descriptions for the FTP Hosts Tab

Field	Description
Create button	Opens the Create New FTP Host dialog box, which allows you to create up to 12 new FTP hosts in a GNE/ENE firewall environment. See 5.3.10.1 Creating an FTP Host, page 5-22. **Note** You cannot create more than 12 FTP hosts.
Delete button	Deletes the selected FTP host.
FTP Host Address	Displays the FTP host IP address.
Prefix Length	Displays the FTP host subnet mask length.

Table B-279 Field Descriptions for the FTP Hosts Tab (continued)

Field	Description
Enable FTP Relay	Indicates whether FTP relay is enabled or disabled. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Displays the number of minutes that the FTP relay is configured to run, after which the FTP relay resumes blocking all FTP access for the ENEs.

B.9.1.4 DCC/GCC/OSC

The DCC/GCC/OSC Properties pane allows you to create, delete, and view SDCCs, LDCCs, Generic Communications Channels (GCCs), Optical Service Channels (OSCs), and DWDM ring IDs.

Table B-280 Field Descriptions for the DCC/GCC/OSC Properties Pane

Field	Description
SDCC	
SDCC Terminations	Displays the slot, port, and card type of an SDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.

Table B-280 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
Service State	Select the state of the termination: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion. • UEQ—Unequipped; there is nothing in the slot. • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted. • SWDL—Software download in progress. • MT—Maintenance, as per the Admin State change. • AINS—Automatic in service. • DSBLD—Traffic is disabled on the entity. • LPBK—Port or connection has a loopback on it. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11 on page 11-15. See Table 11-11 on page 11-15 for the Service state-Secondary state possible values. **Note** If the NE release does not support the Service state, this field shows N/A.
LDCC	
LDCC Terminations	Displays the slot, port, and card type of an LDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only. For GCCs, this column is always N/A.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the LDCC termination (IS-NR, OOS-AU, OOS-MA, OOS-AUMA) plus the secondary state (MEA, UEQ, UAS, SWDL, MT, AINS, DSBLD, FLT, LPBK).
GCC	
GCC Terminations	Displays the slot, port, and card type of a GCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
GCC Rate	Displays the GCC rate.
Foreign	A check mark indicates that the far-end node is a non-ONS node.

Table B-280 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only. For GCCs, this column is always N/A.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the GCC termination (IS-NR, OOS-AU, OOS-MA, OOS-AUMA) plus the secondary state (MEA, UEQ, UAS, SWDL, MT, AINS, DSBLD, FLT, LPBK).
OSC	
OSC Terminations	Displays the slot, port, and card type of an OSC termination.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only.
OSI SNPA	If the OSC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Displays the state of the OSC termination.
DWDM Ring ID	
Ring ID	Displays the ring ID.
West Direction	Lists the OSCM or OSC-CSM port that supports the ring in the west direction. The value is N/A if there are no ports in the west direction.
East Direction	Lists the OSCM or OSC-CSM port that supports the ring in the east direction. The value is N/A if there are no ports in the east direction.
Create button	Allows you to create new terminations on SONET or SDH cards.
Edit button	Allows you to modify existing terminations on SONET or SDH cards.
Delete button	Allows you to delete the selected SDCC, LDCC, GCC, OSC, or DWDM ring ID.

B.9.1.5 Timing

The Timing Properties pane contains the following tabs:

- B.9.1.5.1 General Tab, page B-202
- B.9.1.5.2 Reference List Tab, page B-204
- B.9.1.5.3 Status Tab, page B-204
- B.9.1.5.4 Timing Report Tab, page B-205

B.9.1.5.1 General Tab

The General tab displays general timing information.

Note BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.

Table B-281 Field Descriptions for the General Tab

Field	Description
General Timing	
Timing Mode	Set to External if the ONS 15454 derives its timing from a BITS source wired to the backplane pins; set to Line if timing is derived from an OC-N card that is optically connected to the timing node. A third option, Mixed, allows you to set external and line timing references. **Caution** Mixed timing might cause timing loops. Use this mode with care.
SSM Message Set	Choose the SSM set level supported by your network. SSM is an SONET protocol that communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SONET Line layer. They enable SONET devices to automatically select the highest quality timing reference and to avoid timing loops. If a Generation 1 node receives a Generation 2 message, the message is mapped down to the next available Generation 1 node. For example, an ST3E message becomes an ST3.
Revertive	If checked, the ONS 15454 reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected. Use the Reversion Time field to specify the time in half-minute increments.
Quality of RES	If your timing source supports the reserved S1 byte, set the timing quality here. (Most timing sources do not use RES.) Qualities are displayed in descending quality order as ranges. For example, ST3 < RES < ST2 means the timing reference is higher than a Stratum 3 and lower than a Stratum 2.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.
BITS IN Facilities	
In State	Set the BITS reference to IS (In Service) or OOS (Out of Service). For nodes set to Line timing with no equipment timed through BITS Out, set the state to OOS. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to IS.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either ESF or SF (D4). SSM is not available with Super Frame.
Sync Messaging	If checked, enables the SSM for BITS In. (SSM is not available if Framing is set to Super Frame.)
Admin. SSM	If the Sync Messaging check box is not checked, you can choose the SSM Generation 2 type from the drop-down list.
BITS OUT Facilities	
Out State	Set the BITS reference to IS or OOS. For nodes set to Line timing with no equipment timed through BITS Out, set the state to OOS. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to IS.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either ESF or SF (D4). SSM is not available with Super Frame.

Table B-281 Field Descriptions for the General Tab (continued)

Field	Description
AIS Threshold	If SSM is disabled or Super Frame is used, sets the quality level where a node sends an AIS from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
LBO	If you are timing an external device connected to the BITS Out pins, set the distance between it and the ONS 15454. Options are 0-133 ft (Cisco default), 134-266 ft, 267-399 ft, 400-533 ft, and 534-655 ft.

B.9.1.5.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-282 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to the internal clock. This is the Stratum 3 clock provided on the TCC+. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal. • Timing Mode set to Line—Options are the node's working optical cards and Internal. **Note** For Timing Mode set to External and Timing Mode set to Line, select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1. • Timing Mode set to Mixed—Both BITS and optical cards are available, allowing you to set a mixture of external BITS and optical trunk cards as timing references.
BITS-1 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.
BITS-2 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.

B.9.1.5.3 Status Tab

The Status tab displays timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.

- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-283 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference.
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 out timing reference.
Operations	Execute a switch on the BITS-1 out timing reference.
BITS-2 Out	
BITS-2 Out	Set the BITS-2 out timing reference.
Status	Displays the status of the BITS-2 out timing reference.
Operations	Execute a switch on the BITS-2 out timing reference.

B.9.1.5.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

B.9.1.6 Protection

The Protection Properties pane contains the following tabs:

- B.9.1.6.1 Protection Groups Tab, page B-205
- B.9.1.6.2 Operations Tab, page B-206

B.9.1.6.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-284 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Protection Groups	Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.
Type	View the protection type (1:1 [card], 1:N [card], Y Cable [port], 1+1 [port], or 1+1 Optimized [port]) of the selected protection group.

Table B-284 Field Descriptions for the Protection Groups Tab (continued)

Field	Description
Protect Module	View the protect module if using 1:1 or 1:N protection. **Note** For OTU2_XP cards, the card name might be shown as XP_4_10G_LINE_CARD.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select the 1+1 (port) type.
Revertive	If checked, the node reverts traffic to the working card or port after failure conditions for the amount of time entered in Reversion Time. This option is not available if you select the 1:N (card) type.
Reversion Time	If Revertive is checked, choose the amount of time following failure condition correction after which the node should switch back to the working card or port. Use half-minute increments. This option is available only if you select the 1:1 (card) type.
Recovery Guard Time	The recovery guard timer prevents rapid switches due to SD or SF failures. After the SD or SF condition is cleared on a facility protected by Optimized 1+1 protection, no switches are performed for the duration of the recovery guard timer.
Verification Guard Time	The verification guard timer specifies the amount of time that a user command has to complete. If a user command cannot be completed within the duration set by the verification guard timer, the command is cleared and an APS_CLEAR event is sent.
Detection Guard Time	The detection guard timer specifies the amount of time after a failure that the system has to complete a switch. After detecting an SD, SF, LOS, LOF, or AISL failure, the detection guard timer is started. If the detection guard timer is set to zero, the system completes a switch within 60 ms for failure events.

B.9.1.6.2 Operations Tab

The Operations tab displays protection group operation information.

Table B-285 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands. **Note** For OTU2_XP cards, the card name might be shown as XP_4_10G_LINE_CARD.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock out switching, or lock on switching.

B.9.1.7 Ether Bridge

The Ether Bridge Properties pane contains the following tabs:

- B.9.1.7.1 Spanning Tree Config Tab, page B-207
- B.9.1.7.2 Spanning Tree Status Tab, page B-207

B.9.1.7.1 Spanning Tree Config Tab

The Spanning Tree Config tab displays spanning tree configuration information for the ONS 15454.

Table B-286 Field Descriptions for the Spanning Tree Config Tab

Field	Description
Index Number	Unique number that identifies the spanning tree.
Priority	Incoming traffic queue. Priority can be either high or low.
Bridge Max Age	Maximum amount of time that received-protocol information is retained before it is discarded.
Bridge Hello Time	Time interval, in seconds, between the transmission of configuration bridge protocol data units (BPDUs) by a bridge that is the spanning-tree root or is attempting to become the spanning-tree root.
Bridge Forward Delay	Time spent by a port in the listening state and the learning state.

B.9.1.7.2 Spanning Tree Status Tab

The Spanning Tree Status tab displays spanning tree status information for the ONS 15454.

Table B-287 Field Descriptions for the Spanning Tree Status Tab

Field	Description
Index Number	Unique number that identifies the spanning tree.
Bridge ID	ONS 15454 unique identifier that transmits the configuration BPDU; the bridge ID is a combination of the bridge priority and the ONS 15454 MAC address.
Topology Age	Amount of time, in seconds, since the last topology change.
Topology Changes	Number of times the spanning-tree topology has been changed since the node booted up.
Designated Root	Spanning tree's designated root for a particular spanning-tree instance.
Root Cost	Total path cost to the designated root.
Root Port	Port used to reach the root.
Max Age	Maximum amount of time that received-protocol information is retained before it is discarded.
Hello Time	Time interval, in seconds, between the transmission of configuration BPDUs by a bridge that is the spanning-tree root or is attempting to become the spanning-tree root.
Hold Time	Minimum time period, in seconds, that elapses during the transmission of configuration information on a given port.
Forward Delay	Time spent by a port in the listening state and the learning state.

B.9.1.8 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the ONS 15454 SONET NE. You can edit NE defaults for the ONS 15454 SONET R5.0 and later.

Table B-288 Field Descriptions for the NE Defaults Properties Pane

Field	Description
Parameter	Lists the default NE parameter.
Value	Shows the default parameter value, and allows you to change the default.

Table B-288 Field Descriptions for the NE Defaults Properties Pane (continued)

Field	Description
Units	Lists the unit of measure that corresponds to the default NE parameter.
Range	Lists the possible range of values for the default NE parameter. **Note** This field applies to the ONS 15454 SONET R6.0 and later.
Side Effects	Lists any side effects that could occur as a result of changing the default NE parameter. **Note** This field applies to the ONS 15454 SONET R6.0 and later.

You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.9.1.9 Security

The Security Properties pane allows you to view and edit security features for the ONS 15454 SONET NE. The Properties pane contains the following tabs:

- B.9.1.9.1 Policy Tab, page B-208
- B.9.1.9.2 Password Tab, page B-209
- B.9.1.9.3 Access Tab, page B-210
- B.9.1.9.4 RADIUS Server Tab, page B-211
- B.9.1.9.5 Legal Disclaimer Tab, page B-212

B.9.1.9.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-289 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.
SuperUser	Set the idle user timeout for a CTC SuperUser user.

Table B-289 Field Descriptions for the Policy Tab (continued)

Field	Description
User Lockout	
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Sessions per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.
Disable Inactive User	If checked, inactive users are disabled automatically. Specify the duration in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.9.1.9.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-290 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords. Default value is 45 days. Range is from 20 to 90 days.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire. Default value is 5 days. Range is from 2 to 20 days.

B.9.1.9.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-291 Field Descriptions for the Access Tab

Field	Description
Access	
LAN Access	Specify the type of LAN access allowed. Values are Backplane Only, No LAN Access, Front and Backplane, or Front Only. **Note** After the LAN access to the backplane is set, the Prime Optical client is unusable for 4 to 5 minutes.
Restore Timeout	This time period begins if *No LAN Access* is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Serial Craft Access (available for ONS 15454 SONET NEs R6.0 and later)	
Enable Craft Port	Check this check box to enable the craft port.
Shell Access	
Shell Access on	Specify shell access on Telnet or SSH.
SSH Port	Indicates the SSH port number that will be used if the SSH radio button is selected.
Telnet Port	This is enabled if you selected the Telnet radio button. Enter the Telnet port number.
Use Standard Telnet Port	If checked, the standard Telnet port is used for Telnet access.
Shell Access (available for ONS 15454 SONET NEs R6.0 and later)	
Access State	Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SSH Port	Indicates the SSH port number that will be used.
SFTP Port	Indicates the SFTP port number.
Telnet Port	This is enabled if you selected the Non-secure access state. Enter the Telnet port number that will be used.
Use Standard Telnet Port	Check this check box to indicate that the standard Telnet port will be used.
Enable Shell Password	Indicates whether or not the Shell password is enabled. **Note** You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
EMS Access (available for ONS 15454 SONET NEs R6.0 and later)	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.
CORBA Listener Port	Select the port numbers for the TCC CORBA (IIOP) listener port and the TCC CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the TCC CORBA (IIOP) listener port is 683. The port number for the TCC CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.

Table B-291 Field Descriptions for the Access Tab (continued)

Field	Description
TL1 Access (available for ONS 15454 SONET NEs R6.0 and later)	
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access (available for ONS 15454 SONET NEs R6.0 and later)	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.
Pseudo-IOS Access (available for ONS 15454 SONET R9.2)	
Access State	Pseudo CLI is a command-line interface on the NE that simulates a Cisco IOS connection. Select the pseudo-IOS access state from the drop-down list. You can select Disable, Non-secure, or Secure. If you choose Disable, the port is not configurable, which means that the node does not listen for pseudo-CLI connections. **Note** Pseudo-IOS functionality is available only if the node contains 10GE_XP or GE_XP cards in L2 mode.
Port	Enter the port number for pseudo-IOS access. If the Access State field is set to Disable, you cannot configure this field.
Other	
PM Clearing Privilege	Select the user privilege that allows clearing PM statistics for the NE.

B.9.1.9.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for the ONS 15454 SONET R6.0 and later.

Table B-292 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.

Table B-292 Field Descriptions for the RADIUS Server Tab (continued)

Field	Description
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.9.1.9.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-293 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.9.1.10 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual ONS 15454 SONET nodes. The Alarm Properties pane contains Profile and Alarm Behavior tabs.

B.9.1.10.1 Profile Tab

The Profile tab allows you to view, create, or delete alarm profiles.

Table B-294 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list. Click **Create** to create a new alarm profile for the NE. Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.9.1.10.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-295 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.9.1.11 Alarm Conditions

The Conditions Properties pane allows you to view all NE conditions (events with a Not Reported [NR] severity) at the node level. Alarm Conditions Properties pane gives a clear record of changes or events that do not result in alarms.

Note The Alarm Conditions tab is not updated when conditions change; therefore, you must click **Retrieve** to see any changes.

Table B-296 Field Descriptions for the Alarm Conditions Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Retrieve button	Click the **Retrieve** button. The Retrieve button requests the current set of fault conditions from the node, card, or network. Conditions include all fault conditions raised on the node, whether or not they are reported. The time stamp of the condition request is also reported next to the **Retrieve** button.
Perceived Severity	Perceived severity of the selected alarm (critical, major, minor, or warning). The background color also indicates the severity, where: • Red = Critical • Orange = Major • Yellow = Minor • Blue = Warning • Green = Cleared **Note** For the ONS 15530 and ONS 15540, alarms that are shown in the command-line interface (CLI) as informational are shown in Prime Optical as warnings.
Probable Cause	Probable cause of the selected alarm. Some possible values include: • Not Applicable/Unknown—If no additional information is available • Mismatch of equipment and attributes (MEA) alarm—For misconfigured pluggable port modules (PPMs) • Link Layer Keep-Alive Failure—When the keepalive frame on the POS port is disabled and the port is shut down • Bad Packet Count Exceeds Threshold—When the packets through the front port have CRC errored frames • Auto-Negotiation Remote Failure Indication—When a remote Gigabit Ethernet port is shut down from a local port
Condition	Error message or condition name that is associated with the alarm or event.
Affected Object	Name of the object where the selected alarm occurred.
Module Name	Name of the module where the selected alarm occurred.
Physical Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.
NE Alarm Time	Date and time when the alarm occurred on the NE.
Service Affecting	Whether the alarm or event is service affecting (SA). Values are: • True—The alarm is service affecting • False—The alarm is not service affecting

B.9.1.12 XC Utilization

The XC Utilization Properties pane allows you to view a summary of the percentage of XTC cross-connect resources used by circuits that traverse or terminate at an ONS 15454 SONET.

Table B-297 Field Descriptions for the XC Utilization Properties Pane

Field	Description
VT Payload Type	Indicates the payload type of the cross-connect card in the NE. This field is not editable unless the NE contains an XCVXC card. If the NE contains an XCVXC card, you can specify the VT payload type as VT1.5, VT2, or mixed mode (a combination of VT1.5 and VT2).
Summary	
STS-1 Matrix	Provides the percentage of the XC cross-connect STS-1 paths resources that are used.
VT2 Matrix Ports	Provides the percentage of the XTC cross-connect VT2 matrix ports that are used, and the total number of ports available.
VT2 Matrix	Provides the percentage of the VT2 matrix resources that are used, and the total number of resources available.
VT1.5 Matrix Ports	Provides the percentage of the XTC cross-connect VT1.5 matrix ports that are used, and the total number of ports available.
VT1.5 Matrix	Provides the percentage of the V1.5 matrix resources that are used, and the total number of resources available.

B.9.1.13 BLSR

The BLSR Properties pane allows you to view BLSR information and create or delete BLSRs.

Table B-298 Field Descriptions for the BLSR Properties Pane

Field	Description
Fiber Type	Indicates whether the fiber type is 2-fiber or 4-fiber.
Rate	Select the BLSR rate.
Ring Name	Assign a six-digit alphanumeric ring name. Nodes in the same BLSR must have the same ring name.
Node ID	Assign a node ID. The node ID identifies the node to the BLSR. Nodes in the same BLSR must have unique node IDs.
Ring Reversion	Set the amount of time that will pass before the traffic reverts to the original working path. The Cisco default is 5 minutes. All nodes in a BLSR ring should have the same ring reversion setting, particularly if *never* (nonrevertive) is selected.
Span Reversion	Set the amount of time to pass before the span reverts to the working path.
East Line	Assign the east BLSR port.
East Switch	Displays a list of switch commands for the east port.
West Line	Assign the west BLSR port.
West Switch	Displays a list of switch commands for the west port.
East Protect	For 4-fiber BLSRs, assign the east BLSR protect port.
West Protect	For 4-fiber BLSRs, assign the west BLSR protect port.

B.9.1.14 DWDM

The DWDM Properties pane allows you to manage and provision DWDM connections. The DWDM Properties pane contains the following tabs:

- B.9.1.14.1 Provisioning Tab, page B-216
- B.9.1.14.2 Connections Tab, page B-218
- B.9.1.14.3 Port Status Tab, page B-218
- B.9.1.14.4 Span Check Tab, page B-219
- B.9.1.14.5 APC Tab, page B-219
- B.9.1.14.6 Side Power Monitoring Tab, page B-220
- B.9.1.14.7 Node Setup Tab, page B-221
- B.9.1.14.8 Side Tab, page B-222
- B.9.1.14.9 All Facilities Tab, page B-222
- B.9.1.14.10 Passive Cards Tab, page B-222
- B.9.1.14.11 Alien Wavelength Tab, page B-223
- B.9.1.14.12 Fiber Attribute Tab, page B-223

B.9.1.14.1 Provisioning Tab

The Provisioning tab allows you to view, export, and import a Cisco MetroPlanner configuration file into the DWDM node to configure the node automatically for ONS 15454 SONET NEs R6.*x* and earlier. It also allows you to provision card and ANS parameters using the Automatic Node Setup wizard for ONS 15454 SONET NEs R7.0 and later. See 7.12.11 Configuring Automatic Node Setup, page 7-340 for more information.

Table B-299 Field Descriptions for the Provisioning Tab

Field	Description
Attribute Name	Displays the Properties pane name that is imported from or exported to the Cisco MetroPlanner configuration file.
Value	Displays the default value of the corresponding Properties pane name imported from or exported to the Cisco MetroPlanner configuration file.

Table B-299 Field Descriptions for the Provisioning Tab (continued)

Field	Description
Origin (*Available in ONS 15454 SONET R8.0 and later*)	Shows how the parameter is set. Possible values are: • Default • Automatic • Provisioned • Imported
Note (*Available in ONS 15454 SONET R8.0 and later*)	Displays error details if ANS fails to set the parameter. Possible errors are: • Error during NE board navigation; value is not calculated • Cannot send the parameter request to far-end node; value is not calculated • No response from far-end node; value is not calculated • Configuration is not supported; value is not calculated • Far-end node configuration is not supported; value is not calculated • OSC far-end launch power is not available; value is not calculated • Far-end launch power is not available; value is not calculated • Span loss value is not available; value is not calculated • Fiber stage insertion loss is not available; value is not calculated • Preamplifier tilt is not available; value is not calculated • Add/drop output power is not available; value is not calculated • NE node launch power is not available; value is not calculated • WXC degree is not available; value is not calculated • Value is out of range • Read-only attribute; value is not calculated

B.9.1.14.2 Connections Tab

The Connections tab allows you to create or delete DWDM connections or internal patchcords. It also allows you to calculate DWDM connections.

Table B-300 Field Descriptions for the Connections Tab

Field	Description
Create button	Create a DWDM connection or an internal patchcord. See 7.12.1 Calculating DWDM Connections—ONS 15454 SONET and ONS 15454 SDH R7.2 and Earlier, page 7-331 or 7.12.4 Creating Internal Patchcords—ONS 15454 SONET and ONS 15454 SDH R8.0 and Later, page 7-332 for more information.
Delete button	Delete a DWDM connection or an internal patchcord. See 7.12.5 Deleting DWDM Connections or Internal Patchcords, page 7-334 for more information.
Calculate Connections button	Verify if the DWDM connection matches the connections on the DWDM design plan. See 7.12.1 Calculating DWDM Connections—ONS 15454 SONET and ONS 15454 SDH R7.2 and Earlier, page 7-331 for more information. It also automatically creates an internal patchcord based on the card provisioned on the node. See 7.12.2 Calculating Internal Patchcord Connections—ONS 15454 SONET and ONS 15454 SDH R8.0 and R9.0, page 7-331 for more information.
ONS 15454 SONET R7.2 and Earlier	
Slot-From	The slot from which the DWDM connection originates.
Unit-From	The unit from which the DWDM connection originates.
Port-From	The port from which the DWDM connection originates.
Slot-To	The slot at which the DWDM connection terminates.
Unit-To	The unit at which the DWDM connection terminates.
Port-To	The port at which the DWDM connection terminates.
State	The state of the DWDM connection.
ONS 15454 SONET R8.0 and Later	
From	The unit or port from which the internal patchcord originates.
To	The unit or port at which the internal patchcord terminates.
Wavelength	Shows the wavelength value if the internal patchcord is between two channel ports. Otherwise, it shows *N/A*.

B.9.1.14.3 Port Status Tab

The Port Status tab allows you to view port status and launch automatic node setup (ANS) for the selected port. Click the **Update** button to view the port status of all newly added cards.

This tab applies only to NE releases earlier than NE release 9.2.

Table B-301 Field Descriptions for the Port Status Tab

Field	Description
Launch ANS button	Launches the ANS function for the selected port. ANS adjusts the variable optical attenuators (VOAs) on the different channel paths to equalize the amplifier per-channel input power.
Slot ID (*available in CTM R7.2 and earlier*)	Lists the ONS node slot where the DWDM card is installed.
Card (*available in CTM R7.2 and earlier*)	Describes the card that is installed in the slot.
Port	Displays the card port.
Link Status	Displays the status of the link. Values are: • Success - Changed—The calculated setpoint was changed. • Success - Unchanged—The calculated setpoint was not changed. • Fail - Out of Range—The calculated setpoint is outside the range for that parameter. • Fail - Port in IS State—The setpoint cannot be applied because the port has an IS-NR service state. • Not Applicable—The setpoint does not apply to the node.
Parameter	The parameter name.

B.9.1.14.4 Span Check Tab

The Span Check tab allows you to check the span loss between the selected node and the previous node in the chain. The span check is always in reception.

Note If the Measured Span Loss value crosses the Min or Max Expected Span Loss threshold, a condition is raised.

Table B-302 Field Descriptions for the Span Check Tab

Field	Description
Retrieve Span Loss Values button	Runs the span loss verification function and retrieves values for the Measure Span Loss column.
Side	Specifies the side for which span loss information is displayed (east-to-west or west-to-east).
Min Exp. Span Loss	Specifies the minimum expected span loss (in dBm) for the incoming span. This value is imported from MetroPlanner, but can be modified manually.
Max Exp. Span Loss	Specifies the maximum expected span loss (in dBm) for the incoming span.
Meas. Span Loss	The measured span loss value.
Resolution	The resolution or accuracy of the span loss measurement.

B.9.1.14.5 APC Tab

The APC tab allows you to manually run the automatic power control (APC) function, disable and enable APC, and view the date and time the power control setpoint was last checked and modified.

Table B-303 Field Descriptions for the APC Tab

Field	Description
Disable APC button (*available in CTM R7.2 and earlier*)	Disables the automatic power control function. **Caution** Disabling APC should be performed only for specific maintenance actions. When APC is disabled, aging compensation calculations are not performed and circuits cannot be activated.
Run APC button (*available in CTM R7.2 and earlier*)	Runs the automatic power control function manually.
Slot ID (*available in CTM R7.2 and earlier*)	Slot number for power control information and actions.
Card (*available in CTM R7.2 and earlier*)	Card type that is installed in the slot.
Port	Port number.
Last Modification	Date and time the power control setpoint was last modified.
Param (*available in CTM R8.0 and later*)	All the APC parameters associated with the ports.
Last Check	Date and time the power control setpoint was last verified.
Side (*available in CTM R8.0 and later*)	Lists all the NEs and their sides that belong to the APC domain.
APC State (*available in CTM R8.0 and later*)	Displays the actual state of the APC. Values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.

B.9.1.14.6 Side Power Monitoring Tab

The Side Power Monitoring tab allows you to view bar charts of the input and output spectrum on each optical side of the node.

When you place the mouse over each wavelength in the bar chart, the power level and wavelength type are displayed. This feature is available on nodes that are installed with cards with Optical Channel Monitoring (OCM) capability.

Table B-304 Field Descriptions for the Side Power Monitoring Tab

Field	Descriptions
Bar Chart	Displays power monitoring information. The Side Power Monitoring panel is divided into Optical Side X subtabs, where X is the optical side. The number of subtabs is equal to the number of optical sides in the node. Each subtab displays two bar graphs. The IN bar graph displays the optical spectrum at the input port (LINE-RX) of the side in the direction from the fiber to the node provided the OCM functionality is available on this port else the graph displays the aggregate signal spectral distribution on the first port in the signal flow (indicated in the title of the bar chart) that is downstream of the LINE-RX port where an OCM measurement is available (For example, in node using a booster and SMR card, the measurement is done on the EXP port of the SMR card). The OUT bar graph displays the optical spectrum at the output port (LINE-TX) of the side in the direction from the node to the fiber provided the OCM functionality is available on this port else the graph displays the aggregate signal spectral distribution on the first port (indicated in the title of the bar chart) that is upstream of the LINE-TX port where an OCM measurement is available. **Note** Depending on the side layout, the LINE-TX port (output) and the LINE-RX port (input) of the card facing the fiber cannot measure the optical spectrum in a reliable manner if the OCM functionality is not available on these ports. When you place the mouse over each wavelength in the bar chart, the power level and the wavelength type (local ADD/DROP or EXPRESS) are displayed as a tooltip. • IN graph: The tooltip displays the destination side of each wavelength. The wavelength is either dropped locally or expressed to another side. • OUT graph: The tooltip displays the source side of each wavelength. The wavelength is either added locally or expressed from another side.
Tooltip Data	You can select or deselect the tooltip check boxes and the corresponding information is displayed in the tooltip. The tooltip check boxes control the tooltip information for both charts in this tab. Each Optical Side X subtab has these check boxes to control the chart tooltip for its own subtab. The options are: • Power • Lambda • Side • Channel

B.9.1.14.7 Node Setup Tab

The Node Setup tab allows you to automatically preprovision NEs from a selected XML configuration file.

Table B-305 Field Descriptions for the Node Setup Tab

Field	Description
XML Settings	
Select XML File	Click **Browse** to select an XML file (generated by the MetroPlanner application). Prime Optical parses the XML file selected by the operator and checks the accuracy of its content.

Table B-305 Field Descriptions for the Node Setup Tab (continued)

Field	Description
Log Settings	
Select Log File	Click **Browse** to select a log file to which the results of the operations you perform will be saved.
Launch ANS Wizard button	Click the **Launch Wizard** button to launch the Automatic Node Setup wizard. See 7.12.11 Configuring Automatic Node Setup, page 7-340 for more information.

B.9.1.14.8 Side Tab

The Side tab allows you to view, edit, and delete sides defined for an ONS 15454 SONET NE.

Table B-306 Field Descriptions for the Side Tab

Field	Description
Create button	Allows you to create side objects for the NE.
Modify button	Allows you to modify the side ID of an existing side object.
Delete button	Allows you to delete side objects.
Side	Displays the NE's side ID.
Line In	Displays the index of the receive side of the OTS port.
Line Out	Displays the index of the transmit side of the OTS port.

B.9.1.14.9 All Facilities Tab

The All Facilities tab allows you to view the DWDM and optical ports for the ONS 15454 SONET NE.

Table B-307 Field Descriptions for the All Facilities Tab

Field	Description
Port	Displays the card port number, shelf ID, and slot number. **Note** Shelf ID is not included in the port number if the node is not a multishelf NE.
Power	Displays the current power for the port.
State	Displays the administrative state of the port.
Service State	Displays the service state of the port.
Keep Selected button	Displays only the ports that you selected.
Load button	Retrieves and displays all the optical and DWDM ports for the NE.

B.9.1.14.10 Passive Cards Tab

The Passive Cards tab allows you to view information about passive units provisioned in CTC.

Note Passive units can be provisioned in CTC only.

Table B-308 Field Descriptions for the Passive Cards Tab

Field	Description
Passive Cards	
ID	Displays the passive card shelf ID.
Equipment Name	Displays the general card type/name.
Location	Displays the location of the passive card.
Description	Displays the passive card description.
Optical Ports	
Port	Displays the port number.
Type	Displays the port type.
MPO	Displays any physical multifiber push connectors.
Wavelength	Displays the port wavelength.

B.9.1.14.11 Alien Wavelength Tab

The Alien Wavelength tab allows you to view and edit the port and wavelength parameters defined for an ONS 15454 SONET NE. Click the **Refresh** button to refresh the Alien Wavelength table.

Note Alien Wavelength is applicable to ONS 15454 NEs that support WSON nodes.

Table B-309 Field Descriptions for the Alien Wavelength Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Create button	Allows you to create alien wavelengths for the NE. See 7.12.15 Creating Alien Wavelength for more information.
Edit button	Allows you to modify the existing alien wavelength value. See 7.12.16 Editing Alien Wavelength for more information.
Position	Displays information about the shelf, slot, and port on which the alien wavelength is configured.
Alien Wavelength	Displays the alien wavelength class.
Lambda	Displays the alien wavelength value.
FEC	Displays the FEC mode.

B.9.1.14.12 Fiber Attribute Tab

The Fiber Attribute tab allows you to view the fiber parameters defined for an ONS 15454 SONET NE.

Note Fiber Attribute is applicable to ONS 15454 NEs that support WSON node.

Table B-310 Field Descriptions for the Fiber Attribute Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Toggle button	Click the **Toggle** button to select the unit of measure.
Optical Side	Displays the name of the optical side to which the fiber is connected.
Fiber Type	Choose the fiber type from the drop-down list.
Fiber Number	Displays the number of the fiber associated to the optical side. Useful when different types of fiber are present on the span.
Fiber Length	Allows you to edit the fiber length.

B.9.1.14.13 WSON Tab

The WSON tab allows you to view and acknowledge the unverified alarms at the circuit level.

Table B-311 Field Descriptions for the WSON Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Acknowledge WSON Alarm button	Click the **Acknowledge WSON Alarm** button to acknowledge a WSON alarm.
Affected Circuits button	Click the **Affected Circuits** button to view the affected circuits. If there are circuits affected by the selected alarm, the new circuit report is displayed. See 7.2.2 Viewing the Circuit Table for more information. **Note** The Affected Circuits button is enabled only when an alarm condition is selected.
ID	Displays the ID of the NE from the Domain Explorer.
PS	Perceived severity of the selected alarm (critical, major, minor, or warning). The background color also indicates the severity, where: • Red = Critical • Orange = Major • Yellow = Minor • Blue = Warning • Green = Cleared **Note** For the ONS 15530 and ONS 15540, alarms that are shown in the command-line interface (CLI) as informational are shown in Prime Optical as warnings.

Table B-311 Field Descriptions for the WSON Tab (continued)

Field	Description
Probable Cause	Probable cause of the selected alarm. Some possible values include: • Not Applicable/Unknown—If no additional information is available • Mismatch of equipment and attributes (MEA) alarm—For misconfigured pluggable port modules (PPMs) • Link Layer Keep-Alive Failure—When the keepalive frame on the POS port is disabled and the port is shut down • Bad Packet Count Exceeds Threshold—When the packets through the front port have CRC errored frames • Auto-Negotiation Remote Failure Indication—When a remote Gigabit Ethernet port is shut down from a local port
Condition	Error message or condition name that is associated with the alarm or event.
Affected Object	Name of the object where the selected alarm occurred.
Module Name	Name of the module where the selected alarm occurred.
Physical Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.
NE Alarm Time	Date and time when the alarm occurred on the NE.
SA	Whether the alarm or event is service affecting (SA). Values are: • Yes—The alarm is service affecting • No—The alarm is not service affecting • N/A—No information is provided by the NE

B.9.1.14.14 WSON Tab

The WSON tab allows you to view and acknowledge the unverified alarms at the circuit level.

Table B-312 Field Descriptions for the WSON Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Acknowledge WSON Alarm button	Click the **Acknowledge WSON Alarm** button to acknowledge a WSON alarm.
Affected Circuits button	Click the **Affected Circuits** button to view the affected circuits. If there are circuits affected by the selected alarm, the new circuit report is displayed. See 7.2.28.2 Working with Circuit Reports for more information. **Note** The Affected Circuits button is enabled only when an alarm condition is selected.
ID	Displays the ID of the NE from the Domain Explorer.

Table B-312 Field Descriptions for the WSON Tab (continued)

Field	Description
PS	Perceived severity of the selected alarm (critical, major, minor, or warning). The background color also indicates the severity, where: • Red = Critical • Orange = Major • Yellow = Minor • Blue = Warning • Green = Cleared **Note** For the ONS 15530 and ONS 15540, alarms that are shown in the command-line interface (CLI) as informational are shown in Prime Optical as warnings.
Probable Cause	Probable cause of the selected alarm. Some possible values include: • Not Applicable/Unknown—If no additional information is available • Mismatch of equipment and attributes (MEA) alarm—For misconfigured pluggable port modules (PPMs) • Link Layer Keep-Alive Failure—When the keepalive frame on the POS port is disabled and the port is shut down • Bad Packet Count Exceeds Threshold—When the packets through the front port have CRC errored frames • Auto-Negotiation Remote Failure Indication—When a remote Gigabit Ethernet port is shut down from a local port
Condition	Error message or condition name that is associated with the alarm or event.
Affected Object	Name of the object where the selected alarm occurred.
Module Name	Name of the module where the selected alarm occurred.
Physical Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.
NE Alarm Time	Date and time when the alarm occurred on the NE.
SA	Whether the alarm or event is service affecting (SA). Values are: • Yes—The alarm is service affecting • No—The alarm is not service affecting • N/A—No information is provided by the NE

B.9.1.15 OSI

The OSI Properties pane allows you to provision ONS 15454 SONET Open System Interconnection (OSI) parameters. The Properties pane contains the following tabs:

- B.9.1.15.1 Main Setup Tab, page B-227
- B.9.1.15.2 TARP-Config Tab, page B-227
- B.9.1.15.3 TARP-TDC Tab, page B-229
- B.9.1.15.4 TARP-MAT Tab, page B-229
- B.9.1.15.5 Routers-Setup Tab, page B-230

- B.9.1.15.6 Subnets Tab, page B-230
- B.9.1.15.7 Tunnels Tab, page B-231
- B.9.1.15.8 IS-IS RIB Tab, page B-232
- B.9.1.15.9 ES-IS RIB Tab, page B-232

B.9.1.15.1 Main Setup Tab

The Main Setup tab allows you to view and provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-313 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI end system (ES). ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1	Provisions the node as an OSI intermediate system (IS). The ONS 15454 SONET performs all IS functions including routing data between ISs and ESs, between networks, and between parts of a network. ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs. For the ONS 15454 SONET, Intermediate System Level 1 is the Cisco default.
Intermediate System Level 1/Level 2	The ONS 15454 SONET performs all IS functions. It communicates with other IS and ES nodes within an OSI area and broadcasts ISHs to IS nodes in other areas to which it is connected.
Node Routing Mode	
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.9.1.15.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-314 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial ONS 15454 SONET startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.
Timers	
LDB Entry	Sets the TARP LDB timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.

Table B-314 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.9.1.15.3 TARP-TDC Tab

Table B-315 Field Descriptions for the TARP-TDC Tab

Field	Description
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.
Type	Indicates how the TARP data cache entry was created. It can be either: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Selected Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.

B.9.1.15.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-316 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.

Table B-316 Field Descriptions for the TARP-MAT Tab (continued)

Field	Description
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.9.1.15.5 Routers-Setup Tab

The Routers-Setup tab allows you to view and manage OSI virtual routers.

Table B-317 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. The ONS 15454 SONET provides three virtual routers, numbered 1 through 3.
System ID	Displays the NSAP system ID of the virtual router. The NSAP system identifier is set to the node's first IEEE 802.3 MAC address + *n*, where *n* = 0 through 2. For the primary router (Router 1), *n* = 0.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Edit button	Click **Edit** to modify the address parameters.

B.9.1.15.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-318 Field Descriptions for the Subnets Tab

Field	Description
Slot/Port	The subnet slot and port.
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets

Table B-318 Field Descriptions for the Subnets Tab (continued)

Field	Description
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64. For the ONS 15454 LAN subnet, the default DIS priority is 63. This priority should not be changed.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.
Edit button	Click **Edit** to modify the subnet parameters.
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.

B.9.1.15.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-319 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.9.1.15.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-320 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the OSI router number. The ONS 15454 SONET provides three virtual routers, numbered 1 through 3.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.9.1.15.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-321 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the OSI router number. The ONS 15454 SONET provides three virtual routers, numbered 1 through 3.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.10 ONS 15454 SDH NE Explorer

When you choose **Configuration > NE Explorer** for the ONS 15454 SDH, the window that Prime Optical displays consists of a tree on the left side and a properties pane on the right. The tree provides a hierarchical view and alarm status of the NE's physical shelves and slots. The properties pane shows information about the selected entity. See B.10.1 Node Properties Pane—ONS 15454 SDH, page B-233 for more information.

Note If CTC is launched from the web browser for an ONS 15454 SDH node, the CTC GUI might look different from when it is launched from Prime Optical. This discrepancy occurs because the latest version of CTC (for NE releases supported by Prime Optical) is packaged with Prime Optical. If launched from a browser, the CTC software is retrieved from the NE itself, which might be a version different from that packaged with Prime Optical.

When an NE Explorer is in autorefresh mode, all values of an entity that is being edited by the user are automatically refreshed. You will lose all of your changes unless you click the Apply button. To enable autorefresh, click the Refresh Data button in the NE Explorer.

B.10.1 Node Properties Pane—ONS 15454 SDH

The node properties pane displays information about the ONS 15454 SDH NE. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.10.1.1 Shelf View, page B-233
- B.10.1.2 General, page B-234
- B.10.1.3 Network, page B-235
- B.10.1.4 DCC/GCC/OSC, page B-244
- B.10.1.5 Timing, page B-251
- B.10.1.6 Protection, page B-254
- B.10.1.7 Ether Bridge, page B-255
- B.10.1.8 NE Defaults, page B-256
- B.10.1.9 Security, page B-257
- B.10.1.10 Alarm, page B-261
- B.10.1.11 Alarm Conditions, page B-262
- B.10.1.12 XC Utilization, page B-264
- B.10.1.13 MS-SPRing, page B-264
- B.10.1.14 DWDM, page B-265
- B.10.1.15 OSI, page B-274

Note When the NE Explorer is in autorefresh mode, any updates made to an entity or object (port, line, card, protection group, DCC, MS-SPRing, and so on) will refresh all the values of that entity even if you are currently editing the values. You will lose your changes on that entity.

B.10.1.1 Shelf View

The Shelf View Properties pane displays a graphic of the ONS 15454 SDH that is selected in the NE Explorer tree. Moving the mouse pointer over the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset, delete, or change the card. For unprovisioned slots, the right-click menu allows you to add a card.

B.10.1.2 General

The General Properties pane displays identification information, voltage thresholds, and multishelf configurations for the ONS 15454 SDH NE.

Table B-322 Field Descriptions for the General Properties Pane

Field	Description
Identification Tab	
NE ID	Displays the ID of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name of the node contact person and the phone number.
Description	Enter a description of the NE.
System Description	Displays the NE type and the version of the system software.
SNTP Settings	
Use NTP/SNTP Server	If checked, CTC uses an SNTP server to set the date and time of the node. Using an SNTP server ensures that all ONS 15454 SDH network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. If you check the **Use NTP/SNTP Server** check box, enter the server's IP address in the next field. If you do not use an SNTP server, complete the Time and Time Zone fields. The ONS 15454 SDH will use these fields for alarm dates and times.
SNTP Server	Displays the SNTP server IP address.
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.
Use Daylight Savings Time	If checked, Daylight Savings Time is observed.
APC State	
Side	Lists all the NEs and their sides that belong to the automatic power control (APC) domain.
APC State	Displays the actual state of the APC. Values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.
Power Monitor Tab	

Table B-322 Field Descriptions for the General Properties Pane (continued)

Field	Description
ELWBATVG	Allows you to set the monitor value for extreme low battery voltage (ELWBATVG) in volts direct current (VDC).
EHIBATVG	Allows you to set the monitor value for extreme high battery voltage (EHIBATVG) in VDC.
Current Voltage Environment	Shows the current voltage environment.
Multishelf Config Tab	
Shelf Role	Specify the configuration for multishelf NEs, where the primary NE is configured to take care of other NEs in the shelf. Select one of the following radio buttons: • Disable Multishelf • Enable as Subtended Shelf • Enable as Node Controller
Shelf ID	Unique number that identifies the shelf. Shelf ID #1 is reserved for the node controller.
LAN Config	Used to specify the LAN configuration that is used for the multishelf NE. A change in this attribute will force an automatic TCC reboot.
Voltage/Temperature Tab	
Voltage	Displays the voltage (in millivolts) of the shelf that corresponds to the power supply.
Temperature	Displays the temperature (in degrees Celsius) of the shelf.

B.10.1.3 Network

The Network Properties pane displays information about the NE network address. The Properties pane contains the following tabs:

- B.10.1.3.1 Address Tab, page B-236
- B.10.1.3.2 Static Routes Tab, page B-236
- B.10.1.3.3 OSPF Tab, page B-237
- B.10.1.3.4 OSPF Area Range Tab, page B-238
- B.10.1.3.5 OSPF Virtual Links Tab, page B-238
- B.10.1.3.6 SNMP Tab, page B-239
- B.10.1.3.7 Firewall/Proxy Tab, page B-240
- B.10.1.3.8 Routing Table Tab, page B-240
- B.10.1.3.9 RIP Routing Table Tab, page B-240
- B.10.1.3.10 RIP Tab, page B-241
- B.10.1.3.11 Proxy Tunnels Tab, page B-241
- B.10.1.3.12 Firewall Tunnels Tab, page B-242
- B.10.1.3.13 Secure Config Mode Tab, page B-242
- B.10.1.3.14 FTP Hosts Tab, page B-243

B.10.1.3.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-323 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.
MAC Address	Displays the ONS 15454 SDH address as it is identified on the IEEE 802 MAC layer.
LCD IP Setting	Allows you to configure the LCD screen. Select from the following values: • Allow Configuration—Enables shelf address changing from the LCD. • Display Only—Prevents users from changing the shelf IP address from the LCD screen. • Suppress Display—Makes the LCD screen blank.
Forward DHCP Requests	If checked, forwards DHCP requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.
IPv6 Config	
Enable IPv6	If checked, allows you to configure the node to use the IPv6 protocol and to assign an IPv6 address to the node.
IPv6 Address	Enter the IPv6 address of the node.
Default IPv6 Router	Enter the IPv6 default router of the node.
IPv6 Subnet Mask	Enter the IPv6 subnetwork mask length.

B.10.1.3.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and ONS 15454 SDH connectivity and create or delete static routes.

Table B-324 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the ONS 15454 SDH and the computer.

B.10.1.3.3 OSPF Tab

The OSPF tab displays OSPF information. OSPF is a link-state Internet routing protocol.

Table B-325 Field Descriptions for the OSPF Tab

Field	Description
Slot	Displays the slot number.
Port	Displays the port number.
DCC OSPF Area ID	Displays the number that identifies the ONS 15454 SDH NE as a unique OSPF area. The OSPF area number can be an integer from 0 to 4294967295, and it can take a form similar to an IP address. The number must be unique to the LAN OSPF area.
RS-DCC Metric	Sets a cost for sending packets across the RS-DCC, which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
MS-DCC Metric	Sets a cost for sending packets across the MS-DCC, which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
OSPF on LAN	
OSPF Active on LAN	If checked, enables the ONS 15454 SDH OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15454 SDH NEs that directly connect to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the ONS 15454 SDH is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the value used for this NE in designated router election. The Cisco default value is zero (0). A router that has Router Priority set to 0 is ineligible to become a designated router on the attached network.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
OSPF Authentication	
Authentication Type	Displays Simple Password if the router where the ONS 15454 SDH is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.10.1.3.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-326 Field Descriptions for the OSPF Area Range Tab

Field	Description
Range Address	Displays the area IP address for the ONS 15454 SDH NEs that reside within the OSPF area. For example, if the ONS 15454 SDH OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the ONS 15454 SDH NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF routing table is advertised.

B.10.1.3.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-327 Field Descriptions for the OSPF Virtual Links Tab

Field	Description
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.10.1.3.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-328 Field Descriptions for the SNMP Tab

Field	Description
Allow SNMP Set	If checked, allows you to use SNMP management software with the ONS 15454 SDH.
Allow SNMP Proxy	If checked, allows you to configure the ONS 15454 SDH to proxy SNMP calls.
Use Generic MIB	All enterprise-specific SNMP traps are defined twice in the MIBs, once in CERENT-454-MIB and then again in CERENT-GENERIC-MIB. The ONS 15454 SDH uses SNMP trap definitions from CERENT-454-MIB and does not use the CERENT-GENERIC-MIB. Other ONS nodes use SNMP trap definitions from CERENT-GENERIC-MIB and do not use the CERENT-454-MIB. When you check the Use Generic MIB check box on an ONS 15454 SDH, the node starts using SNMP trap definitions from CERENT-GENERIC-MIB instead of the SNMP trap definitions specified by the CERENT-454-MIB to prepare and send SNMP traps.
IP Address	The IP address of the NMS.
Community Name	The SNMP community name.
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.
Relay A IP Address	The first ONS 15454 SDH to relay traps through. The IP address is appended to the base community string to tell the first NE the IP address and the port to forward the trap to. The second NE recognizes the IP address and strips it from the community string before forwarding the trap.
Relay A Community Name	The community name for the relay A node to use in the trap when forwarding it.
Relay B IP Address	The second ONS 15454 SDH to relay traps through.
Relay B Community Name	The community name for the relay B node to use in the trap when forwarding it.
Relay C IP Address	The third ONS 15454 SDH to relay traps through.
Relay C Community Name	The community name for the relay C node to use in the trap when forwarding it.

B.10.1.3.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-329 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Gateway Settings	
Enable Proxy Server on Port	If checked, the ONS 15454 SDH serves as a proxy for connections between the Prime Optical server and ONS 15454 SDHs that are DCC-connected to the proxy ONS 15454 SDH. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Configures the ONS 15454 SDH to proxy as an ENE. Note that an alternate expansion for ENE is *external network element*. • Gateway Network Element (GNE)—Configures the ONS 15454 SDH to proxy as a GNE. • Proxy-only—Configures the ONS 15454 SDH to act as a proxy. If unchecked, the node does not proxy; instead, it acts as a LAN-connected NE (LNE).

B.10.1.3.8 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-330 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Usage	Shows the number of times the listed route has been used.
Interface	Shows the ONS 15454 SDH interface used to access the destination. Values are: • cpm0—The ONS 15454 SDH Ethernet interface (that is, the RJ-45 jack on the TCC+/TCC2 and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface.

B.10.1.3.9 RIP Routing Table Tab

The RIP Routing Table tab allows you to view the Routing Information Protocol (RIP) routing table.

Table B-331 Field Descriptions for the RIP Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.

Table B-331 Field Descriptions for the RIP Routing Table Tab (continued)

Field	Description
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Cost	Displays the hop count metric. The valid range is from 1 to 15.

B.10.1.3.10 RIP Tab

The RIP tab allows you to view and configure the RIP parameters.

Note

- When you enable RIP, you must wait for approximately one minute for the default RIP address summary to become visible.
- When you disable RIP on the NE, all summary address entries in the Summary Address table are deleted.

Table B-332 Field Descriptions for the RIP Tab

Field	Description
RIP Active	Check this check box to enable RIP. Uncheck it to disable RIP. **Note** Checking the RIP Active check box and clicking the **Apply** button does not enable RIP. Instead, you must check the RIP Active check box, click the **Create** button, and use the Create RIP Address Summary dialog box to create a new RIP address. For details, see 5.3.5 Using RIP, page 5-8.
RIP Type	Select RIP version 1.0 or RIP version 2.0.
Metric	Enter the hop count metric. The valid range is from 1 to 15.
Authentication Type	Select the authentication type.
Authentication Key	Enter the authentication key (password) if the authentication type is Simple Password.
Confirm Authentication Key	Retype the authentication key to confirm it.
RIP Address Summary	• Summary Address—Displays the summary address. • Mask Length—Displays the subnet mask length. • Cost—Displays the hop count metric. The valid range is from 1 to 15.
Create button	Click **Create** to create a new RIP address. See 5.3.5 Using RIP, page 5-8.
Delete button	Click **Delete** to delete an existing RIP address.

B.10.1.3.11 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-333 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.10.1.3.12 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-334 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.10.1.3.13 Secure Config Mode Tab

The TCC2P card supports secure config mode. When the secure mode is on, the NE has two IP addresses, one for the backplane and one for the front port. The front port IP address is used by the DCC-connected NEs. The secure config mode feature applies to the ONS 15454 SDH R5.0 and later.

Note When there is no TCC2P card present, the fields in the following table cannot be configured.

The Secure Config Mode tab allows you to configure the secure config mode. The fields shown depend on whether the NE is in secure mode. For example, the Backplane Ethernet Port values are displayed only when the NE is in secure mode.

Table B-335 Field Descriptions for the Secure Config Mode Tab

Field	Description
TCP/IP Mode	
Normal	When this text is visible, the NE is not in secure mode. There is one IP address shared by TCC and backplane Ethernet ports, with full connectivity between ports.

Table B-335 Field Descriptions for the Secure Config Mode Tab (continued)

Field	Description
Secure	When this text is visible, the NE is in secure mode. There are separate IP addresses for TCC and backplane Ethernet ports, with no connectivity between ports.
Mode not locked	When this text is visible, you can change the secure mode.
Mode permanently locked and cannot be unlocked	When this text is visible, the NE is in secure mode, and the secure mode is locked and cannot be changed.
Backplane Ethernet Port	
IP Address	Displays the IP address of the NE.
Secure IP Address	Displays the backplane IP address.
Secure Subnet Mask Length	Displays the mask length of the secure IP address. Use the up or down arrows to change the mask length.
Default Router	Displays the address of the default router for this NE.
Secure MAC Address	Displays the MAC/Ethernet address for the backplane.
Secure LCD IP Setting	Displays the setting value applicable for the secure mode. Select from the following values: • Allow Configuration—Enables shelf address changing from the LCD. • Display Only—Prevents users from changing the shelf IP address from the LCD screen. • Suppress Display—Makes the LCD screen blank.
Change Mode	
Change Mode button	Opens the Change Secure Mode dialog box, which allows you to change the mode of the NE from secure to unsecure, and vice versa. This button is enabled only if an active TCC2P card exists on the NE.
Lock	
Lock button	When the NE is in secure mode, the Lock button locks the secure mode on the NE/TCC so that it cannot be changed.

B.10.1.3.14 FTP Hosts Tab

The FTP Hosts tab allows you to configure database backup or restore and software download to an ENE when the firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which the FTP relay resumes blocking all FTP access for the ENEs.

Table B-336 Field Descriptions for the FTP Hosts Tab

Field	Description
Create button	Opens the Create New FTP Host dialog box, which allows you to create up to 12 new FTP hosts in a GNE/ENE firewall environment. See 5.3.10.1 Creating an FTP Host, page 5-22. **Note** You cannot create more than 12 FTP hosts.
Delete button	Deletes the selected FTP host.
FTP Host Address	Displays the FTP host IP address.
Prefix Length	Displays the FTP host subnet mask length.

Table B-336 Field Descriptions for the FTP Hosts Tab (continued)

Field	Description
Enable FTP Relay	Indicates whether FTP relay is enabled or disabled. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Displays the number of minutes that the FTP relay is configured to run, after which the FTP relay resumes blocking all FTP access for the ENEs.

B.10.1.4 DCC/GCC/OSC

The DCC/GCC/OSC Properties pane allows you to create, delete, and view RS-DCCs, MS-DCCs, GCCs, OSCs, and DWDM ring IDs.

Table B-337 Field Descriptions for the DCC/GCC/OSC Properties Pane

Field	Description
RS-DCC	
SDCC Terminations	Displays the slot, port, and card type of an RS-DCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	If the RS-DCC is provisioned as OSI only, the following LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.
OSI SNPA	If the RS-DCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.

Table B-337 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
Service State	Includes an administrative-operational state and secondary state. Administrative-operational states are used to manage service states and use a status attribute to specify the change in service state. The following are valid administrative-operational states: • Unlocked-enabled—The NE is fully operational and performs as provisioned. • Unlocked-disabled—The NE is not operational because of an autonomous event. • Locked-disabled—The NE is not operational because of an autonomous event; it has also been manually removed from service. • Locked-enabled—The NE has been manually removed from service. The following are valid secondary states: • AutomaticInService—Transitioning to the Unlocked-enabled service state is delayed. The transition to Unlocked-enabled state depends on correction of conditions, or on a soak timer. Alarm reporting is suppressed, but traffic is carried. Raised fault conditions, whether or not their alarms are reported, can be retrieved by using the TL1 **RTRV-COND** command. • Disabled—The NE has been manually removed from service and does not provide its provisioned functions. All services are disrupted; the entity is unable to carry traffic. • Failed—The NE has a raised alarm or condition. • Loopback—The NE is in loopback mode. • MismatchOfEquipment—An improper card is installed, a cross-connect card does not support an installed card, or an incompatible backplane is installed. For example, an installed card is not compatible with the card preprovisioning or the slot. This secondary state applies only to cards. • Maintenance—The NE has been manually removed from service for a maintenance activity but still performs its provisioned functions. Alarm reporting is suppressed, but traffic is carried. You can use the TL1 **RTRV-COND** command to retrieve raised fault conditions even if alarms have not been reported. • OutOfGroup—The virtual concatenation (VCAT) member cross-connect is not used to carry VCAT group traffic. This state is used to put a member circuit out of the group and to stop sending traffic. Locked-enabled,outOfGroup applies only to the cross-connects on an end node where VCAT resides. The cross-connects on intermediate nodes are in the Locked-enabled,maintenance service state. • SoftwareDownload—A card is involved in a software download. This secondary state applies only to cards. • Unassigned—A card is not provisioned in the database. This secondary state applies only to cards. • NotInstalled—A card is not physically present (that is, the slot is empty). This secondary state applies only to cards. **Note** If the NE release does not support the Service state, this field shows N/A.
MS-DCC	
LDCC Terminations	Displays the slot, port, and card type of an MS-DCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.

Table B-337 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the MS-DCCs that are provisioned as OSI only.
OSI SNPA	If the MS-DCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.

Table B-337 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
Service State	Includes an administrative-operational state and secondary state. Administrative-operational states are used to manage service states and use a status attribute to specify the change in service state. The following are valid administrative-operational states: • Unlocked-enabled—The NE is fully operational and performs as provisioned. • Unlocked-disabled—The NE is not operational because of an autonomous event. • Locked-disabled—The NE is not operational because of an autonomous event; it has also been manually removed from service. • Locked-enabled—The NE has been manually removed from service. The following are valid secondary states: • AutomaticInService—Transitioning to the Unlocked-enabled service state is delayed. The transition to Unlocked-enabled state depends on correction of conditions, or on a soak timer. Alarm reporting is suppressed, but traffic is carried. Raised fault conditions, whether or not their alarms are reported, can be retrieved by using the TL1 **RTRV-COND** command. • Disabled—The NE has been manually removed from service and does not provide its provisioned functions. All services are disrupted; the entity is unable to carry traffic. • Failed—The NE has a raised alarm or condition. • Loopback—The NE is in loopback mode. • MismatchOfEquipment—An improper card is installed, a cross-connect card does not support an installed card, or an incompatible backplane is installed. For example, an installed card is not compatible with the card preprovisioning or the slot. This secondary state applies only to cards. • Maintenance—The NE has been manually removed from service for a maintenance activity but still performs its provisioned functions. Alarm reporting is suppressed, but traffic is carried. You can use the TL1 **RTRV-COND** command to retrieve raised fault conditions even if alarms have not been reported. • OutOfGroup—The virtual concatenation (VCAT) member cross-connect is not used to carry VCAT group traffic. This state is used to put a member circuit out of the group and to stop sending traffic. Locked-enabled,outOfGroup applies only to the cross-connects on an end node where VCAT resides. The cross-connects on intermediate nodes are in the Locked-enabled,maintenance service state. • SoftwareDownload—A card is involved in a software download. This secondary state applies only to cards. • Unassigned—A card is not provisioned in the database. This secondary state applies only to cards. • NotInstalled—A card is not physically present (that is, the slot is empty). This secondary state applies only to cards. **Note** If the NE release does not support the Service state, this field shows N/A.
GCC	
GCC Terminations	Displays the slot, port, and card type of a GCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
GCC Rate	Displays the GCC rate.

Table B-337 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the GCCs that are provisioned as OSI only. For GCCs, this column is always N/A.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.

Table B-337 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
Service State	Includes an administrative-operational state and secondary state. Administrative-operational states are used to manage service states and use a status attribute to specify the change in service state. The following are valid administrative-operational states: • Unlocked-enabled—The NE is fully operational and performs as provisioned. • Unlocked-disabled—The NE is not operational because of an autonomous event. • Locked-disabled—The NE is not operational because of an autonomous event; it has also been manually removed from service. • Locked-enabled—The NE has been manually removed from service. The following are valid secondary states: • AutomaticInService—Transitioning to the Unlocked-enabled service state is delayed. The transition to Unlocked-enabled state depends on correction of conditions, or on a soak timer. Alarm reporting is suppressed, but traffic is carried. Raised fault conditions, whether or not their alarms are reported, can be retrieved by using the TL1 **RTRV-COND** command. • Disabled—The NE has been manually removed from service and does not provide its provisioned functions. All services are disrupted; the entity is unable to carry traffic. • Failed—The NE has a raised alarm or condition. • Loopback—The NE is in loopback mode. • MismatchOfEquipment—An improper card is installed, a cross-connect card does not support an installed card, or an incompatible backplane is installed. For example, an installed card is not compatible with the card preprovisioning or the slot. This secondary state applies only to cards. • Maintenance—The NE has been manually removed from service for a maintenance activity but still performs its provisioned functions. Alarm reporting is suppressed, but traffic is carried. You can use the TL1 **RTRV-COND** command to retrieve raised fault conditions even if alarms have not been reported. • OutOfGroup—The virtual concatenation (VCAT) member cross-connect is not used to carry VCAT group traffic. This state is used to put a member circuit out of the group and to stop sending traffic. Locked-enabled,outOfGroup applies only to the cross-connects on an end node where VCAT resides. The cross-connects on intermediate nodes are in the Locked-enabled,maintenance service state. • SoftwareDownload—A card is involved in a software download. This secondary state applies only to cards. • Unassigned—A card is not provisioned in the database. This secondary state applies only to cards. • NotInstalled—A card is not physically present (that is, the slot is empty). This secondary state applies only to cards. **Note** If the NE release does not support the Service state, this field shows N/A.
OSC	
OSC Terminations	Displays the slot, port, and card type of an OSC termination.
LAPD Config	Displays the LAP-D parameters for the OSCs that are provisioned as OSI only.

Table B-337 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
OSI SNPA	If the OSC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Includes an administrative-operational state and secondary state. Administrative-operational states are used to manage service states and use a status attribute to specify the change in service state. The following are valid administrative-operational states: • Unlocked-enabled—The NE is fully operational and performs as provisioned. • Unlocked-disabled—The NE is not operational because of an autonomous event. • Locked-disabled—The NE is not operational because of an autonomous event; it has also been manually removed from service. • Locked-enabled—The NE has been manually removed from service. The following are valid secondary states: • AutomaticInService—Transitioning to the Unlocked-enabled service state is delayed. The transition to Unlocked-enabled state depends on correction of conditions, or on a soak timer. Alarm reporting is suppressed, but traffic is carried. Raised fault conditions, whether or not their alarms are reported, can be retrieved by using the TL1 **RTRV-COND** command. • Disabled—The NE has been manually removed from service and does not provide its provisioned functions. All services are disrupted; the entity is unable to carry traffic. • Failed—The NE has a raised alarm or condition. • Loopback—The NE is in loopback mode. • MismatchOfEquipment—An improper card is installed, a cross-connect card does not support an installed card, or an incompatible backplane is installed. For example, an installed card is not compatible with the card preprovisioning or the slot. This secondary state applies only to cards. • Maintenance—The NE has been manually removed from service for a maintenance activity but still performs its provisioned functions. Alarm reporting is suppressed, but traffic is carried. You can use the TL1 **RTRV-COND** command to retrieve raised fault conditions even if alarms have not been reported. • OutOfGroup—The virtual concatenation (VCAT) member cross-connect is not used to carry VCAT group traffic. This state is used to put a member circuit out of the group and to stop sending traffic. Locked-enabled,outOfGroup applies only to the cross-connects on an end node where VCAT resides. The cross-connects on intermediate nodes are in the Locked-enabled,maintenance service state. • SoftwareDownload—A card is involved in a software download. This secondary state applies only to cards. • Unassigned—A card is not provisioned in the database. This secondary state applies only to cards. • NotInstalled—A card is not physically present (that is, the slot is empty). This secondary state applies only to cards. **Note** If the NE release does not support the Service state, this field shows N/A.

Table B-337 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
DWDM Ring ID	
Ring ID	Displays the ring ID.
West Direction	Lists the OSCM or OSC-CSM port that supports the ring in the west direction. The value is N/A if there are no ports in the west direction.
East Direction	Lists the OSCM or OSC-CSM port that supports the ring in the east direction. The value is N/A if there are no ports in the east direction.
Create button	Allows you to create new terminations on SONET, SDH, or transponder cards.
Edit button	Allows you to modify existing terminations on SONET, SDH, or transponder cards.
Delete button	Allows you to delete the selected RS-DCC, MS-DCC, GCC, OSC, or DWDM ring ID.

B.10.1.5 Timing

The Timing Properties pane contains the following tabs:

- B.10.1.5.1 General Tab, page B-251
- B.10.1.5.2 Reference List Tab, page B-253
- B.10.1.5.3 Status Tab, page B-253
- B.10.1.5.4 Timing Report Tab, page B-254

B.10.1.5.1 General Tab

The General tab displays general timing information.

Note BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.

Table B-338 Field Descriptions for the General Tab

Field	Description
General Timing	
Timing Mode	Set to External if the ONS 15454 SDH derives its timing from a BITS source wired to the backplane pins; set to Line if timing is derived from an OC-N card that is optically connected to the timing node. A third option, Mixed, allows you to set external and line timing references. **Caution** Mixed timing might cause timing loops. Use this mode with care.
Revertive	If checked, the ONS 15454 SDH reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
Reversion Time	Specify the reversion time in half-minute increments.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.

Table B-338 Field Descriptions for the General Tab (continued)

Field	Description
BITS IN Facilities	
In State	Set the BITS reference to Locked or Unlocked. For nodes set to Line timing with no equipment timed through BITS Out, set the state to Locked. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to Unlocked.
Coding	Set to the coding used by your BITS reference, either AMI or HDB3.
Framing	Set to the framing used by your BITS reference.
Sync Messaging	If checked, enables the SSM for BITS In. (SSM is not available if Framing is set to Super Frame.)
Admin SSM	If the Sync Messaging check box is not checked, you can choose the SSM Generation 2 type from the drop-down list.
Sa Bit	The Sa Bit field is used to transmit the SSM message. The five available Sa bits are Sa4, Sa5, Sa6, Sa7, and Sa8.
BITS OUT Facilities	
Out State	Set the BITS reference to Locked or Unlocked. For nodes set to Line timing with no equipment timed through BITS Out, set the state to Locked. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to Unlocked.
Coding	Set to the coding used by your BITS reference, either AMI or HDB3.
Framing	Set to the framing used by your BITS reference.
AIS Threshold	If SSM is disabled or Super Frame is used, sets the quality level where a node sends an AIS from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
Sa Bit	The Sa Bit field is used to transmit the SSM message. The five available Sa bits are Sa4, Sa5, Sa6, Sa7, and Sa8.

B.10.1.5.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-339 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to Internal Clock. This is the Stratum 3 clock provided on the TCC+. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal Clock. • Timing Mode set to Line—Options are the node's working optical cards and Internal Clock. **Note** For Timing Mode set to External and Timing Mode set to Line, select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1. • Timing Mode set to Mixed—Both BITS and optical cards are available, allowing you to set a mixture of external BITS and optical trunk cards as timing references.
BITS-1 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for the equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.
BITS-2 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for the equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.

B.10.1.5.3 Status Tab

The Status tab displays timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.
- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-340 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.

Table B-340 Field Descriptions for the Status Tab (continued)

Field	Description
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference.
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 out timing reference.
Operations	Execute a switch on the BITS-1 out timing reference.
BITS-2 Out	
BITS-2 Out	Set the BITS-2 out timing reference.
Status	Displays the status of the BITS-2 out timing reference.
Operations	Execute a switch on the BITS-2 out timing reference.

B.10.1.5.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

B.10.1.6 Protection

The Protection Properties pane contains the following tabs:

- B.10.1.6.1 Protection Groups Tab, page B-254
- B.10.1.6.2 Operations Tab, page B-255

B.10.1.6.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-341 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.	
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.
Type	Choose the protection type (1:1, 1:N, 1+1, or Y-cable) from the drop-down list. The protection selected determines the cards that are available to serve as protect and working cards. For example, if you choose 1:N protection, only DS-1N and DS-3N cards are displayed.
Protect Module	View the protect module if using 1:1, 1:N, or Y-cable protection. **Note** For OTU2_XP cards, the card name might be shown as XP_4_10G_LINE_CARD.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.

Table B-341 Field Descriptions for the Protection Groups Tab (continued)

Field	Description
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select the 1+1 (port) type.
Revertive	If checked, the ONS 15454 SDH reverts traffic to the working card or port after failure conditions for the amount of time entered in Reversion Time. This option is not available if you select the 1:N (card) type.
Reversion Time	If Revertive is checked, enter the amount of time following failure condition correction that should elapse before the ONS 15454 SDH switches back to the working card or port. Use half-minute increments. This option is available only if you select the 1:1 (card) type.

B.10.1.6.2 Operations Tab

The Operations tab displays protection group operation information.

Table B-342 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands. **Note** For OTU2_XP cards, the card name might be shown as XP_4_10G_LINE_CARD.
Switch Commands	Allows you to perform command switching.
Inhibit Switching	Allows you to inhibit command switching.

B.10.1.7 Ether Bridge

The Ether Bridge Properties pane contains the following tabs:

- B.10.1.7.1 Spanning Tree Config Tab, page B-255
- B.10.1.7.2 Spanning Tree Status Tab, page B-256

B.10.1.7.1 Spanning Tree Config Tab

The Spanning Tree Config tab displays spanning-tree configuration information for the ONS 15454 SDH.

Table B-343 Field Descriptions for the Spanning Tree Config Tab

Field	Description
Index Number	Unique number that identifies the spanning tree.
Priority	Incoming traffic queue. Priority can be either high or low.
Bridge Max Age	Maximum amount of time that received-protocol information is retained before it is discarded.

Table B-343 Field Descriptions for the Spanning Tree Config Tab (continued)

Field	Description
Bridge Hello Time	Time interval, in seconds, between the transmission of configuration bridge protocol data units (BPDUs) by a bridge that is the spanning-tree root or is attempting to become the spanning-tree root.
Bridge Forward Delay	Time spent by a port in the listening state and the learning state.

B.10.1.7.2 Spanning Tree Status Tab

The Spanning Tree Status tab displays spanning-tree status information for the ONS 15454 SDH.

Table B-344 Field Descriptions for the Spanning Tree Status Tab

Field	Description
Index Number	Unique number that identifies the spanning tree.
Bridge ID	ONS 15454 SDH unique identifier that transmits the configuration BPDU; the bridge ID is a combination of the bridge priority and the ONS 15454 SDH MAC address.
Topology Age	Amount of time, in seconds, since the last topology change.
Topology Changes	Number of times the spanning-tree topology has been changed since the node booted up.
Designated Root	Spanning tree's designated root for a particular spanning-tree instance.
Root Cost	Total path cost to the designated root.
Root Port	Port used to reach the root.
Max Age	Maximum amount of time that received-protocol information is retained before it is discarded.
Hello Time	Time interval, in seconds, between the transmission of configuration BPDUs by a bridge that is the spanning-tree root or is attempting to become the spanning-tree root.
Hold Time	Minimum time period, in seconds, that elapses during the transmission of configuration information on a given port.
Forward Delay	Time spent by a port in the listening state and the learning state.

B.10.1.8 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the ONS 15454 SDH NE. You can edit NE defaults for the ONS 15454 SDH R5.0 and later.

Table B-345 Field Descriptions for the NE Defaults Properties Pane

Field	Description
Parameter	Lists the default NE parameter.
Value	Shows the default parameter value, and allows you to change the default.
Units	Lists the unit of measure that corresponds to the default NE parameter.

Table B-345 Field Descriptions for the NE Defaults Properties Pane (continued)

Field	Description
Range	Lists the possible range of values for the default NE parameter. **Note** This field applies to the ONS 15454 SDH R6.0 and later.
Side Effects	Lists any side effects that could occur as a result of changing the default NE parameter. **Note** This field applies to the ONS 15454 SDH R6.0 and later.

You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.10.1.9 Security

The Security Properties pane allows you to view and edit security features for the ONS 15454 SDH NE. The Properties pane contains the following tabs:

- B.10.1.9.1 Policy Tab, page B-257
- B.10.1.9.2 Password Tab, page B-258
- B.10.1.9.3 Access Tab, page B-259
- B.10.1.9.4 RADIUS Server Tab, page B-260
- B.10.1.9.5 Legal Disclaimer Tab, page B-261

B.10.1.9.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-346 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.
SuperUser	Set the idle user timeout for a CTC SuperUser user.
User Lockout	
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.

Table B-346 Field Descriptions for the Policy Tab (continued)

Field	Description
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Sessions per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.
Disable Inactive User	If checked, inactive users are disabled automatically for the amount of time in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.10.1.9.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-347 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

B.10.1.9.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-348 Field Descriptions for the Access Tab

Field	Description
Access	
LAN Access	Specify the type of LAN access allowed. Values are Backplane Only, No LAN Access, Front and Backplane, or Front Only (for ONS 15454 SONET NEs only). **Note** After the LAN access to the backplane is set, the Prime Optical client is unusable for 4 to 5 minutes.
Restore Timeout	This time period begins if *No LAN Access* is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Serial Craft Access	
Enable Craft Port	Check this check box to enable the craft port.
Shell Access	
Shell Access on	Specify shell access on Telnet or SSH.
SSH Port	Indicates the SSH port number that will be used if the SSH radio button is selected.
Telnet Port	This is enabled if you selected the Telnet radio button. Enter the Telnet port number.
Use Standard Telnet Port	If checked, the standard Telnet port is used for Telnet access.
Shell Access	
Access State	Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SSH Port	Indicates the SSH port number that will be used.
SFTP Port	Indicates the SFTP port number.
Telnet Port	This is enabled if you selected the Non-secure access state. Enter the Telnet port number that will be used.
Use Standard Telnet Port	Check this check box to indicate that the standard Telnet port will be used.
Enable Shell Password	Indicates whether or not the Shell password is enabled. **Note** You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
EMS Access	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.
CORBA Listener Port	Select the port numbers for the Controller Card CORBA (IIOP) listener port and the Controller Card CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the Controller Card CORBA (IIOP) listener port is 683. The port number for the Controller Card CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.
TL1 Access	

Table B-348 Field Descriptions for the Access Tab (continued)

Field	Description
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.
Pseudo-IOS Access	
Access State	Pseudo CLI is a command-line interface on the NE that simulates a Cisco IOS connection. Select the pseudo-IOS access state from the drop-down list. You can select Disable, Non-secure, or Secure. If you choose Disable, the port is not configurable, which means that the node does not listen for pseudo-CLI connections. **Note** Pseudo-IOS functionality is available only if the node contains 10GE_XP or GE_XP cards in L2 mode.
Port	Enter the port number for pseudo-IOS access. If the Access State field is set to Disable, you cannot configure this field.
Other	
PM Clearing Privilege	Select the users privilege that allows clearing PM statistics for the NE.

B.10.1.9.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for ONS 15454 SDH R6.0 or later.

Table B-349 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.

Table B-349 Field Descriptions for the RADIUS Server Tab (continued)

Field	Description
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.10.1.9.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-350 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.10.1.10 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual ONS 15454 SDH nodes. The Properties pane contains the following tabs:

- B.10.1.10.1 Profile Tab, page B-262
- B.10.1.10.2 Alarm Behavior Tab, page B-262

B.10.1.10.1 Profile Tab

The Profile tab allows you to select, create, or delete alarm profiles.

Table B-351 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list. Click **Create** to create a new alarm profile for the NE. Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.10.1.10.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-352 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.10.1.11 Alarm Conditions

The Conditions Properties pane allows you to view all NE conditions (events with a Not Reported [NR] severity) at the node level. Alarm Conditions Properties pane gives a clear record of changes or events that do not result in alarms.

Note The Alarm Conditions tab is not updated when conditions change; therefore, you must click **Retrieve** to see any changes.

Table B-353 Field Descriptions for the Alarm Conditions Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Retrieve button	Click the **Retrieve** button. The Retrieve button requests the current set of fault conditions from the node, card, or network. Conditions include all fault conditions raised on the node, whether or not they are reported. The time stamp of the condition request is also reported next to the **Retrieve** button.
Perceived Severity	Perceived severity of the selected alarm (critical, major, minor, or warning). The background color also indicates the severity, where: • Red = Critical • Orange = Major • Yellow = Minor • Blue = Warning • Green = Cleared **Note** For the ONS 15530 and ONS 15540, alarms that are shown in the command-line interface (CLI) as informational are shown in Prime Optical as warnings.
Probable Cause	Probable cause of the selected alarm. Some possible values include: • Not Applicable/Unknown—If no additional information is available • Mismatch of equipment and attributes (MEA) alarm—For misconfigured pluggable port modules (PPMs) • Link Layer Keep-Alive Failure—When the keepalive frame on the POS port is disabled and the port is shut down • Bad Packet Count Exceeds Threshold—When the packets through the front port have CRC errored frames • Auto-Negotiation Remote Failure Indication—When a remote Gigabit Ethernet port is shut down from a local port
Condition	Error message or condition name that is associated with the alarm or event.
Affected Object	Name of the object where the selected alarm occurred.
Module Name	Name of the module where the selected alarm occurred.
Physical Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.
NE Alarm Time	Date and time when the alarm occurred on the NE.
Service Affecting	Whether the alarm or event is service affecting (SA). Values are: • True—The alarm is service affecting • False—The alarm is not service affecting

B.10.1.12 XC Utilization

The XC Utilization Properties pane allows you to view a summary of the percentage of XTC cross-connect resources used by circuits that traverse or terminate at an ONS 15454 SDH.

Table B-354 Field Descriptions for the XC Utilization Properties Pane

Field	Description
Low Order Payload Type	Indicates the payload type of the cross-connect card in the NE. This field is not editable unless the NE contains an XCVXC card. If the NE contains an XCVXC card, you can specify the payload type as VC11, VC12, or mixed mode (a combination of VC11 and VC12).
Summary	
VC-4 Matrix	Provides the percentage of the XTC cross-connect VC-4 path resources that are used.
TUG3 Matrix Ports	Provides the percentage of the XTC cross-connect TUG3 matrix ports that are used.
TUG3 Matrix	Provides the percentage of the TUG3 matrix resources that are used.
VC12 Matrix Ports	Provides the percentage of the XTC cross-connect VC12 matrix ports that are used.
VC12 Matrix	Provides the percentage of the VC12 matrix resources that are used.
VC11 Matrix Ports	Provides the percentage of the XTC cross-connect VC11 matrix ports that are used.
VC11 Matrix	Provides the percentage of the VC11 matrix resources that are used.

B.10.1.13 MS-SPRing

The MS-SPRing Properties pane allows you to view MS-SPRing information and create new MS-SPRings. MS-SPRings share the ring bandwidth equally between working and protection traffic. Half of the payload bandwidth is reserved for protection in each direction, making the communication pipe half-full under normal operation. Click **Create** to create a new MS-SPRing; click **Delete** to delete an existing MS-SPRing; click **Ring Map** to open the Ring Map; click **Squelch Table** to open the Squelch table.

Table B-355 Field Descriptions for the MS-SPRing Properties Pane

Field	Description
Fiber Type	Indicates whether the fiber type is 2-fiber or 4-fiber.
Rate	Select the MS-SPRing rate.
Ring Name	Assign a six-digit alphanumeric ring name. Nodes in the same MS-SPRing must have the same ring name.
Node ID	Assign a node ID. The node ID identifies the node to the MS-SPRing. Nodes in the same MS-SPRing must have unique node IDs.
Ring Reversion	Set the amount of time that will pass before the traffic reverts to the original working path. The Cisco default is 5 minutes. All nodes in an MS-SPRing should have the same ring reversion setting, particularly if *never* (nonrevertive) is selected.
Span Reversion	Set the amount of time to pass before the span reverts to the working path.
East Line	Assign the east MS-SPRing port.
East Switch	Displays a list of switch commands for the east port.

Table B-355 Field Descriptions for the MS-SPRing Properties Pane (continued)

Field	Description
West Line	Assign the west MS-SPRing port.
West Switch	Displays a list of switch commands for the west port.
East Protect	For 4-fiber MS-SPRings, assign the east MS-SPRing protect port.
West Protect	For 4-fiber MS-SPRings, assign the west MS-SPRing protect port.

B.10.1.14 DWDM

The DWDM Properties pane allows you to manage and provision DWDM connections. The Properties pane contains the following tabs:

- B.10.1.14.1 Provisioning Tab, page B-265
- B.10.1.14.2 Connections Tab, page B-267
- B.10.1.14.3 Port Status Tab, page B-267
- B.10.1.14.4 Span Check Tab, page B-268
- B.10.1.14.5 APC Tab, page B-268
- B.10.1.14.6 Side Power Monitoring Tab, page B-269
- B.10.1.14.7 Node Setup Tab, page B-270
- B.10.1.14.8 Side Tab, page B-271
- B.10.1.14.9 All Facilities Tab, page B-271
- B.10.1.14.10 Passive Cards Tab, page B-271
- B.10.1.14.11 Alien Wavelength Tab, page B-272
- B.10.1.14.12 Fiber Attribute Tab, page B-272

B.10.1.14.1 Provisioning Tab

The Provisioning tab allows you to view, export, and import a Cisco MetroPlanner configuration file into the DWDM node to configure the node automatically for ONS 15454 SDH NEs R6.*x* and earlier. It also allows you to provision card and ANS parameters using the Automatic Node Setup wizard for ONS 15454 SDH NEs R7.0 and later. See 7.12.11 Configuring Automatic Node Setup, page 7-340 for more information.

Table B-356 Field Descriptions for the Provisioning Tab

Field	Description
Attribute Name	Displays the Properties pane name that is imported from or exported to the Cisco MetroPlanner configuration file.
Value	Displays the default value of the corresponding Properties pane name imported from or exported to the Cisco MetroPlanner configuration file.

Table B-356 Field Descriptions for the Provisioning Tab (continued)

Field	Description
Origin (*Available in ONS 15454 SDH R8.0 and later*)	Shows how the parameter is set. Possible values are: • Default • Automatic • Provisioned • Imported
Note (*Available in ONS 15454 SDH R8.0 and later*)	Displays error details if ANS fails to set the parameter. Possible errors are: • Error during NE board navigation; value is not calculated • Cannot send the parameter request to far-end node; value is not calculated • No response from far-end node; value is not calculated • Configuration is not supported; value is not calculated • Far-end node configuration is not supported; value is not calculated • OSC far-end launch power is not available; value is not calculated • Far-end launch power is not available; value is not calculated • Span loss value is not available; value is not calculated • Fiber stage insertion loss is not available; value is not calculated • Preamplifier tilt is not available; value is not calculated • Add/drop output power is not available; value is not calculated • NE node launch power is not available; value is not calculated • WXC degree is not available; value is not calculated • Value is out of range • Read-only attribute; value is not calculated

B.10.1.14.2 Connections Tab

The Connections tab allows you to create or delete DWDM connections or internal patchcords. It also allows you to calculate DWDM connections.

Table B-357 Field Descriptions for the Connections Tab

Field	Description
Create button	Create a DWDM connection or an internal patchcord. See 7.12.1 Calculating DWDM Connections—ONS 15454 SONET and ONS 15454 SDH R7.2 and Earlier, page 7-331 or 7.12.4 Creating Internal Patchcords—ONS 15454 SONET and ONS 15454 SDH R8.0 and Later, page 7-332 for more information.
Delete button	Delete a DWDM connection or an internal patchcord. See 7.12.5 Deleting DWDM Connections or Internal Patchcords, page 7-334 for more information.
Calculate Connections button	Verify if the DWDM connection matches the connections on the DWDM design plan. See 7.12.1 Calculating DWDM Connections—ONS 15454 SONET and ONS 15454 SDH R7.2 and Earlier, page 7-331 for more information. It also automatically creates an internal patchcord based on the card provisioned on the node. See 7.12.2 Calculating Internal Patchcord Connections—ONS 15454 SONET and ONS 15454 SDH R8.0 and R9.0, page 7-331 for more information.
ONS 15454 SDH R7.2 and Earlier	
Slot-From	The slot from which the DWDM connection originates.
Unit-From	The unit from which the DWDM connection originates.
Port-From	The port from which the DWDM connection originates.
Slot-To	The slot at which the DWDM connection terminates.
Unit-To	The unit at which the DWDM connection terminates.
Port-To	The port at which the DWDM connection terminates.
State	The state of the DWDM connection.
ONS 15454 SDH R8.0 and Later	
From	The unit or port from which the internal patchcord originates.
To	The unit or port at which the internal patchcord terminates.
Wavelength	Shows the wavelength value if the internal patchcord is between two channel ports. Otherwise, it shows *N/A*.

B.10.1.14.3 Port Status Tab

The Port Status tab allows you to view port status and launch automatic node setup (ANS) for the selected port. Click the **Update** button to view the port status of all newly added cards.

This tab applies only to NE releases earlier than NE release 9.2.

Table B-358 Field Descriptions for the Port Status Tab

Field	Description
Launch ANS button	Launches the ANS function for the selected port. ANS adjusts the variable optical attenuators (VOAs) on the different channel paths to equalize the amplifier per-channel input power.
Slot ID (*available in CTM R7.2 and earlier*)	Lists the ONS node slot where the DWDM card is installed.

Table B-358 Field Descriptions for the Port Status Tab (continued)

Field	Description
Card (*available in CTM R7.2 and earlier*)	Describes the card that is installed in the slot.
Port	Displays the card port.
Link Status	Displays the status of the link. Possible values are: • Success - Changed—The calculated setpoint was changed. • Success - Unchanged—The calculated setpoint was not changed. • Fail - Out of Range—The calculated setpoint is outside the range for that parameter. • Fail - Port in IS State—The setpoint cannot be applied because the port has an IS-NR service state. • Not Applicable—The setpoint does not apply to the node.
Parameter	The parameter name.

B.10.1.14.4 Span Check Tab

The Span Check tab allows you to check the span loss between the selected node and the previous node in the chain. The span check is always in reception.

Note If the Measured Span Loss value crosses the Min or Max Expected Span Loss threshold, a condition is raised.

Table B-359 Field Descriptions for the Span Check Tab

Field	Description
Retrieve Span Loss Values button	Runs the span loss verification function and retrieves values for the measured span loss column.
Side	Specifies the side for which span loss information is displayed (east-to-west or west-to-east).
Min Exp. Span Loss	Specifies the minimum expected span loss (in dBm) for the incoming span. This value is imported from MetroPlanner, but can be modified manually.
Max Exp. Span Loss	Specifies the maximum expected span loss (in dBm) for the incoming span.
Meas. Span Loss	The measured span loss value.
Resolution	The resolution or accuracy of the span loss measurement.

B.10.1.14.5 APC Tab

The APC tab allows you to manually run the automatic power control (APC) function, disable and enable APC, and view the date and time the power control setpoint was last checked and modified.

Table B-360 Field Descriptions for the APC Tab

Field	Description
Disable APC button (*available in CTM R7.2 and earlier*)	Disables the automatic power control function. **Caution** Disabling APC should be performed only for specific maintenance actions. When APC is disabled, aging compensation calculations are not performed and circuits cannot be activated.
Run APC button (*available in CTM R7.2 and earlier*)	Runs the automatic power control function manually.
Slot ID (*available in CTM R7.2 and earlier*)	The slot number for power control information and actions.
Card (*available in CTM R7.2 and earlier*)	The card type that is installed in the slot.
Port	The port number.
Last Modification	Date and time the power control setpoint was last modified.
Param (*available in CTM R8.0 and later*)	All the parameters associated with the ports.
Last Check	Date and time the power control setpoint was last verified.
Side (*available in CTM R8.0 and later*)	Lists all the NEs and their sides that belong to the APC domain.
APC State (*available in CTM R8.0 and later*)	Displays the actual state of the APC. Values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.

B.10.1.14.6 Side Power Monitoring Tab

The Side Power Monitoring tab allows you to view bar charts of the input and output spectrum on each optical side of the node.

When you place the mouse over each wavelength in the bar chart, the power level and wavelength type are displayed. This feature is available on nodes that are installed with cards with Optical Channel Monitoring (OCM) capability.

Table B-361 Field Descriptions for the Side Power Monitoring Tab

Field	Descriptions
Bar Chart	Displays power monitoring information. The Side Power Monitoring panel is divided into Optical Side X subtabs, where X is the optical side. The number of subtabs is equal to the number of optical sides in the node. Each subtab displays two bar graphs. The IN bar graph displays the optical spectrum at the input port (LINE-RX) of the side in the direction from the fiber to the node provided the OCM functionality is available on this port else the graph displays the aggregate signal spectral distribution on the first port in the signal flow (indicated in the title of the bar chart) that is downstream of the LINE-RX port where an OCM measurement is available (For example, in node using a booster and SMR card, the measurement is done on the EXP port of the SMR card). The OUT bar graph displays the optical spectrum at the output port (LINE-TX) of the side in the direction from the node to the fiber provided the OCM functionality is available on this port else the graph displays the aggregate signal spectral distribution on the first port (indicated in the title of the bar chart) that is upstream of the LINE-TX port where an OCM measurement is available. **Note** Depending on the side layout, the LINE-TX port (output) and the LINE-RX port (input) of the card facing the fiber cannot measure the optical spectrum in a reliable manner if the OCM functionality is not available on these ports. When you place the mouse over each wavelength in the bar chart, the power level and the wavelength type (local ADD/DROP or EXPRESS) are displayed as a tooltip. • IN graph: The tooltip displays the destination side of each wavelength. The wavelength is either dropped locally or expressed to another side. • OUT graph: The tooltip displays the source side of each wavelength. The wavelength is either added locally or expressed from another side.
Tooltip Data	You can select or deselect the tooltip check boxes and the corresponding information is displayed in the tooltip. The tooltip check boxes control the tooltip information for both charts in this tab. Each Optical Side X subtab has these check boxes to control the chart tooltip for its own subtab. The options are: • Power • Lambda • Side • Channel

B.10.1.14.7 Node Setup Tab

The Node Setup tab allows you to automatically preprovision NEs.

Table B-362 Field Descriptions for the Node Setup Tab

Field	Description
XML Settings	
Select XML File	Click **Browse** to select an XML file (generated by the MetroPlanner application). Prime Optical parses the XML file selected by the operator and checks the accuracy of its content.

Table B-362 Field Descriptions for the Node Setup Tab (continued)

Field	Description
Log Settings	
Select Log File	Click **Browse** to select a log file to which the results of the operations you perform will be saved.
Launch ANS Wizard button	Click the **Launch Wizard** button to launch the Automatic Node Setup wizard. See 7.12.11 Configuring Automatic Node Setup, page 7-340 for more information.

B.10.1.14.8 Side Tab

The Side tab allows you to view, edit, and delete sides defined for an ONS 15454 SDH NE.

Table B-363 Field Descriptions for the Side Tab

Field	Description
Create button	Allows you to create side objects for the NE.
Modify button	Allows you to modify the side ID of an existing side object.
Delete button	Allows you to delete side objects.
Side	Displays the NE's side ID.
Line In	Displays the index of the receive side of the OTS port.
Line Out	Displays the index of the transmit side of the OTS port.

B.10.1.14.9 All Facilities Tab

The All Facilities tab allows you to view the DWDM and optical ports for the ONS 15454 SDH NE.

Table B-364 Field Descriptions for the All Facilities Tab

Field	Description
Port	Displays the card port number, shelf ID, and slot number. **Note** Shelf ID is not included in the port number if the node is not a multishelf NE.
Power	Displays the current power for the port.
State	Displays the administrative state of the port.
Service State	Displays the service state of the port.
Retain Selected button	Displays only the ports that you selected.
Show All button	Retrieves and displays all the optical and DWDM ports for the NE.

B.10.1.14.10 Passive Cards Tab

The Passive Cards tab allows you to view information about passive units provisioned in CTC.

Note Passive units can be provisioned in CTC only.

Table B-365 Field Descriptions for the Passive Cards Tab

Field	Description
Passive Cards	
ID	Displays the passive card shelf ID.
Equipment Name	Displays the general card type/name.
Location	Displays the location of the passive card.
Description	Displays the passive card description.
Optical Ports	
Port	Displays the port number.
Type	Displays the port type.
MPO	Displays any physical multifiber push connectors.
Wavelength	Displays the port wavelength.

B.10.1.14.11 Alien Wavelength Tab

The Alien Wavelength tab allows you to view and edit the port and wavelength parameters defined for an ONS 15454 SDH NE. Click the **Refresh** button to refresh the Alien Wavelength table.

Note Alien Wavelength is applicable to ONS 15454 NEs that support WSON nodes.

Table B-366 Field Descriptions for the Alien Wavelength Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Create button	Allows you to create alien wavelengths for the NE. See 7.12.15 Creating Alien Wavelength for more information.
Edit button	Allows you to modify the existing alien wavelength value. See 7.12.16 Editing Alien Wavelength for more information.
Position	Displays information about the shelf, slot, and port on which the alien wavelength is configured.
Alien Wavelength	Displays the alien wavelength class.
Lambda	Displays the alien wavelength value.
FEC	Displays the FEC mode.

B.10.1.14.12 Fiber Attribute Tab

The Fiber Attribute tab allows you to view the fiber parameters defined for an ONS 15454 SDH NE.

Note Fiber Attribute is applicable to ONS 15454 NEs that support WSON node.

Table B-367 Field Descriptions for the Fiber Attribute Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Toggle button	Click the **Toggle** button to select the unit of measure.
Optical Side	Displays the name of the optical side to which the fiber is connected
Fiber Type	Choose the fiber type from the drop-down list.
Fiber Number	Displays the number of the fiber associated to the optical side. Useful when different types of fiber are present on the span.
Fiber Length	Allows you to edit the fiber length.

B.10.1.14.13 WSON Tab

The WSON tab allows you to view and acknowledge the unverified alarms at the circuit level.

Table B-368 Field Descriptions for the WSON Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Acknowledge WSON Alarm button	Click the **Acknowledge WSON Alarm** button to acknowledge a WSON alarm.
Affected Circuits button	Click the **Affected Circuits** button to view the affected circuits. If there are circuits affected by the selected alarm, the new circuit report is displayed. See 7.2.28.2 Working with Circuit Reports for more information. **Note** The Affected Circuits button is enabled only when an alarm condition is selected.
ID	Displays the ID of the NE from the Domain Explorer.
PS	Perceived severity of the selected alarm (critical, major, minor, or warning). The background color also indicates the severity, where: • Red = Critical • Orange = Major • Yellow = Minor • Blue = Warning • Green = Cleared **Note** For the ONS 15530 and ONS 15540, alarms that are shown in the command-line interface (CLI) as informational are shown in Prime Optical as warnings.

Table B-368 Field Descriptions for the WSON Tab (continued)

Field	Description
Probable Cause	Probable cause of the selected alarm. Some possible values include: • Not Applicable/Unknown—If no additional information is available • Mismatch of equipment and attributes (MEA) alarm—For misconfigured pluggable port modules (PPMs) • Link Layer Keep-Alive Failure—When the keepalive frame on the POS port is disabled and the port is shut down • Bad Packet Count Exceeds Threshold—When the packets through the front port have CRC errored frames • Auto-Negotiation Remote Failure Indication—When a remote Gigabit Ethernet port is shut down from a local port
Condition	Error message or condition name that is associated with the alarm or event.
Affected Object	Name of the object where the selected alarm occurred.
Module Name	Name of the module where the selected alarm occurred.
Physical Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.
NE Alarm Time	Date and time when the alarm occurred on the NE.
SA	Whether the alarm or event is service affecting (SA). Values are: • Yes—The alarm is service affecting • No—The alarm is not service affecting • N/A—No information is provided by the NE

B.10.1.15 OSI

The OSI Properties pane allows you to provision ONS 15454 SDH Open System Interconnection (OSI) parameters. The Properties pane contains the following tabs:

- B.10.1.15.1 Main Setup Tab, page B-274
- B.10.1.15.2 TARP-Config Tab, page B-275
- B.10.1.15.3 TARP-TDC Tab, page B-276
- B.10.1.15.4 TARP-MAT Tab, page B-277
- B.10.1.15.5 Routers-Setup Tab, page B-277
- B.10.1.15.6 Subnets Tab, page B-278
- B.10.1.15.7 Tunnels Tab, page B-279
- B.10.1.15.8 IS-IS RIB Tab, page B-279
- B.10.1.15.9 ES-IS RIB Tab, page B-279

B.10.1.15.1 Main Setup Tab

The Main Setup tab allows you to provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-369 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI end system (ES). ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1	Provisions the node as an OSI intermediate system (IS). ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs. For the ONS 15454 SDH, Intermediate System Level 1 is the Cisco default.
Intermediate System Level 1/Level 2	The ONS 15454 SDH performs all IS functions. It communicates with other IS and ES nodes within an OSI area and broadcasts ISHs to IS nodes in other areas to which it is connected.
Node Routing Mode	
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.10.1.15.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-370 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).

Table B-370 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial ONS 15454 SDH startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.
Timers	
LDB Entry	Sets the TARP LDB timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.10.1.15.3 TARP-TDC Tab

Table B-371 Field Descriptions for the TARP-TDC Tab

Field	Description
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.

Table B-371 Field Descriptions for the TARP-TDC Tab (continued)

Field	Description
Type	Indicates how the TARP data cache entry was created. It can be either: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Selected Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.

B.10.1.15.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-372 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.10.1.15.5 Routers-Setup Tab

Table B-373 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. The ONS 15454 SDH provides three virtual routers, numbered 1 through 3.
System ID	Displays the NSAP system ID of the virtual router. The NSAP system identifier is set to the node's first IEEE 802.3 MAC address + *n*, where *n* = 0 through 2. For the primary router (Router 1), *n* = 0.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.

Table B-373 Field Descriptions for the Routers-Setup Tab (continued)

Field	Description
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.

B.10.1.15.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-374 Field Descriptions for the Subnets Tab

Field	Description
Slot/Port	The subnet slot and port.
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64. For the ONS 15454 LAN subnet, the default DIS priority is 63. This priority should not be changed.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.
Edit button	Click **Edit** to modify the subnet parameters.
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.

B.10.1.15.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-375 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.10.1.15.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-376 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the OSI router number. The ONS 15454 SDH provides three virtual routers, numbered 1 through 3.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.10.1.15.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-377 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the OSI router number. The ONS 15454 SDH provides three virtual routers, numbered 1 through 3.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.11 ONS 15454-M6 NE Explorer

When you choose **Configuration > NE Explorer** for the ONS 15454 MSTP, the window that Prime Optical displays consists of a tree on the left side and a properties pane on the right. The tree provides a hierarchical view and alarm status of the NE's physical shelves and slots. The properties pane shows information about the selected entity. See B.11.1 Node Properties Pane—ONS 15454-M6, page B-281 for more information.

Note Refer to the Cisco ONS 15454 SONET, SDH, and DWDM components' installation documents for precautions, guidelines, and procedures for converting single-shelf NEs to multishelf NEs. Incorrect procedures for converting single-shelf NEs to multishelf NEs can result in nodes not being properly discovered and managed by Prime Optical.

Caution If a shelf is added to a node that is managed by Prime Optical, force a Refresh from NE operation to correctly update the node inventory. Inconsistencies in the node inventory can occur if the operation is not performed. Those inconsistencies are reflected in all Prime Optical user interfaces, including the gateways.

B.11.1 Node Properties Pane—ONS 15454-M6

The node properties pane displays information about the ONS 15454-M6 NE. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.11.1.1 Shelf View, page B-281
- B.11.1.2 General, page B-281
- B.11.1.3 Network, page B-283
- B.11.1.4 DCC/GCC/OSC, page B-291
- B.11.1.5 Timing, page B-293
- B.11.1.6 Protection, page B-296
- B.11.1.7 NE Defaults, page B-297
- B.11.1.8 Security, page B-298
- B.11.1.9 Alarm, page B-302
- B.11.1.10 Alarm Conditions, page B-303
- B.11.1.11 DWDM, page B-305
- B.11.1.12 OSI, page B-311
- B.11.1.13 ECU Ports Alarms Suppression, page B-317
- B.11.1.14 Alarm Extenders, page B-317

B.11.1.1 Shelf View

The Shelf View Properties pane displays a graphic of the ONS 15454-M6 that is selected in the NE Explorer tree. Moving the mouse pointer over the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset, delete, or change the card. For unprovisioned slots, the right-click menu allows you to add a card.

B.11.1.2 General

The General Properties pane displays identification information, voltage thresholds, and multishelf configurations for the ONS 15454-M6 NE.

Table B-378 Field Descriptions for the General Properties Pane

Field	Description
Identification Tab	
NE ID	Displays the ID of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name of the node contact person and the phone number.
Description	Enter a description of the NE.
System Description	Displays the NE type and the version of the system software.

Table B-378 Field Descriptions for the General Properties Pane (continued)

Field	Description
SNTP Settings	
Use NTP/SNTP Server	If checked, CTC uses an SNTP server to set the date and time of the node. Using an SNTP server ensures that all ONS 15454-M6 network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. If you check the **Use NTP/SNTP Server** check box, enter the server's IP address in the next field. If you do not use an SNTP server, complete the Time and Time Zone fields. The ONS 15454-M6 will use these fields for alarm dates and times.
SNTP Server	Displays the SNTP server IP address.
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.
Use Daylight Savings Time	If checked, Daylight Savings Time is observed.
APC State	
Side	Lists all the NEs and their sides that belong to the automatic power control (APC) domain.
APC State	Displays the actual state of the APC. Values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.
Power Monitor Tab	
Voltage Thresholds	
ELWBATVG	Allows you to set the monitor value for extreme low battery voltage (ELWBATVG) in volts direct current (VDC).
LWBATVG	Allows you to set the monitor value for low battery voltage (LWBATVG) in VDC.
HIBATVG	Allows you to set the monitor value for high battery voltage (HIBATVG) in VDC.
EHIBATVG	Allows you to set the monitor value for extreme high battery voltage (EHIBATVG) in VDC.
Current Voltage Environment	Shows the current voltage environment.
Multishelf Config Tab	

Table B-378 Field Descriptions for the General Properties Pane (continued)

Field	Description
Shelf Role	Specify the configuration for multishelf NEs, where the primary NE is configured to take care of other NEs in the shelf. Select one of the following radio buttons: • Disable Multishelf • Enable as Subtended Shelf • Enable as Node Controller
Shelf ID	Unique number that identifies the shelf. Shelf ID #1 is reserved for the node controller.
LAN Config	Used to specify the LAN configuration that is used for the multishelf NE. A change in this attribute forces an automatic TNC/TSC reboot.
Public VLAN ID	*Display only.* Public VLAN ID is used by the node controller to communicate with the external network.
Internal VLAN ID	*Display only.* Internal VLAN ID is used by the node controller to communicate with the subtending shelves.
Voltage/Temperature Tab	
Voltage A, B, and so on	Displays the voltage (in millivolts) of the shelf that corresponds to the power supply.
Temperature	Displays the temperature (in degrees Celsius) of the shelf.
Cooling Profile	Displays the fan cooling profile. Values are: • High • Medium • Low
Reset	Resets all voltage and temperature values.
Help	Opens context-sensitive help.

B.11.1.3 Network

The Network Properties pane displays information about the NE network address. The Network Properties pane contains the following tabs:

- B.11.1.3.1 Address Tab, page B-284
- B.11.1.3.2 Static Routes Tab, page B-284
- B.11.1.3.3 OSPF Tab, page B-285
- B.11.1.3.4 OSPF Area Range Tab, page B-286
- B.11.1.3.5 OSPF Virtual Links Tab, page B-286
- B.11.1.3.6 SNMP Tab, page B-287
- B.11.1.3.7 Firewall/Proxy Tab, page B-287
- B.11.1.3.8 Routing Table Tab, page B-288
- B.11.1.3.9 RIP Routing Table Tab, page B-288
- B.11.1.3.10 RIP Tab, page B-288
- B.11.1.3.11 Proxy Tunnels Tab, page B-289
- B.11.1.3.12 Firewall Tunnels Tab, page B-290

- B.11.1.3.13 Secure Config Mode Tab, page B-290
- B.11.1.3.14 FTP Hosts Tab, page B-290

B.11.1.3.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-379 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.
MAC Address	Displays the ONS 15454-M6 address as it is identified on the IEEE 802 MAC layer.
LCD IP Setting	Allows you to configure the LCD screen. Select from the following values: • Allow Configuration—Enables shelf address changing from the LCD. • Display Only—Prevents users from changing the shelf IP address from the LCD screen. • Suppress Display—Makes the LCD screen blank.
Forward DHCP Requests	If checked, forwards DHCP requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.
IPv6 Config	
Enable IPv6	If checked, allows you to configure the node to use the IPv6 protocol and to assign an IPv6 address to the node.
IPv6 Address	Enter the IPv6 address of the node.
Default IPv6 Router	Enter the IPv6 default router of the node.
IPv6 Subnet Mask	Enter the IPv6 subnetwork mask length.

B.11.1.3.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and ONS 15454-M6 connectivity and create or delete static routes.

Table B-380 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the ONS 15454-M6 and the computer.

B.11.1.3.3 OSPF Tab

The OSPF tab displays OSPF information. OSPF is a link-state Internet routing protocol.

Table B-381 Field Descriptions for the OSPF Tab

Field	Description
Slot	Displays the slot number.
Port	Displays the port number.
DCC OSPF Area ID	Displays the number that identifies the ONS 15454-M6 NE as a unique OSPF area. The OSPF area number can be an integer from 0 to 4294967295, and it can take a form similar to an IP address. The number must be unique to the LAN OSPF area.
SDCC Metric	Sets a cost for sending packets across the Section Data Communications Channel (SDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
LDCC Metric	Sets a cost for sending packets across the Line Data Communications Channel (LDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
OSPF on LAN	
OSPF Active on LAN	If checked, enables the ONS 15454-M6 OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15454-M6 SDH NEs that directly connect to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the ONS 15454-M6 is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the value used for this NE in designated router election. The Cisco default value is zero (0). A router that has Router Priority set to 0 is ineligible to become a designated router on the attached network.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
OSPF Authentication	
Authentication Type	Displays Simple Password if the router where the ONS 15454-M6 is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.11.1.3.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-382 Field Descriptions for the OSPF Area Range Tab

Field	Description
Range Address	Displays the area IP address for the ONS 15454-M6 NEs that reside within the OSPF area. For example, if the ONS 15454-M6 OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the ONS 15454-M6 NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF routing table is advertised.

B.11.1.3.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-383 Field Descriptions for the OSPF Virtual Links Tab

Field	Description
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.11.1.3.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-384 Field Descriptions for the SNMP Tab

Field	Description
Use Generic MIB	If checked, allows you to transfer traps to a local MIB browser or server.
Engine ID	Displays the unique SNMP node engine ID.
Allow SNMP Set	If checked, allows you to use SNMP management software with the ONS 15454-M6.
Allow SNMP Proxy	If checked, allows you to configure the ONS 15454-M6 to proxy SNMP calls.
IP Address	The IP address of the NMS.
Community Name	The SNMP community name.
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.
Relay A IP Address	The first ONS 15454-M6 to relay traps through. The IP address is appended to the base community string to tell the first NE the IP address and the port to forward the trap to. The second NE recognizes the IP address and strips it from the community string before forwarding the trap.
Relay A Community Name	The community name for the relay A node to use in the trap when forwarding it.
Relay B IP Address	The second ONS 15454-M6 to relay traps through.
Relay B Community Name	The community name for the relay B node to use in the trap when forwarding it.
Relay C IP Address	The third ONS 15454-M6 to relay traps through.
Relay C Community Name	The community name for the relay C node to use in the trap when forwarding it.

B.11.1.3.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-385 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Gateway Settings	
Enable Proxy Server on Port	If checked, the ONS 15454-M6 serves as a proxy for connections between the Prime Optical server and ONS 15454-M6 that are DCC-connected to the proxy ONS 15454-M6. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Configures the ONS 15454-M6 to proxy as an ENE. Note that an alternate expansion for ENE is *external network element*. • Gateway Network Element (GNE)—Configures the ONS 15454-M6 to proxy as a GNE. • Proxy-only—Configures the ONS 15454-M6 to act as a proxy. If unchecked, the node does not proxy; instead, it acts as a LAN-connected NE (LNE).

B.11.1.3.8 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-386 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Usage	Shows the number of times the listed route has been used.
Interface	Shows the ONS 15454-M6 interface used to access the destination. Values are: • cpm0—The ONS 15454-M6 Ethernet interface (that is, the RJ-45 jack on the TNC/TSC and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface.

B.11.1.3.9 RIP Routing Table Tab

The RIP Routing Table tab allows you to view the Routing Information Protocol (RIP) routing table.

Table B-387 Field Descriptions for the RIP Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Cost	Displays the hop count metric. The valid range is from 1 to 15.

B.11.1.3.10 RIP Tab

The RIP tab allows you to view and configure the RIP parameters.

Note
- When you enable RIP, you must wait for approximately one minute for the default RIP address summary to become visible.
- When you disable RIP on the NE, all summary address entries in the Summary Address table are deleted.

Table B-388 Field Descriptions for the RIP Tab

Field	Description
RIP Active	Check this check box to enable RIP. Uncheck it to disable RIP. **Note** Checking the RIP Active check box and clicking the **Apply** button does not enable RIP. Instead, you must check the RIP Active check box, click the **Create** button, and use the Create RIP Address Summary dialog box to create a new RIP address. For details, see 5.3.5 Using RIP, page 5-8.
RIP Type	Select RIP version 1.0 or RIP version 2.0.
Metric	Enter the hop count metric. The valid range is from 1 to 15.
Authentication Type	Select the authentication type.
Authentication Key	Enter the authentication key (password) if the authentication type is Simple Password.
Confirm Authentication Key	Retype the authentication key to confirm it.
RIP Address Summary	• Summary Address—Displays the summary address. • Mask Length—Displays the subnet mask length. • Cost—Displays the hop count metric. The valid range is from 1 to 15.
Create button	Click **Create** to create a new RIP address. See 5.3.5 Using RIP, page 5-8.
Delete button	Click **Delete** to delete an existing RIP address.

B.11.1.3.11 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-389 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.11.1.3.12 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-390 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.11.1.3.13 Secure Config Mode Tab

The Secure Config Mode tab allows you to configure the secure config mode. The fields shown depend on whether the NE is in secure mode. For example, the Backplane Ethernet Port values are displayed only when the NE is in secure mode.

Table B-391 Field Descriptions for the Secure Config Mode Tab

Field	Description
TCP/IP Mode	
Normal	When this text is visible, the NE is not in secure mode. There is one IP address shared by TNC/TSC and backplane Ethernet ports, with full connectivity between ports.
Secure	When this text is visible, the NE is in secure mode. There are separate IP addresses for TNC/TSC and backplane Ethernet ports, with no connectivity between ports.
Mode not locked	When this text is visible, you can change the secure mode.
Mode permanently locked and cannot be unlocked	When this text is visible, the NE is in secure mode, and the secure mode is locked and cannot be changed.
Change Mode	
Change Mode button	Opens the Change Secure Mode dialog box, which allows you to change the mode of the NE from secure to unsecure, and vice versa. This button is enabled only if an active TNC/TSC card exists on the NE.
Lock	
Lock button	When the NE is in secure mode, the Lock button locks the secure mode on the NE/TNC/TSC so that it cannot be changed.

B.11.1.3.14 FTP Hosts Tab

The FTP Hosts tab allows you to configure database backup or restore and software download to an ENE when the firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which the FTP relay resumes blocking all FTP access for the ENEs.

Table B-392 Field Descriptions for the FTP Hosts Tab

Field	Description
Create button	Opens the Create New FTP Host dialog box, which allows you to create up to 12 new FTP hosts in a GNE/ENE firewall environment. See 5.3.10.1 Creating an FTP Host, page 5-22. **Note** You cannot create more than 12 FTP hosts.
Delete button	Deletes the selected FTP host.
FTP Host Address	Displays the FTP host IP address.
Prefix Length	Displays the FTP host subnet mask length.
Enable FTP Relay	Indicates whether FTP relay is enabled or disabled. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Displays the number of minutes that the FTP relay is configured to run, after which the FTP relay resumes blocking all FTP access for the ENEs.

B.11.1.4 DCC/GCC/OSC

The DCC/GCC/OSC Properties pane allows you to create, delete, and view SDCCs, LDCCs, GCCs, and OSCs.

Table B-393 Field Descriptions for the DCC/GCC/OSC Properties Pane

Field	Description
SDCC	
SDCC Terminations	Displays the slot, port, and card type of an SDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.

Table B-393 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
Service State	Select the state of the termination: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion. • UEQ—Unequipped; there is nothing in the slot. • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted. • SWDL—Software download in progress. • MT—Maintenance, as per the Admin State change. • AINS—Automatic in service. • DSBLD—Traffic is disabled on the entity. • LPBK—Port or connection has a loopback on it. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11 on page 11-15. See Table 11-11 on page 11-15 for the Service state-Secondary state possible values. **Note** If the NE release does not support the Service state, this field shows N/A.
LDCC	
LDCC Terminations	Displays the slot, port, and card type of an LDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the LDCC termination (IS-NR, OOS-AU, OOS-MA, OOS-AUMA) plus the secondary state (MEA, UEQ, UAS, SWDL, MT, AINS, DSBLD, LPBK).
GCC	
GCC Terminations	Displays the slot, port, and card type of a GCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
GCC Rate	Displays the GCC rate.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.

Table B-393 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only. For GCCs, this column is always N/A.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the GCC termination (IS-NR, OOS-AU, OOS-MA, OOS-AUMA) plus the secondary state (MEA, UEQ, UAS, SWDL, MT, AINS, DSBLD, LPBK).
OSC	
OSC Terminations	Displays the slot, port, and card type of an OSC termination.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only.
OSI SNPA	If the OSC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Displays the state of the OSC termination.

B.11.1.5 Timing

The Timing Properties pane contains the following tabs:

- B.11.1.5.1 General Tab, page B-293
- B.11.1.5.2 Reference List Tab, page B-295
- B.11.1.5.3 Status Tab, page B-295
- B.11.1.5.4 Timing Report Tab, page B-296

B.11.1.5.1 General Tab

The General tab displays general timing information.

Note BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.

Table B-394 Field Descriptions for the General Tab

Field	Description
General Timing	
Timing Mode	Set to External if the ONS 15454-M6 derives its timing from a BITS source wired to the backplane pins; set to Line if timing is derived from an OC-N card that is optically connected to the timing node. A third option, Mixed, allows you to set external and line timing references. **Caution** Mixed timing might cause timing loops. Use this mode with care.

Table B-394 Field Descriptions for the General Tab (continued)

Field	Description
SSM Message Set	Choose the SSM set level supported by your network. SSM is an SDH protocol that communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SDH Line layer. They enable SDH devices to automatically select the highest quality timing reference and to avoid timing loops. If a Generation 1 node receives a Generation 2 message, the message is mapped down to the next available Generation 1 node. For example, an ST3E message becomes an ST3.
Revertive	If checked, the ONS 15454-M6 reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
Quality of RES	If your timing source supports the reserved S1 byte, set the timing quality here. (Most timing sources do not use RES.) Qualities are displayed in descending quality order as ranges. For example, ST3 < RES < ST2 means the timing reference is higher than a Stratum 3 and lower than a Stratum 2.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.
BITS IN Facilities	
In State	Set the BITS reference to Locked or Unlocked. For nodes set to Line timing with no equipment timed through BITS Out, set the state to Locked. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to Unlocked.
Coding	Set to the coding used by your BITS reference, either AMI or HDB3.
Framing	Set to the framing used by your BITS reference.
Sync Messaging	If checked, enables the SSM for BITS In. (SSM is not available if Framing is set to Super Frame.)
Admin SSM	If the Sync Messaging check box is not checked, you can choose the SSM Generation 2 type from the drop-down list.
BITS OUT Facilities	
Out State	Set the BITS reference to Locked or Unlocked. For nodes set to Line timing with no equipment timed through BITS Out, set the state to Locked. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to Unlocked.
Coding	Set to the coding used by your BITS reference, either AMI or HDB3.
Framing	Set to the framing used by your BITS reference.
AIS Threshold	If SSM is disabled or Super Frame is used, sets the quality level where a node sends an AIS from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
LBO	If you are timing an external device connected to the BITS Out pins, set the distance between it and the ONS 15454-M6. Options are 0-133 ft (Cisco default), 134-266 ft, 267-399 ft, 400-533 ft, and 534-655 ft.

B.11.1.5.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-395 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to Internal Clock. This is the Stratum 3 clock provided on the TNC/TSC. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal Clock. • Timing Mode set to Line—Options are the node's working optical cards and Internal Clock. **Note** For Timing Mode set to External and Timing Mode set to Line, select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1. • Timing Mode set to Mixed—Both BITS and optical cards are available, allowing you to set a mixture of external BITS and optical trunk cards as timing references.
BITS-1 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for the equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.
BITS-2 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for the equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.

B.11.1.5.3 Status Tab

The Status tab displays timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.
- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-396 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.

Table B-396 Field Descriptions for the Status Tab (continued)

Field	Description
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference.
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 out timing reference.
Operations	Execute a switch on the BITS-1 out timing reference.
BITS-2 Out	
BITS-2 Out	Set the BITS-2 out timing reference.
Status	Displays the status of the BITS-2 out timing reference.
Operations	Execute a switch on the BITS-2 out timing reference.

B.11.1.5.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

B.11.1.6 Protection

The Protection Properties pane contains the following tabs:

- B.11.1.6.1 Protection Groups Tab, page B-296
- B.11.1.6.2 Operations Tab, page B-297

B.11.1.6.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-397 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.	
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.
Type	Choose the protection type (1:1, 1:N, 1+1, or Y-cable) from the drop-down list. The protection selected determines the cards that are available to serve as protect and working cards. For example, if you choose 1:N protection, only DS-1N and DS-3N cards are displayed.
Protect Module	View the protect module if using 1:1, 1:N, or Y-cable protection. **Note** For OTU2_XP cards, the card name might be shown as XP_4_10G_LINE_CARD.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.

Table B-397 Field Descriptions for the Protection Groups Tab (continued)

Field	Description
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select the 1+1 (port) type.
Revertive	If checked, the ONS 15454-M6 reverts traffic to the working card or port after failure conditions for the amount of time entered in Reversion Time. This option is not available if you select the 1:N (card) type.
Reversion Time	If Revertive is checked, enter the amount of time following failure condition correction that should elapse before the ONS 15454-M6 switches back to the working card or port. Use half-minute increments. This option is available only if you select the 1:1 (card) type.
Recovery Guard Time	The recovery guard timer prevents rapid switches due to SD or SF failures. After the SD or SF condition is cleared on a facility protected by Optimized 1+1 protection, no switches are performed for the duration of the recovery guard timer.
Verification Guard Time	The verification guard timer specifies the amount of time that a user command has to complete. If a user command cannot be completed within the duration set by the verification guard timer, the command is cleared and an APS_CLEAR event is sent.
Detection Guard Time	The detection guard timer specifies the amount of time after a failure that the system has to complete a switch. After detecting an SD, SF, LOS, LOF, or AISL failure, the detection guard timer is started. If the detection guard timer is set to zero, the system completes a switch within 60 ms for failure events.

B.11.1.6.2 Operations Tab

The Operations tab displays protection group operation information.

Table B-398 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands. **Note** For OTU2_XP cards, the card name might be shown as XP_4_10G_LINE_CARD.
Switch Commands	Allows you to perform command switching.
Inhibit Switching	Allows you to inhibit command switching.

B.11.1.7 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the ONS 15454-M6 NE.

Table B-399 Field Descriptions for the NE Defaults Properties Pane

Field	Description
Load Data	Loads the NE default values.
Parameter	Lists the default NE parameter.
Value	Shows the default parameter value, and allows you to change the default.
Units	Lists the unit of measure that corresponds to the default NE parameter.

Table B-399 Field Descriptions for the NE Defaults Properties Pane (continued)

Field	Description
Range	Lists the possible range of values for the default NE parameter.
Side Effects	Lists any side effects that could occur as a result of changing the default NE parameter.

You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.11.1.8 Security

The Security Properties pane allows you to view and edit security features for the ONS 15454-M6 NE. The Properties pane contains the following tabs:

- B.11.1.8.1 Policy Tab, page B-298
- B.11.1.8.2 Password Tab, page B-299
- B.11.1.8.3 Access Tab, page B-300
- B.11.1.8.4 RADIUS Server Tab, page B-301
- B.11.1.8.5 Legal Disclaimer Tab, page B-302

B.11.1.8.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-400 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.
SuperUser	Set the idle user timeout for a CTC SuperUser user.
User Lockout	
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.

Table B-400 Field Descriptions for the Policy Tab (continued)

Field	Description
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Sessions per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.
Disable Inactive User	If checked, inactive users are disabled automatically for the amount of time in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.11.1.8.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-401 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

B.11.1.8.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-402 Field Descriptions for the Access Tab

Field	Description
Access	
LAN Access	Specify the type of LAN access allowed. Values are EMS Only, No LAN Access, Front Craft and EMS, or Front and Craft.
Restore Timeout	This time period begins if *No LAN Access* is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Serial Craft Access	
Enable Craft Port	Check this check box to enable the craft port.
Shell Access	
Access State	Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SSH Port	Indicates the SSH port number that will be used.
SFTP Port	Indicates the SFTP port number.
Telnet Port	This is enabled if you selected the Non-secure access state. Enter the Telnet port number that will be used.
Use Standard Telnet Port	Check this check box to indicate that the standard Telnet port will be used.
Enable Shell Password	Indicates whether or not the Shell password is enabled. **Note** You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
EMS Access	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.
CORBA Listener Port	Select the port numbers for the Controller Card CORBA (IIOP) listener port and the Controller Card CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the Controller Card CORBA (IIOP) listener port is 683. The port number for the Controller Card CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.
TL1 Access	
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.
Pseudo-IOS Access (available for ONS 15454 SDH R9.2)	

Table B-402 Field Descriptions for the Access Tab (continued)

Field	Description
Access State	Pseudo CLI is a command-line interface on the NE that simulates a Cisco IOS connection. Select the pseudo-IOS access state from the drop-down list. You can select Disable, Non-secure, or Secure. If you choose Disable, the port is not configurable, which means that the node does not listen for pseudo-CLI connections. **Note** Pseudo-IOS functionality is available only if the node contains 10GE_XP or GE_XP cards in L2 mode.
Port	Enter the port number for pseudo-IOS access. If the Access State field is set to Disable, you cannot configure this field.
Other	
PM Clearing Privilege	Select the users privilege that allows clearing PM statistics for the NE.

B.11.1.8.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for the ONS 15454-M6 NE.

Table B-403 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.11.1.8.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-404 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.11.1.9 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual ONS 15454-M6 nodes. The Properties pane contains the following tabs:

- B.11.1.9.1 Profile Tab, page B-302
- B.11.1.9.2 Alarm Behavior Tab, page B-303

B.11.1.9.1 Profile Tab

The Profile tab allows you to select, create, or delete alarm profiles.

Table B-405 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list. Click **Create** to create a new alarm profile for the NE. Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.11.1.9.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-406 Field Descriptions for the Alarm Behavior Tab

Field	Description
Node Profile	
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.11.1.10 Alarm Conditions

The Conditions Properties pane allows you to view all NE conditions (events with a Not Reported [NR] severity) at the node level. Alarm Conditions Properties pane gives a clear record of changes or events that do not result in alarms.

Note The Alarm Conditions tab is not updated when conditions change; therefore, you must click **Retrieve** to see any changes.

Table B-407 Field Descriptions for the Alarm Conditions Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Retrieve button	Click the **Retrieve** button. The Retrieve button requests the current set of fault conditions from the node, card, or network. Conditions include all fault conditions raised on the node, whether or not they are reported. The time stamp of the condition request is also reported next to the **Retrieve** button.
Perceived Severity	Perceived severity of the selected alarm (critical, major, minor, or warning). The background color also indicates the severity, where: • Red = Critical • Orange = Major • Yellow = Minor • Blue = Warning • Green = Cleared **Note** For the ONS 15530 and ONS 15540, alarms that are shown in the command-line interface (CLI) as informational are shown in Prime Optical as warnings.
Probable Cause	Probable cause of the selected alarm. Some possible values include: • Not Applicable/Unknown—If no additional information is available • Mismatch of equipment and attributes (MEA) alarm—For misconfigured pluggable port modules (PPMs) • Link Layer Keep-Alive Failure—When the keepalive frame on the POS port is disabled and the port is shut down • Bad Packet Count Exceeds Threshold—When the packets through the front port have CRC errored frames • Auto-Negotiation Remote Failure Indication—When a remote Gigabit Ethernet port is shut down from a local port
Condition	Error message or condition name that is associated with the alarm or event.
Affected Object	Name of the object where the selected alarm occurred.
Module Name	Name of the module where the selected alarm occurred.
Physical Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.
NE Alarm Time	Date and time when the alarm occurred on the NE.
Service Affecting	Whether the alarm or event is service affecting (SA). Values are: • True—The alarm is service affecting • False—The alarm is not service affecting

B.11.1.11 DWDM

The DWDM Properties pane allows you to manage and provision DWDM connections. The Properties pane contains the following tabs:

- B.11.1.11.1 Provisioning Tab, page B-305
- B.11.1.11.2 Connections Tab, page B-306
- B.11.1.11.3 Span Check Tab, page B-306
- B.11.1.11.4 APC Tab, page B-307
- B.11.1.11.5 Node Setup Tab, page B-308
- B.11.1.11.6 Side Tab, page B-308
- B.11.1.11.7 All Facilities Tab, page B-308
- B.11.1.11.8 Passive Cards Tab, page B-309
- B.11.1.11.9 Alien Wavelength Tab, page B-309
- B.11.1.11.10 Fiber Attribute Tab, page B-310

B.11.1.11.1 Provisioning Tab

The Provisioning tab allows you to view and change the optical parameters for the ONS 15454-M6 NE. The optical parameters might have already been provisioned manually or by automatic node setup (ANS).

Table B-408 Field Descriptions for the Provisioning Tab

Field	Description
Attribute Name	Displays the Properties pane name that is imported from or exported to the Cisco MetroPlanner configuration file.
Value	Displays the default value of the corresponding Properties pane name imported from or exported to the Cisco MetroPlanner configuration file.

Table B-408 Field Descriptions for the Provisioning Tab (continued)

Field	Description
Origin (*Available in ONS 15454 SDH R8.0 and later*)	Shows how the parameter is set. Possible values are: • Default • Automatic • Provisioned • Imported
Note (*Available in ONS 15454 SDH R8.0 and later*)	Displays error details if ANS fails to set the parameter. Possible errors are: • Error during NE board navigation; value is not calculated • Cannot send the parameter request to far-end node; value is not calculated • No response from far-end node; value is not calculated • Configuration is not supported; value is not calculated • Far-end node configuration is not supported; value is not calculated • OSC far-end launch power is not available; value is not calculated • Far-end launch power is not available; value is not calculated • Span loss value is not available; value is not calculated • Fiber stage insertion loss is not available; value is not calculated • Preamplifier tilt is not available; value is not calculated • Add/drop output power is not available; value is not calculated • NE node launch power is not available; value is not calculated • WXC degree is not available; value is not calculated • Value is out of range • Read-only attribute; value is not calculated

B.11.1.11.2 Connections Tab

The Connections tab allows you to create or delete DWDM connections or internal patchcords. It also allows you to calculate DWDM connections.

Table B-409 Field Descriptions for the Connections Tab

Field	Description
From	The unit or port from which the internal patchcord originates.
To	The unit or port at which the internal patchcord terminates.
Wavelength	Shows the wavelength value if the internal patchcord is between two channel ports. Otherwise, it shows *N/A*.

B.11.1.11.3 Span Check Tab

The Span Check tab allows you to check the span loss between the selected node and the previous node in the chain. The span check is always in reception.

Note If the Measured Span Loss value crosses the Min or Max Expected Span Loss threshold, a condition is raised.

Table B-410 Field Descriptions for the Span Check Tab

Field	Description
Retrieve Span Loss Values button	Runs the span loss verification function and retrieves values for the measured span loss column.
Side	Specifies the side for which span loss information is displayed (east-to-west or west-to-east).
Min Exp. Span Loss	Specifies the minimum expected span loss (in dBm) for the incoming span. This value is imported from MetroPlanner, but can be modified manually.
Max Exp. Span Loss	Specifies the maximum expected span loss (in dBm) for the incoming span.
Meas. Span Loss	The measured span loss value.
Resolution	The resolution or accuracy of the span loss measurement.
Measured By	Specifies the channel on which the span check was calculated.

B.11.1.11.4 APC Tab

The APC tab allows you to manually run the automatic power control (APC) function, disable and enable APC, and view the date and time the power control setpoint was last checked and modified.

Table B-411 Field Descriptions for the APC Tab

Field	Description
Disable APC button (*available in CTM R7.2 and earlier*)	Disables the automatic power control function. **Caution** Disabling APC should be performed only for specific maintenance actions. When APC is disabled, aging compensation calculations are not performed and circuits cannot be activated.
Run APC button (*available in CTM R7.2 and earlier*)	Runs the automatic power control function manually.
Slot ID (*available in CTM R7.2 and earlier*)	The slot number for power control information and actions.
Card (*available in CTM R7.2 and earlier*)	The card type that is installed in the slot.
Port	The port number.
Last Modification	Date and time the power control setpoint was last modified.
Param (*available in CTM R8.0 and later*)	All the parameters associated with the ports.
Last Check	Date and time the power control setpoint was last verified.

Table B-411 Field Descriptions for the APC Tab (continued)

Field	Description
Side (*available in CTM R8.0 and later*)	Lists all the NEs and their sides that belong to the APC domain.
APC State (*available in CTM R8.0 and later*)	Displays the actual state of the APC. Values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.

B.11.1.11.5 Node Setup Tab

The Node Setup tab allows you to automatically preprovision NEs.

Table B-412 Field Descriptions for the Node Setup Tab

Field	Description
XML Settings	
Select XML File	Click **Browse** to select an XML file (generated by the MetroPlanner application). Prime Optical parses the XML file selected by the operator and checks the accuracy of its content.
Log Settings	
Select Log File	Click **Browse** to select a log file to which the results of the operations you perform will be saved.
Launch ANS Wizard button	Click the **Launch Wizard** button to launch the Automatic Node Setup wizard. See 7.12.11 Configuring Automatic Node Setup, page 7-340 for more information.

B.11.1.11.6 Side Tab

The Side tab allows you to view, edit, and delete sides defined for an ONS 15454-M6 NE.

Table B-413 Field Descriptions for the Side Tab

Field	Description
Create button	Allows you to create side objects for the NE.
Modify button	Allows you to modify the side ID of an existing side object.
Delete button	Allows you to delete side objects.
Side	Displays the NE's side ID.
Line In	Displays the index of the receive side of the OTS port.
Line Out	Displays the index of the transmit side of the OTS port.

B.11.1.11.7 All Facilities Tab

The All Facilities tab allows you to view the DWDM and optical ports for the ONS 15454-M6 NE.

Table B-414 Field Descriptions for the All Facilities Tab

Field	Description
Port	Displays the card port number, shelf ID, and slot number. **Note** Shelf ID is not included in the port number if the node is not a multishelf NE.
Power	Displays the current power for the port.
State	Displays the administrative state of the port.
Service State	Displays the service state of the port.
Retain Selected button	Displays only the ports that you selected.
Show All button	Retrieves and displays all the optical and DWDM ports for the NE.

B.11.1.11.8 Passive Cards Tab

The Passive Cards tab allows you to view information about passive units provisioned in CTC.

Note Passive units can be provisioned in CTC only.

Table B-415 Field Descriptions for the Passive Cards Tab

Field	Description
Passive Cards	
ID	Displays the passive card shelf ID.
Equipment Name	Displays the general card type/name.
Location	Displays the location of the passive card.
Description	Displays the passive card description.
Optical Ports	
Port	Displays the port number.
Type	Displays the port type.
MPO	Displays any physical multifiber push connectors.
Wavelength	Displays the port wavelength.

B.11.1.11.9 Alien Wavelength Tab

The Alien Wavelength tab allows you to view and edit the port and wavelength parameters defined for an ONS 15454-M6 NE. Click the **Refresh** button to refresh the Alien Wavelength table.

Note Alien Wavelength is applicable to ONS 15454 NEs that support WSON nodes.

Table B-416 Field Descriptions for the Alien Wavelength Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Create button	Allows you to create alien wavelengths for the NE. See 7.12.15 Creating Alien Wavelength for more information.
Edit button	Allows you to modify the existing alien wavelength value. See 7.12.16 Editing Alien Wavelength for more information.
Position	Displays information about the shelf, slot, and port on which the alien wavelength is configured.
Alien Wavelength	Displays the alien wavelength class.
Lambda	Displays the alien wavelength value.
FEC	Displays the FEC mode.

B.11.1.11.10 Fiber Attribute Tab

The Fiber Attribute tab allows you to view the fiber parameters defined for an ONS 15454-M6 NE.

Note Fiber Attribute is applicable to ONS 15454 NEs that support WSON node.

Table B-417 Field Descriptions for the Fiber Attribute Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Toggle button	Click the **Toggle** button to select the unit of measure.
Optical Side	Displays the name of the optical side to which the fiber is connected.
Fiber Type	Choose the fiber type from the drop-down list.
Fiber Number	Displays the number of the fiber associated to the optical side. Useful when different types of fiber are present on the span.
Fiber Length	Allows you to edit the fiber length.

B.11.1.11.11 WSON Tab

The WSON tab allows you to view and acknowledge the unverified alarms at the circuit level.

Table B-418 Field Descriptions for the WSON Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Acknowledge WSON Alarm button	Click the **Acknowledge WSON Alarm** button to acknowledge a WSON alarm.
Affected Circuits button	Click the **Affected Circuits** button to view the affected circuits. If there are circuits affected by the selected alarm, the new circuit report is displayed. See 7.2.28.2 Working with Circuit Reports for more information. **Note** The Affected Circuits button is enabled only when an alarm condition is selected.

Table B-418 Field Descriptions for the WSON Tab (continued)

Field	Description
ID	Displays the ID of the NE from the Domain Explorer.
PS	Perceived severity of the selected alarm (critical, major, minor, or warning). The background color also indicates the severity, where: • Red = Critical • Orange = Major • Yellow = Minor • Blue = Warning • Green = Cleared **Note** For the ONS 15530 and ONS 15540, alarms that are shown in the command-line interface (CLI) as informational are shown in Prime Optical as warnings.
Probable Cause	Probable cause of the selected alarm. Some possible values include: • Not Applicable/Unknown—If no additional information is available • Mismatch of equipment and attributes (MEA) alarm—For misconfigured pluggable port modules (PPMs) • Link Layer Keep-Alive Failure—When the keepalive frame on the POS port is disabled and the port is shut down • Bad Packet Count Exceeds Threshold—When the packets through the front port have CRC errored frames • Auto-Negotiation Remote Failure Indication—When a remote Gigabit Ethernet port is shut down from a local port
Condition	Error message or condition name that is associated with the alarm or event.
Affected Object	Name of the object where the selected alarm occurred.
Module Name	Name of the module where the selected alarm occurred.
Physical Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.
NE Alarm Time	Date and time when the alarm occurred on the NE.
SA	Whether the alarm or event is service affecting (SA). Values are: • Yes—The alarm is service affecting • No—The alarm is not service affecting • N/A—No information is provided by the NE

B.11.1.12 OSI

The OSI Properties pane allows you to provision ONS 15454-M6 Open System Interconnection (OSI) parameters. The Properties pane contains the following tabs:

- B.11.1.12.1 Main Setup Tab, page B-312
- B.11.1.12.2 TARP-Config Tab, page B-312
- B.11.1.12.3 TARP-TDC Tab, page B-314
- B.11.1.12.4 TARP-MAT Tab, page B-314

- B.11.1.12.5 Routers-Setup Tab, page B-314
- B.11.1.12.6 Subnets Tab, page B-315
- B.11.1.12.7 Tunnels Tab, page B-316
- B.11.1.12.8 IS-IS RIB Tab, page B-316
- B.11.1.12.9 ES-IS RIB Tab, page B-317

B.11.1.12.1 Main Setup Tab

The Main Setup tab allows you to provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-419 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI end system (ES). ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1	Provisions the node as an OSI intermediate system (IS). ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs. For the ONS 15454-M6, Intermediate System Level 1 is the Cisco default.
Intermediate System Level 1/Level 2	The ONS 15454-M6 performs all IS functions. It communicates with other IS and ES nodes within an OSI area and broadcasts ISHs to IS nodes in other areas to which it is connected.
Node Routing Mode	
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.11.1.12.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-420 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.

Table B-420 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial ONS 15454 SDH startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.
Timers	
LDB Entry	Sets the TARP LDB timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.11.1.12.3 TARP-TDC Tab

Table B-421 Field Descriptions for the TARP-TDC Tab

Field	Description
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.
Type	Indicates how the TARP data cache entry was created. It can be either: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Selected Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.

B.11.1.12.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-422 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.11.1.12.5 Routers-Setup Tab

Table B-423 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. The ONS 15454-M6 provides three virtual routers, numbered 1 through 3.
System ID	Displays the NSAP system ID of the virtual router. The NSAP system identifier is set to the node's first IEEE 802.3 MAC address + *n*, where *n* = 0 through 2. For the primary router (Router 1), *n* = 0.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.

Table B-423 Field Descriptions for the Routers-Setup Tab (continued)

Field	Description
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Edit button	Click **Edit** to modify the address parameters.

B.11.1.12.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-424 Field Descriptions for the Subnets Tab

Field	Description
Slot/Port	The subnet slot and port.
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64. For the ONS 15454 LAN subnet, the default DIS priority is 63. This priority should not be changed.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.

Table B-424 Field Descriptions for the Subnets Tab (continued)

Field	Description
Edit button	Click **Edit** to modify the subnet parameters.
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.

B.11.1.12.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-425 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.11.1.12.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-426 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the OSI router number. The ONS 15454-M6 provides three virtual routers, numbered 1 through 3.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.11.1.12.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-427 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the OSI router number. The ONS 15454-M6 provides three virtual routers, numbered 1 through 3.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.11.1.13 ECU Ports Alarms Suppression

The External Control Unit (ECU) Ports Alarms Suppression Properties pane allows you to suppress the alarms for the MS_ISC ports of the ECU.

Table B-428 Field Descriptions for the ECU Ports Alarms Suppression Properties Pane

Field	Description
Ports	The port number.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms for the MS_ISC ports of the ECU are suppressed.

B.11.1.14 Alarm Extenders

The Alarm Extenders Properties pane allows you to view external alarm information and create custom alarm types. The Alarm Extenders Properties pane contains the following tabs:

- B.11.1.14.1 Alarm Dry Contacts Mode Tab, page B-318
- B.11.1.14.2 External Alarms Tab, page B-318
- B.11.1.14.3 External Controls Tab, page B-318
- B.11.1.14.4 User Defined Alarms Tab, page B-319

B.11.1.14.1 Alarm Dry Contacts Mode Tab

The Alarm Dry Contacts Mode tab indicates whether the input and output ports are External Alarms or External Controls.

Table B-429 Field Descriptions for the Alarm Dry Contacts Mode Tab

Field	Description
Input/Output	Select External Alarm if you use external alarms only; select External Control if you use both external alarms and external controls. Selecting only External Alarm gives you 14 external alarm ports and no external control ports. If you select External Control, four of the ports are converted to external control ports, leaving you with 10 external alarm ports.
External Controls	Allows you to view and update external controls.
External Alarms	Allows you to view and update external alarm information.

B.11.1.14.2 External Alarms Tab

Table B-430 Field Descriptions for the External Alarms Tab

Field	Description
Input No.	Displays the number assigned to the external alarm. To activate the input number, check the Enabled check box and set the input number.
Enabled	If checked, the Input No. field for the alarm gets activated.
Alarm Type	Sets the type of alarm. Select an alarm type from the drop-down list; more than 50 types of alarms are available.
Severity	Defines the severity of the alarm. The alarm severity level indicates the state of the LEDs. The LEDs are active if the alarm level is set to one of the following: Critical (CR), Major (MJ), or Minor (MN). The LEDs are not active if the alarm level is set to one of the following: Not Alarmed (NA) or Not Reported (NR). However, even if the LEDs are not active, they will continue to send reports to Prime Optical.
Raised When	Indicates the contact condition of the device (Open or Closed), which triggered the alarm.
Virtual Wire	Assigns the alarm to a virtual wire.
Description	Allows you to enter a description for the alarm.

B.11.1.14.3 External Controls Tab

The External Controls tab allows you to view and update external controls.

Table B-431 Field Descriptions for the External Controls Tab

Field	Description
Control No.	The control number.
Enabled	Check to activate the fields for the control number.
Control Type	Choose a control type from the provided list.
Trigger Type	Choose a trigger type: a local minor, major, or critical alarm; a remote minor, major, or critical alarm; or a virtual wire activation.
Description	Enter a description.

B.11.1.14.4 User Defined Alarms Tab

The User-Defined Alarms tab allows you to view, add, and delete custom alarm types on the ONS 15454-M6 SONET/SDH NE.

Table B-432 Field Descriptions for the User Defined Alarms Tab

Field	Description
Alarm Types	Lists the user-defined alarm types that have been created on the ONS 15454-M6 SONET/SDH. You can create up to 50 custom environmental alarms, which are reported in the Condition column in the Alarm Log and Alarm Browser windows.
Add	Click the Add button to add a new custom alarm type. Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).
Delete	Click the Delete button to delete an existing alarm type.

B.12 ONS 15454-M2 NE Explorer

When you choose **Configuration > NE Explorer** for the ONS 15454 MSTP, the window that Prime Optical displays consists of a tree on the left side and a properties pane on the right. The tree provides a hierarchical view and alarm status of the NE's physical shelves and slots. The properties pane shows information about the selected entity. See B.12.1 Node Properties Pane—ONS 15454-M2, page B-320 for more information.

Note Refer to the Cisco ONS 15454 SONET, SDH, and DWDM components' installation documents for precautions, guidelines, and procedures for converting single-shelf NEs to multishelf NEs. Incorrect procedures for converting single-shelf NEs to multishelf NEs can result in nodes not being properly discovered and managed by Prime Optical.

Caution If a shelf is added to a node that is managed by Prime Optical, force a Refresh from NE operation to correctly update the node inventory. Inconsistencies in the node inventory can occur if the operation is not performed. Those inconsistencies are reflected in all Prime Optical user interfaces, including the gateways.

B.12.1 Node Properties Pane—ONS 15454-M2

The node properties pane displays information about the ONS 15454-M2 MSTP NE. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.12.1.1 Shelf View, page B-320
- B.12.1.2 General, page B-320
- B.12.1.3 Network, page B-322
- B.12.1.4 DCC/GCC/OSC, page B-330
- B.12.1.5 Timing, page B-332
- B.12.1.6 Protection, page B-335
- B.12.1.7 NE Defaults, page B-336
- B.12.1.8 Security, page B-337
- B.12.1.9 Alarm, page B-341
- B.12.1.10 Alarm Conditions, page B-342
- B.12.1.11 DWDM, page B-343
- B.12.1.12 OSI, page B-350

B.12.1.1 Shelf View

The Shelf View Properties pane displays a graphic of the ONS 15454-M2 that is selected in the NE Explorer tree. Moving the mouse pointer over the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset, delete, or change the card. For unprovisioned slots, the right-click menu allows you to add a card.

B.12.1.2 General

The General Properties pane displays identification information and voltage thresholds for the ONS 15454-M2 NE.

Table B-433 Field Descriptions for the General Properties Pane

Field	Description
Identification Tab	
NE ID	Displays the ID of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name of the node contact person and the phone number.
Description	Enter a description of the NE.
System Description	Displays the NE type and the version of the system software.

Table B-433 Field Descriptions for the General Properties Pane (continued)

Field	Description
SNTP Settings	
Use NTP/SNTP Server	If checked, CTC uses an SNTP server to set the date and time of the node. Using an SNTP server ensures that all ONS 15454-M2 network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. If you check the **Use NTP/SNTP Server** check box, enter the server's IP address in the next field. If you do not use an SNTP server, complete the Time and Time Zone fields. The ONS 15454-M2 will use these fields for alarm dates and times.
SNTP Server	Displays the SNTP server IP address.
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.
Use Daylight Savings Time	If checked, Daylight Savings Time is observed.
APC State	
Side	Lists all the NEs and their sides that belong to the automatic power control (APC) domain.
APC State	Displays the actual state of the APC. Values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.
Power Monitor Tab	
ELWBATVG	Allows you to set the monitor value for extreme low battery voltage (ELWBATVG) in volts direct current (VDC).
LWBATVG	Allows you to set the monitor value for low battery voltage (LWBATVG) in VDC.
HIBATVG	Allows you to set the monitor value for high battery voltage (HIBATVG) in VDC.
EHIBATVG	Allows you to set the monitor value for extreme high battery voltage (EHIBATVG) in VDC.
Current Voltage Environment	Shows the current voltage environment.
Multishelf Config Tab	
The Multishelf Config Tab for this card is disabled.	
Voltage/Temperature Tab	
Voltage A, B, and so on	Displays the voltage (in millivolts) of the shelf that corresponds to the power supply.
Temperature	Displays the temperature (in degrees Celsius) of the shelf.

Table B-433 Field Descriptions for the General Properties Pane (continued)

Field	Description
Reset	Resets all voltage and temperature values.
Help	Opens context-sensitive help.

B.12.1.3 Network

The Network Properties pane displays information about the NE network address. The Network Properties pane contains the following tabs:

- B.12.1.3.1 Address Tab, page B-322
- B.12.1.3.2 Static Routes Tab, page B-323
- B.12.1.3.3 OSPF Tab, page B-323
- B.12.1.3.4 OSPF Area Range Tab, page B-324
- B.12.1.3.5 OSPF Virtual Links Tab, page B-325
- B.12.1.3.6 SNMP Tab, page B-325
- B.12.1.3.7 Firewall/Proxy Tab, page B-326
- B.12.1.3.8 Routing Table Tab, page B-326
- B.12.1.3.9 RIP Routing Table Tab, page B-327
- B.12.1.3.10 RIP Tab, page B-327
- B.12.1.3.11 Proxy Tunnels Tab, page B-328
- B.12.1.3.12 Firewall Tunnels Tab, page B-328
- B.12.1.3.13 Secure Config Mode Tab, page B-329
- B.12.1.3.14 FTP Hosts Tab, page B-329

B.12.1.3.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-434 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.
MAC Address	Displays the ONS 15454-M2 address as it is identified on the IEEE 802 MAC layer.
LCD IP Setting	Allows you to configure the LCD screen. Select from the following values: • Allow Configuration—Enables shelf address changing from the LCD. • Display Only—Prevents users from changing the shelf IP address from the LCD screen. • Suppress Display—Makes the LCD screen blank.

Table B-434 Field Descriptions for the Address Tab (continued)

Field	Description
Forward DHCP Requests	If checked, forwards DHCP requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.
IPv6 Config	
Enable IPv6	If checked, allows you to configure the node to use the IPv6 protocol and to assign an IPv6 address to the node.
IPv6 Address	Enter the IPv6 address of the node.
Default IPv6 Router	Enter the IPv6 default router of the node.
IPv6 Subnet Mask	Enter the IPv6 subnetwork mask length.

B.12.1.3.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and ONS 15454-M2 connectivity and create or delete static routes.

Table B-435 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the ONS 15454-M2 and the computer.

B.12.1.3.3 OSPF Tab

The OSPF tab displays OSPF information. OSPF is a link-state Internet routing protocol.

Table B-436 Field Descriptions for the OSPF Tab

Field	Description
Slot	Displays the slot number.
Port	Displays the port number.
DCC OSPF Area ID	Displays the number that identifies the ONS 15454-M2 as a unique OSPF area. The OSPF area number can be from 0.0.0.0 to 255.255.255.255. The number must be unique to the LAN OSPF area.
SDCC Metric	Sets a cost for sending packets across the Section Data Communications Channel (SDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
LDCC Metric	Sets a cost for sending packets across the Line Data Communications Channel (LDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.

Table B-436 Field Descriptions for the OSPF Tab (continued)

Field	Description
OSPF on LAN	
OSPF Active on LAN	If checked, enables the ONS 15454-M2 OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15454-M2 NEs that directly connect to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the ONS 15454-M2 is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the value used for this NE in designated router election. The Cisco default value is zero (0). A router that has Router Priority set to 0 is ineligible to become a designated router on the attached network.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
OSPF Authentication	
Authentication Type	Displays Simple Password if the router where the ONS 15454-M2 is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.12.1.3.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-437 Field Descriptions for the OSPF Area Range Tab

Field	Description
Range Address	Displays the area IP address for the ONS 15454-M2 NEs that reside within the OSPF area. For example, if the ONS 15454-M2 OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the ONS 15454-M2 NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF routing table is advertised.

B.12.1.3.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-438 Field Descriptions for the OSPF Virtual Links

Field	Description
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.12.1.3.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-439 Field Descriptions for the SNMP Tab

Field	Description
Use Generic MIB	If checked, allows you to transfer traps to a local MIB browser or server.
Engine ID	Displays the unique SNMP node engine ID.
Allow SNMP Set	If checked, allows you to use SNMP management software with the ONS 15454-M2.
Allow SNMP Proxy	If checked, allows you to configure the ONS 15454-M2 to proxy SNMP calls.
IP Address	The IP address of the NMS.
Community Name	The SNMP community name. **Note** The SNMP community string cannot be blank in Prime Optical. If a blank community string is required in CTC builds earlier than R4.6, you must set the blank community string in CTC.
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.
Relay A IP Address	The first ONS 15454-M2 to relay traps through. The IP address is appended to the base community string to tell the first NE the IP address and the port to forward the trap to. The second NE recognizes the IP address and strips it from the community string before forwarding the trap.
Relay A Community Name	The community name for the relay A node to use in the trap when forwarding it.

Table B-439 Field Descriptions for the SNMP Tab (continued)

Field	Description
Use Generic MIB	If checked, allows you to transfer traps to a local MIB browser or server.
Engine ID	Displays the unique SNMP node engine ID.
Relay B IP Address	The second ONS 15454-M2 to relay traps through.
Relay B Community Name	The community name for the relay B node to use in the trap when forwarding it.
Relay C IP Address	The third ONS 15454-M2 to relay traps through.
Relay C Community Name	The community name for the relay C node to use in the trap when forwarding it.

B.12.1.3.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-440 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Gateway Settings	
Enable Proxy Server on Port	If checked, the ONS 15454-M2 serves as a proxy for connections between the Prime Optical server and ONS 15454-M2 that are DCC-connected to the proxy ONS 15454-M2. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Configures the ONS 15454-M2 to proxy as an ENE. Note that an alternate expansion for ENE is *external network element*. • Gateway Network Element (GNE)—Configures the ONS 15454-M2 to proxy as a GNE. • Proxy-only—Configures the ONS 15454-M2 to act as a proxy. If unchecked, the node does not proxy; instead, it acts as a LAN-connected NE (LNE).

B.12.1.3.8 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-441 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.

Table B-441 Field Descriptions for the Routing Table Tab (continued)

Field	Description
Usage	Shows the number of times the listed route has been used.
Interface	Shows the ONS 15454-M2 interface used to access the destination. Values are: • cpm0—The ONS 15454-M2 Ethernet interface (that is, the RJ-45 jack on the TNC or TSC and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface.

B.12.1.3.9 RIP Routing Table Tab

The RIP Routing Table tab allows you to view the Routing Information Protocol (RIP) routing table.

Table B-442 Field Descriptions for the RIP Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host.
Mask	Displays the subnet mask used to reach the destination network or host.
Gateway	Displays the IP address of the gateway used to reach the destination network or host.
Cost	Displays the hop count metric. The valid range is from 1 to 15.

B.12.1.3.10 RIP Tab

The RIP tab allows you to view and configure the RIP parameters.

Note
- When you enable RIP, you must wait for approximately one minute for the default RIP address summary to become visible.
- When you disable RIP on the NE, all summary address entries in the Summary Address table are deleted.

Table B-443 Field Descriptions for the RIP Tab

Field	Description
RIP Active	Check this check box to enable RIP. Uncheck it to disable RIP. **Note** Checking the RIP Active check box and clicking the **Apply** button does not enable RIP. Instead, you must check the RIP Active check box, click the **Create** button, and use the Create RIP Address Summary dialog box to create a new RIP address. For details, see 5.3.5 Using RIP, page 5-8.
RIP Type	Select RIP version 1.0 or RIP version 2.0.
Metric	Enter the hop count metric. The valid range is from 1 to 15.
Authentication Type	Select the authentication type.
Authentication Key	Enter the authentication key (password) if the authentication type is Simple Password.

Table B-443 Field Descriptions for the RIP Tab (continued)

Field	Description
Confirm Authentication Key	Retype the authentication key to confirm it.
RIP Address Summary	• Summary Address—Displays the summary address. • Mask Length—Displays the subnet mask length. • Cost—Displays the hop count metric. The valid range is from 1 to 15.
Create button	Click **Create** to create a new RIP address. See 5.3.5 Using RIP, page 5-8.
Delete button	Click **Delete** to delete an existing RIP address.

B.12.1.3.11 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-444 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.12.1.3.12 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-445 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.12.1.3.13 Secure Config Mode Tab

The Secure Config Mode tab allows you to configure the secure config mode. The fields shown depend on whether the NE is in secure mode. For example, the Backplane Ethernet Port values are displayed only when the NE is in secure mode.

Table B-446 Field Descriptions for the Secure Config Mode Tab

Field	Description
TCP/IP Mode	
Normal	When this text is visible, the NE is not in secure mode. There is one IP address shared by TNC/TSC and backplane Ethernet ports, with full connectivity between ports.
Secure	When this text is visible, the NE is in secure mode. There are separate IP addresses for TNC/TSC and backplane Ethernet ports, with no connectivity between ports.
Mode not locked	When this text is visible, you can change the secure mode.
Mode permanently locked and cannot be unlocked	When this text is visible, the NE is in secure mode, and the secure mode is locked and cannot be changed.
Change Mode	
Change Mode button	Opens the Change Secure Mode dialog box, which allows you to change the mode of the NE from secure to unsecure, and vice versa. This button is enabled only if an active TNC/TSC card exists on the NE.
Lock	
Lock button	When the NE is in secure mode, the Lock button locks the secure mode on the NE/TNC/TSC so that it cannot be changed.

B.12.1.3.14 FTP Hosts Tab

The FTP Hosts tab allows you to configure database backup or restore and software download to an ENE when the firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which the FTP relay resumes blocking all FTP access for the ENEs.

Table B-447 Field Descriptions for the FTP Hosts Tab

Field	Description
Create button	Opens the Create New FTP Host dialog box, which allows you to create up to 12 new FTP hosts in a GNE/ENE firewall environment. See 5.3.10.1 Creating an FTP Host, page 5-22. **Note** You cannot create more than 12 FTP hosts.
Delete button	Deletes the selected FTP host.
FTP Host Address	Displays the FTP host IP address.
Prefix Length	Displays the FTP host subnet mask length.
Enable FTP Relay	Indicates whether FTP relay is enabled or disabled. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Displays the number of minutes that the FTP relay is configured to run, after which the FTP relay resumes blocking all FTP access for the ENEs.

B.12.1.4 DCC/GCC/OSC

The DCC/GCC/OSC Properties pane allows you to create, delete, and view SDCCs, LDCCs, GCCs, OSCs, and DWDM ring IDs.

Table B-448 Field Descriptions for the DCC/GCC/OSC Properties Pane

Field	Description
SDCC	
Create	Click the Create button to create new terminations on SONET or SDH cards.
Edit	Click the Edit button to modify existing terminations on SONET or SDH cards.
Delete	Click the Delete button to delete the selected SDCC, LDCC, GCC, or OSC.
SDCC Terminations	Displays the slot, port, and card type of an SDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.

Table B-448 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
Service State	Select the state of the termination: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion. • UEQ—Unequipped; there is nothing in the slot. • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted. • SWDL—Software download in progress. • MT—Maintenance, as per the Admin State change. • AINS—Automatic in service. • DSBLD—Traffic is disabled on the entity. • LPBK—Port or connection has a loopback on it. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11 on page 11-15. See Table 11-11 on page 11-15 for the Service state-Secondary state possible values. **Note** If the NE release does not support the Service state, this field shows N/A.
LDCC	
LDCC Terminations	Displays the slot, port, and card type of an LDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the LDCC termination (IS-NR, OOS-AU, OOS-MA, OOS-AUMA) plus the secondary state (MEA, UEQ, UAS, SWDL, MT, AINS, DSBLD, LPBK).
GCC	
GCC Terminations	Displays the slot, port, and card type of a GCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
GCC Rate	Displays the GCC rate.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.

Table B-448 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only. For GCCs, this column is always N/A.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the GCC termination (IS-NR, OOS-AU, OOS-MA, OOS-AUMA) plus the secondary state (MEA, UEQ, UAS, SWDL, MT, AINS, DSBLD, LPBK).
OSC	
OSC Terminations	Displays the slot, port, and card type of an OSC termination.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only.
OSI SNPA	If the OSC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Displays the state of the OSC termination.

B.12.1.5 Timing

The Timing Properties pane contains the following tabs:

- B.12.1.5.1 General Tab, page B-332
- B.12.1.5.2 Reference List Tab, page B-334
- B.12.1.5.3 Status Tab, page B-334
- B.12.1.5.4 Timing Report Tab, page B-335

B.12.1.5.1 General Tab

The General tab displays general timing information.

Note BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.

Table B-449 Field Descriptions for the General Tab

Field	Description
General Timing	
Timing Mode	Set to External if the ONS 15454-M2 derives its timing from a BITS source wired to the backplane pins; set to Line if timing is derived from an OC-N card that is optically connected to the timing node. A third option, Mixed, allows you to set external and line timing references. **Caution** Mixed timing might cause timing loops. Use this mode with care.

Table B-449 Field Descriptions for the General Tab (continued)

Field	Description
SSM Message Set	Choose the SSM set level supported by your network. SSM is an SDH protocol that communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SDH Line layer. They enable SDH devices to automatically select the highest quality timing reference and to avoid timing loops. If a Generation 1 node receives a Generation 2 message, the message is mapped down to the next available Generation 1 node. For example, an ST3E message becomes an ST3.
Revertive	If checked, the ONS 15454-M2 reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
Quality of RES	If your timing source supports the reserved S1 byte, set the timing quality here. (Most timing sources do not use RES.) Qualities are displayed in descending quality order as ranges. For example, ST3 < RES < ST2 means the timing reference is higher than a Stratum 3 and lower than a Stratum 2.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.
BITS IN Facilities	
In State	Set the BITS reference to Locked or Unlocked. For nodes set to Line timing with no equipment timed through BITS Out, set the state to Locked. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to Unlocked.
Coding	Set to the coding used by your BITS reference, either AMI or HDB3.
Framing	Set to the framing used by your BITS reference.
Sync Messaging	If checked, enables the SSM for BITS In. (SSM is not available if Framing is set to Super Frame.)
Admin SSM	If the Sync Messaging check box is not checked, you can choose the SSM Generation 2 type from the drop-down list.
BITS OUT Facilities	
Out State	Set the BITS reference to Locked or Unlocked. For nodes set to Line timing with no equipment timed through BITS Out, set the state to Locked. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to Unlocked.
Coding	Set to the coding used by your BITS reference, either AMI or HDB3.
Framing	Set to the framing used by your BITS reference.
AIS Threshold	If SSM is disabled or Super Frame is used, sets the quality level where a node sends an AIS from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
LBO	If you are timing an external device connected to the BITS Out pins, set the distance between it and the ONS 15454. Options are 0-133 ft (Cisco default), 134-266 ft, 267-399 ft, 400-533 ft, and 534-655 ft.

B.12.1.5.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-450 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to Internal Clock. This is the Stratum 3 clock provided on the TNC/TSC. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal Clock. • Timing Mode set to Line—Options are the node's working optical cards and Internal Clock. **Note** For Timing Mode set to External and Timing Mode set to Line, select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1. • Timing Mode set to Mixed—Both BITS and optical cards are available, allowing you to set a mixture of external BITS and optical trunk cards as timing references.
BITS-1 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for the equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.
BITS-2 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for the equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.

B.12.1.5.3 Status Tab

The Status tab displays timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.
- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-451 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.

Table B-451 Field Descriptions for the Status Tab (continued)

Field	Description
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference.
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 out timing reference.
Operations	Execute a switch on the BITS-1 out timing reference.
BITS-2 Out	
BITS-2 Out	Set the BITS-2 out timing reference.
Status	Displays the status of the BITS-2 out timing reference.
Operations	Execute a switch on the BITS-2 out timing reference.

B.12.1.5.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

B.12.1.6 Protection

The Protection Properties pane contains the following tabs:

- B.12.1.6.1 Protection Groups Tab, page B-335
- B.12.1.6.2 Operations Tab, page B-336

B.12.1.6.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-452 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.	
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.
Type	Choose the protection type (1:1, 1:N, 1+1, or Y-cable) from the drop-down list. The protection selected determines the cards that are available to serve as protect and working cards. For example, if you choose 1:N protection, only DS-1N and DS-3N cards are displayed.
Protect Module	View the protect module if using 1:1, 1:N, or Y-cable protection. **Note** For OTU2_XP cards, the card name might be shown as XP_4_10G_LINE_CARD.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.

Table B-452 Field Descriptions for the Protection Groups Tab (continued)

Field	Description
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select the 1+1 (port) type.
Revertive	If checked, the ONS 15454-M2 reverts traffic to the working card or port after failure conditions for the amount of time entered in Reversion Time. This option is not available if you select the 1:N (card) type.
Reversion Time	If Revertive is checked, enter the amount of time following failure condition correction that should elapse before the ONS 15454-M2 switches back to the working card or port. Use half-minute increments. This option is available only if you select the 1:1 (card) type.
Recovery Guard Time	The recovery guard timer prevents rapid switches due to SD or SF failures. After the SD or SF condition is cleared on a facility protected by Optimized 1+1 protection, no switches are performed for the duration of the recovery guard timer.
Verification Guard Time	The verification guard timer specifies the amount of time that a user command has to complete. If a user command cannot be completed within the duration set by the verification guard timer, the command is cleared and an APS_CLEAR event is sent.
Detection Guard Time	The detection guard timer specifies the amount of time after a failure that the system has to complete a switch. After detecting an SD, SF, LOS, LOF, or AISL failure, the detection guard timer is started. If the detection guard timer is set to zero, the system completes a switch within 60 ms for failure events.

B.12.1.6.2 Operations Tab

The Operations tab displays protection group operation information.

Table B-453 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands. **Note** For OTU2_XP cards, the card name might be shown as XP_4_10G_LINE_CARD.
Switch Commands	Allows you to perform command switching.
Inhibit Switching	Allows you to inhibit command switching.

B.12.1.7 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the ONS 15454-M2 NE.

Table B-454 Field Descriptions for the NE Defaults Properties Pane

Field	Description
Load Data	Loads the values for NE defaults.
Parameter	Lists the default NE parameter.
Value	Shows the default parameter value, and allows you to change the default.
Units	Lists the unit of measure that corresponds to the default NE parameter.

Table B-454 Field Descriptions for the NE Defaults Properties Pane (continued)

Field	Description
Range	Lists the possible range of values for the default NE parameter.
Side Effects	Lists any side effects that could occur as a result of changing the default NE parameter.

You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.12.1.8 Security

The Security Properties pane allows you to view and edit security features for the ONS 15454-M2 NE. The Properties pane contains the following tabs:

- B.12.1.8.1 Policy Tab, page B-337
- B.12.1.8.2 Password Tab, page B-338
- B.12.1.8.3 Access Tab, page B-339
- B.12.1.8.4 RADIUS Server Tab, page B-340
- B.12.1.8.5 Legal Disclaimer Tab, page B-341

B.12.1.8.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-455 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.
SuperUser	Set the idle user timeout for a CTC SuperUser user.
User Lockout	
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.

Table B-455 Field Descriptions for the Policy Tab (continued)

Field	Description
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Sessions per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.
Disable Inactive User	If checked, inactive users are disabled automatically for the amount of time in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.12.1.8.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-456 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

B.12.1.8.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-457 Field Descriptions for the Access Tab

Field	Description
Access	
LAN Access	Specify the type of LAN access allowed. Values are EMS Only, No LAN Access, Front Craft and EMS, or Front and Craft.
Restore Timeout	This time period begins if *No LAN Access* is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Disable IPv4 Access for IPv6	Check this check box to disable IPv4 access for IPv6 ports.
Serial Craft Access	
Enable Craft Port	Check this check box to enable the craft port.
Shell Access	
Access State	Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SSH Port	Indicates the SSH port number that will be used.
SFTP Port	Indicates the SFTP port number.
Telnet Port	This is enabled if you selected the Non-secure access state. Enter the Telnet port number that will be used.
Use Standard Telnet Port	Check this check box to indicate that the standard Telnet port will be used.
Enable Shell Password	Indicates whether or not the Shell password is enabled. **Note** You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
EMS Access	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.
CORBA Listener Port	Select the port numbers for the Controller Card CORBA (IIOP) listener port and the Controller Card CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the Controller Card CORBA (IIOP) listener port is 683. The port number for the Controller Card CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.
TL1 Access	
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.
Pseudo-IOS Access (available for ONS 15454 SDH R9.2)	

Table B-457 Field Descriptions for the Access Tab (continued)

Field	Description
Access State	Pseudo CLI is a command-line interface on the NE that simulates a Cisco IOS connection. Select the pseudo-IOS access state from the drop-down list. You can select Disable, Non-secure, or Secure. If you choose Disable, the port is not configurable, which means that the node does not listen for pseudo-CLI connections. **Note** Pseudo-IOS functionality is available only if the node contains 10GE_XP or GE_XP cards in L2 mode.
Port	Enter the port number for pseudo-IOS access. If the Access State field is set to Disable, you cannot configure this field.
Other	
PM Clearing Privilege	Select the users privilege that allows clearing PM statistics for the NE.

B.12.1.8.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for the ONS 15454-M2 NE.

Table B-458 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.12.1.8.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-459 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.12.1.9 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual ONS 15454-M2 SDH nodes. The Properties pane contains the following tabs:

- B.10.1.10.1 Profile Tab, page B-262
- B.10.1.10.2 Alarm Behavior Tab, page B-262

B.12.1.9.1 Profile Tab

The Profile tab allows you to select, create, or delete alarm profiles.

Table B-460 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list. Click **Create** to create a new alarm profile for the NE. Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.12.1.9.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-461 Field Descriptions for the Alarm Behavior Tab

Field	Description
Node Profile	
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.12.1.10 Alarm Conditions

The Conditions Properties pane allows you to view all NE conditions (events with a Not Reported [NR] severity) at the node level. Alarm Conditions Properties pane gives a clear record of changes or events that do not result in alarms.

Note The Alarm Conditions tab is not updated when conditions change; therefore, you must click **Retrieve** to see any changes.

Table B-462 Field Descriptions for the Alarm Conditions Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Retrieve button	Click the **Retrieve** button. The Retrieve button requests the current set of fault conditions from the node, card, or network. Conditions include all fault conditions raised on the node, whether or not they are reported.
Perceived Severity	Perceived severity of the selected alarm (critical, major, minor, or warning). The background color also indicates the severity, where: • Red = Critical • Orange = Major • Yellow = Minor • Blue = Warning • Green = Cleared **Note** For the ONS 15530 and ONS 15540, alarms that are shown in the command-line interface (CLI) as informational are shown in Prime Optical as warnings.
Probable Cause	Probable cause of the selected alarm. Some possible values include: • Not Applicable/Unknown—If no additional information is available • Mismatch of equipment and attributes (MEA) alarm—For misconfigured pluggable port modules (PPMs) • Link Layer Keep-Alive Failure—When the keepalive frame on the POS port is disabled and the port is shut down • Bad Packet Count Exceeds Threshold—When the packets through the front port have CRC errored frames • Auto-Negotiation Remote Failure Indication—When a remote Gigabit Ethernet port is shut down from a local port
Condition	Error message or condition name that is associated with the alarm or event.
Affected Object	Name of the object where the selected alarm occurred.
Module Name	Name of the module where the selected alarm occurred.
Physical Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.
NE Alarm Time	Date and time when the alarm occurred on the NE.
Service Affecting	Whether the alarm or event is service affecting (SA). Values are: • True—The alarm is service affecting • False—The alarm is not service affecting

B.12.1.11 DWDM

The DWDM Properties pane allows you to manage and provision DWDM connections. The Properties pane contains the following tabs:

- B.12.1.11.1 Provisioning Tab, page B-344
- B.12.1.11.2 Connections Tab, page B-345

- B.12.1.11.3 Span Check Tab, page B-345
- B.12.1.11.4 APC Tab, page B-346
- B.12.1.11.5 Node Setup Tab, page B-347
- B.12.1.11.6 Side Tab, page B-347
- B.12.1.11.7 All Facilities Tab, page B-347
- B.12.1.11.8 Passive Cards Tab, page B-348
- B.12.1.11.9 Alien Wavelength Tab, page B-348
- B.12.1.11.10 Fiber Attribute Tab, page B-349

B.12.1.11.1 Provisioning Tab

The Provisioning tab allows you to view and change the optical parameters for the ONS 15454-M2 NE. The optical parameters might have already been provisioned manually or by automatic node setup (ANS).

Table B-463 Field Descriptions for the Provisioning Tab

Field	Description
Attribute Name	Displays the Properties pane name that is imported from or exported to the Cisco MetroPlanner configuration file.
Value	Displays the default value of the corresponding Properties pane name imported from or exported to the Cisco MetroPlanner configuration file.

Table B-463 Field Descriptions for the Provisioning Tab (continued)

Field	Description
Origin (*Available in ONS 15454 SDH R8.0 and later*)	Shows how the parameter is set. Possible values are: • Default • Automatic • Provisioned • Imported
Note (*Available in ONS 15454 SDH R8.0 and later*)	Displays error details if ANS fails to set the parameter. Possible errors are: • Error during NE board navigation; value is not calculated • Cannot send the parameter request to far-end node; value is not calculated • No response from far-end node; value is not calculated • Configuration is not supported; value is not calculated • Far-end node configuration is not supported; value is not calculated • OSC far-end launch power is not available; value is not calculated • Far-end launch power is not available; value is not calculated • Span loss value is not available; value is not calculated • Fiber stage insertion loss is not available; value is not calculated • Preamplifier tilt is not available; value is not calculated • Add/drop output power is not available; value is not calculated • NE node launch power is not available; value is not calculated • WXC degree is not available; value is not calculated • Value is out of range • Read-only attribute; value is not calculated

B.12.1.11.2 Connections Tab

The Connections tab allows you to create or delete DWDM connections or internal patchcords. It also allows you to calculate DWDM connections.

Table B-464 Field Descriptions for the Connections Tab

Field	Description
From	The unit or port from which the internal patchcord originates.
To	The unit or port at which the internal patchcord terminates.
Wavelength	Shows the wavelength value if the internal patchcord is between two channel ports. Otherwise, it shows *N/A*.

B.12.1.11.3 Span Check Tab

The Span Check tab allows you to check the span loss between the selected node and the previous node in the chain. The span check is always in reception.

Note If the Measured Span Loss value crosses the Min or Max Expected Span Loss threshold, a condition is raised.

Table B-465 Field Descriptions for the Span Check Tab

Field	Description
Retrieve Span Loss Values button	Runs the span loss verification function and retrieves values for the measured span loss column.
Side	Specifies the side for which span loss information is displayed (east-to-west or west-to-east).
Min Exp. Span Loss	Specifies the minimum expected span loss (in dBm) for the incoming span. This value is imported from MetroPlanner, but can be modified manually.
Max Exp. Span Loss	Specifies the maximum expected span loss (in dBm) for the incoming span.
Meas. Span Loss	The measured span loss value.
Resolution	The resolution or accuracy of the span loss measurement.
Measured By	Specifies the channel on which span check was calculated.

B.12.1.11.4 APC Tab

The APC tab allows you to manually run the automatic power control (APC) function, disable and enable APC, and view the date and time the power control setpoint was last checked and modified.

Table B-466 Field Descriptions for the APC Tab

Field	Description
Disable APC button (*available in CTM R7.2 and earlier*)	Disables the automatic power control function. **Caution** Disabling APC should be performed only for specific maintenance actions. When APC is disabled, aging compensation calculations are not performed and circuits cannot be activated.
Run APC button (*available in CTM R7.2 and earlier*)	Runs the automatic power control function manually.
Slot ID (*available in CTM R7.2 and earlier*)	The slot number for power control information and actions.
Card (*available in CTM R7.2 and earlier*)	The card type that is installed in the slot.
Port	The port number.
Last Modification	Date and time the power control setpoint was last modified.
Param (*available in CTM R8.0 and later*)	All the parameters associated with the ports.
Last Check	Date and time the power control setpoint was last verified.

Table B-466 Field Descriptions for the APC Tab (continued)

Field	Description
Side (*available in CTM R8.0 and later*)	Lists all the NEs and their sides that belong to the APC domain.
APC State (*available in CTM R8.0 and later*)	Displays the actual state of the APC. Values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.

B.12.1.11.5 Node Setup Tab

The Node Setup tab allows you to automatically preprovision NEs.

Table B-467 Field Descriptions for the Node Setup Tab

Field	Description
XML Settings	
Select XML File	Click **Browse** to select an XML file (generated by the MetroPlanner application). Prime Optical parses the XML file selected by the operator and checks the accuracy of its content.
Log Settings	
Select Log File	Click **Browse** to select a log file to which the results of the operations you perform will be saved.
Launch ANS Wizard button	Click the **Launch Wizard** button to launch the Automatic Node Setup wizard. See 7.12.11 Configuring Automatic Node Setup, page 7-340 for more information.

B.12.1.11.6 Side Tab

The Side tab allows you to view, edit, and delete sides defined for an ONS 15454-M2 NE.

Table B-468 Field Descriptions for the Side Tab

Field	Description
Create button	Allows you to create side objects for the NE.
Modify button	Allows you to modify the side ID of an existing side object.
Delete button	Allows you to delete side objects.
Side	Displays the NE's side ID.
Line In	Displays the index of the receive side of the OTS port.
Line Out	Displays the index of the transmit side of the OTS port.

B.12.1.11.7 All Facilities Tab

The All Facilities tab allows you to view the DWDM and optical ports for the ONS 15454-M2 NE.

Table B-469 Field Descriptions for the All Facilities Tab

Field	Description
Port	Displays the card port number, shelf ID, and slot number. **Note** Shelf ID is not included in the port number if the node is not a multishelf NE.
Power	Displays the current power for the port.
State	Displays the administrative state of the port.
Service State	Displays the service state of the port.
Retain Selected button	Displays only the ports that you selected.
Show All button	Retrieves and displays all the optical and DWDM ports for the NE.

B.12.1.11.8 Passive Cards Tab

The Passive Cards tab allows you to view information about passive units provisioned in CTC.

Note Passive units can be provisioned in CTC only.

Table B-470 Field Descriptions for the Passive Cards Tab

Field	Description
Passive Cards	
ID	Displays the passive card shelf ID.
Equipment Name	Displays the general card type/name.
Location	Displays the location of the passive card.
Description	Displays the passive card description.
Optical Ports	
Port	Displays the port number.
Type	Displays the port type.
MPO	Displays any physical multifiber push connectors.
Wavelength	Displays the port wavelength.

B.12.1.11.9 Alien Wavelength Tab

The Alien Wavelength tab allows you to view and edit the port and wavelength parameters defined for an ONS 15454-M2 NE. Click the **Refresh** button to refresh the Alien Wavelength table.

Note Alien Wavelength is applicable to ONS 15454 NEs that support WSON nodes.

Table B-471 Field Descriptions for the Alien Wavelength Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Create button	Allows you to create alien wavelengths for the NE. See 7.12.15 Creating Alien Wavelength for more information.
Edit button	Allows you to modify the existing alien wavelength value. See 7.12.16 Editing Alien Wavelength for more information.
Position	Displays information about the shelf, slot, and port on which the alien wavelength is configured.
Alien Wavelength	Displays the alien wavelength class.
Lambda	Displays the alien wavelength value.
FEC	Displays the FEC mode.

B.12.1.11.10 Fiber Attribute Tab

The Fiber Attribute tab allows you to view the fiber parameters defined for an ONS 15454-M2 NE.

Note Fiber Attribute is applicable to ONS 15454 NEs that support WSON node.

Table B-472 Field Descriptions for the Fiber Attribute Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Toggle button	Click the **Toggle** button to select the unit of measure.
Optical Side	Displays the name of the optical side to which the fiber is connected.
Fiber Type	Choose the fiber type from the drop-down list.
Fiber Number	Displays the number of the fiber associated to the optical side. Useful when different types of fiber are present on the span.
Fiber Length	Allows you to edit the fiber length.

B.12.1.11.11 WSON Tab

The WSON tab allows you to view and acknowledge the unverified alarms at the circuit level.

Table B-473 Field Descriptions for the WSON Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Acknowledge WSON Alarm button	Click the **Acknowledge WSON Alarm** button to acknowledge a WSON alarm.
Affected Circuits button	Click the **Affected Circuits** button to view the affected circuits. If there are circuits affected by the selected alarm, the new circuit report is displayed. See 7.2.28.2 Working with Circuit Reports for more information. **Note** The Affected Circuits button is enabled only when an alarm condition is selected.

Table B-473 Field Descriptions for the WSON Tab (continued)

Field	Description
ID	Displays the ID of the NE from the Domain Explorer.
PS	Perceived severity of the selected alarm (critical, major, minor, or warning). The background color also indicates the severity, where: • Red = Critical • Orange = Major • Yellow = Minor • Blue = Warning • Green = Cleared **Note** For the ONS 15530 and ONS 15540, alarms that are shown in the command-line interface (CLI) as informational are shown in Prime Optical as warnings.
Probable Cause	Probable cause of the selected alarm. Some possible values include: • Not Applicable/Unknown—If no additional information is available • Mismatch of equipment and attributes (MEA) alarm—For misconfigured pluggable port modules (PPMs) • Link Layer Keep-Alive Failure—When the keepalive frame on the POS port is disabled and the port is shut down • Bad Packet Count Exceeds Threshold—When the packets through the front port have CRC errored frames • Auto-Negotiation Remote Failure Indication—When a remote Gigabit Ethernet port is shut down from a local port
Condition	Error message or condition name that is associated with the alarm or event.
Affected Object	Name of the object where the selected alarm occurred.
Module Name	Name of the module where the selected alarm occurred.
Physical Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.
NE Alarm Time	Date and time when the alarm occurred on the NE.
SA	Whether the alarm or event is service affecting (SA). Values are: • Yes—The alarm is service affecting • No—The alarm is not service affecting • N/A—No information is provided by the NE

B.12.1.12 OSI

The OSI Properties pane allows you to provision ONS 15454-M2 Open System Interconnection (OSI) parameters. The Properties pane contains the following tabs:

- B.12.1.12.1 Main Setup Tab, page B-351
- B.12.1.12.2 TARP-Config Tab, page B-351
- B.12.1.12.3 TARP-TDC Tab, page B-353
- B.12.1.12.4 TARP-MAT Tab, page B-353

- B.12.1.12.5 Routers-Setup Tab, page B-353
- B.12.1.12.6 Subnets Tab, page B-354
- B.12.1.12.7 Tunnels Tab, page B-355
- B.12.1.12.8 IS-IS RIB Tab, page B-355
- B.12.1.12.9 ES-IS RIB Tab, page B-356

B.12.1.12.1 Main Setup Tab

The Main Setup tab allows you to provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-474 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI end system (ES). ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1	Provisions the node as an OSI intermediate system (IS). ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs. For the ONS 15454-M2, Intermediate System Level 1 is the Cisco default.
Intermediate System Level 1/Level 2	The ONS 15454-M2 performs all IS functions. It communicates with other IS and ES nodes within an OSI area and broadcasts ISHs to IS nodes in other areas to which it is connected.
Node Routing Mode	
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.12.1.12.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-475 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.

Table B-475 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial ONS 15454-M2 startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.
Timers	
LDB Entry	Sets the TARP LDB timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.12.1.12.3 TARP-TDC Tab

Table B-476 Field Descriptions for the TARP-TDC Tab

Field	Description
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.
Type	Indicates how the TARP data cache entry was created. It can be either: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Selected Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.

B.12.1.12.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-477 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.12.1.12.5 Routers-Setup Tab

Table B-478 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. The ONS 15454-M2 provides three virtual routers, numbered 1 through 3.
System ID	Displays the NSAP system ID of the virtual router. The NSAP system identifier is set to the node's first IEEE 802.3 MAC address + *n*, where *n* = 0 through 2. For the primary router (Router 1), *n* = 0.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.

Table B-478 Field Descriptions for the Routers-Setup Tab (continued)

Field	Description
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Edit button	Click **Edit** to modify the address parameters.

B.12.1.12.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-479 Field Descriptions for the Subnets Tab

Field	Description
Slot/Port	The subnet slot and port.
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64. For the ONS 15454 LAN subnet, the default DIS priority is 63. This priority should not be changed.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.

Table B-479 Field Descriptions for the Subnets Tab (continued)

Field	Description
Edit button	Click **Edit** to modify the subnet parameters.
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.

B.12.1.12.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-480 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.12.1.12.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-481 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the OSI router number. The ONS 15454-M2 provides three virtual routers, numbered 1 through 3.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.12.1.12.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-482 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the OSI router number. The ONS 15454-M2 provides three virtual routers, numbered 1 through 3.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.13 ONS 15600 SONET NE Explorer

When you choose **Configuration > NE Explorer** for the ONS 15600 SONET, the window that Prime Optical displays consists of a tree on the left side and a properties pane on the right. The tree provides a hierarchical view and alarm status of the NE's physical shelves and slots. The properties pane shows information about the selected entity. See B.13.1 Node Properties Pane—ONS 15600 SONET, page B-356 for more information.

Note If CTC is launched from the web browser for an ONS 15600 SONET node, the CTC GUI might look different from when it is launched from Prime Optical. This discrepancy occurs because the latest version of CTC (for NE releases supported by Prime Optical) is packaged with Prime Optical. If launched from a browser, the CTC software is retrieved from the NE itself, which might be a version different from that packaged with Prime Optical.

When an NE Explorer is in autorefresh mode, all values of an entity that is being edited by the user are automatically refreshed. You will lose all of your changes unless you click the Apply button. To enable autorefresh, click the Refresh Data button in the NE Explorer.

B.13.1 Node Properties Pane—ONS 15600 SONET

The node properties pane displays information about the ONS 15600 SONET NE. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.13.1.1 Shelf View, page B-357

- B.13.1.2 General, page B-357
- B.13.1.3 Identification, page B-358
- B.13.1.4 Network, page B-358
- B.13.1.5 DCC, page B-364
- B.13.1.6 Timing, page B-366
- B.13.1.7 Protection, page B-369
- B.13.1.8 NE Defaults, page B-370
- B.13.1.9 Security, page B-371
- B.13.1.10 Alarm, page B-375
- B.13.1.11 Maintenance, page B-376
- B.13.1.12 Alarm Extenders, page B-376
- B.13.1.13 BLSR, page B-378
- B.13.1.14 OSI, page B-378

B.13.1.1 Shelf View

The Shelf View Properties pane displays a graphic of the ONS 15600 SONET that is selected in the NE Explorer tree. Moving the mouse pointer over the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset, delete, or change a card. For unprovisioned slots, the right-click menu allows you to add a card.

B.13.1.2 General

The General Properties pane displays identification information, voltage thresholds, and multishelf configurations for the ONS 15600 SONET NE.

Table B-483 Field Descriptions for the General Properties Pane

Field	Description
Identification Tab	
NE ID	Displays the ID of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name and phone number of the node contact person.
Description	Enter a description of the NE.
System Description	Displays the NE type and the version of the system software.
Voltage/Temperature Tab	
Voltage	Displays the voltage (in millivolts) of the shelf that corresponds to the power supply.
Temperature	Displays the temperature (in degrees Celsius) of the shelf.

B.13.1.3 Identification

The Identification Properties pane displays identification information about the ONS 15600 SONET NE.

Table B-484 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name of the node contact person and the phone number.
System Description	Displays a description of the NE.
SNTP Settings	
Use NTP/SNTP Server	If checked, CTC uses an SNTP server to set the date and time of the node. Using an SNTP server ensures that all ONS 15600 SONET network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. If you check the **Use NTP/SNTP Server** check box, enter the server's IP address in the next field. If you do not use an SNTP server, complete the Time and Time Zone fields. The ONS 15600 SONET will use these fields for alarm dates and times.
SNTP Server	Displays the SNTP server IP address.
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.
Use Daylight Savings Time	If checked, Daylight Savings Time is observed.

B.13.1.4 Network

The Network Properties pane displays information about the NE network address. The Properties pane contains the following tabs:

- B.13.1.4.1 Address Tab, page B-359
- B.13.1.4.2 Static Routes Tab, page B-359
- B.13.1.4.3 OSPF Tab, page B-359
- B.13.1.4.4 OSPF Area Range Tab, page B-360
- B.13.1.4.5 OSPF Virtual Links Tab, page B-361
- B.13.1.4.6 SNMP Tab, page B-361
- B.13.1.4.7 Firewall/Proxy Tab, page B-362

- B.13.1.4.8 Routing Table Tab, page B-362
- B.13.1.4.9 Internal Subnet Tab, page B-363
- B.13.1.4.10 Proxy Tunnels Tab, page B-363
- B.13.1.4.11 Firewall Tunnels Tab, page B-364
- B.13.1.4.12 FTP Hosts Tab, page B-364

B.13.1.4.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-485 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.
MAC Address	Displays the ONS 15600 SONET address as it is identified on the IEEE 802 MAC layer.
Forward DHCP Requests	If checked, forwards DHCP requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.
IPv6 Config	
Enable IPv6	If checked, allows you to configure the node to use the IPv6 protocol and to assign an IPv6 address to the node.
IPv6 Address	Enter the IPv6 address of the node.
Default IPv6 Router	Enter the IPv6 default router of the node.
IPv6 Subnet Mask	Enter the IPv6 subnetwork mask length.

B.13.1.4.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and ONS 15600 SONET connectivity and create or delete static routes.

Table B-486 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the ONS 15600 and the computer.

B.13.1.4.3 OSPF Tab

The OSPF tab displays OSPF information. OSPF is a link-state Internet routing protocol.

Table B-487 Field Descriptions for the OSPF Tab

Field	Description
Slot	Displays the slot number.
Port	Displays the port number.
DCC OSPF Area ID	Displays the number that identifies the ONS 15600s as a unique OSPF area. The OSPF area number can be from 0.0.0.0 to 255.255.255.255. The number must be unique to the LAN OSPF area.
SDCC Metric	Sets a cost for sending packets across the SDCC, which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. The Cisco default DCC metric is 100. This value is normally unchanged.
LDCC Metric	Sets a cost for sending packets across the Line Data Communications Channel (LDCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
OSPF on LAN	
OSPF Active on LAN	If checked, enables ONS 15600 OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15600s that directly connect to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the ONS 15600 is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the value used for this NE in designated router election. The Cisco default value is zero (0). A router that has Router Priority set to 0 is ineligible to become a designated router on the attached network.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
OSPF Authentication	
Authentication Type	Displays Simple Password if the router where the ONS 15600 is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.13.1.4.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-488 Field Descriptions for the OSPF Area Range Tab

Field	Description
Range Address	Displays the area IP address for the ONS 15600 SONET NEs that reside within the OSPF area. For example, if the ONS 15600 SONET OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the ONS 15600 SONET NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF routing table is advertised.

B.13.1.4.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-489 Field Descriptions for the OSPF Virtual Links Tab

Field	Description
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.13.1.4.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-490 Field Descriptions for the SNMP Tab

Field	Description
IP Address	The IP address of the NMS.
Community Name	The SNMP community name. **Note** The SNMP community string cannot be blank in Prime Optical. If a blank community string is required in CTC builds earlier than R4.6, you must set the blank community string in CTC.

Table B-490 Field Descriptions for the SNMP Tab (continued)

Field	Description
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.
Allow SNMP Set	If checked, allows you to use SNMP management software with the ONS 15600 SONET.

B.13.1.4.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-491 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Enable Proxy Server on Port	If checked, the ONS 15600 SONET serves as a proxy for connections between the Prime Optical server and ONS 15600 SONET NEs that are DCC-connected to the proxy node. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server port number (display-only) is shown following the Enable Proxy Server on Port field. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Enables the ONS 15600 SONET to proxy as an ENE. Note that an alternate expansion for ENE is *external network element*. • Gateway Network Element (GNE)—Enables the ONS 15600 SONET to proxy as a GNE. • Proxy-only—Enables proxy only. If unchecked, the node does not proxy. ⚠ **Caution** Disabling the proxy prevents the NE from relaying packets to DCC-only connected NEs, and can lead to a loss of connectivity.

B.13.1.4.8 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-492 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host. Destination (0.0.0.0) is the default route entry. All undefined destination network or host entries on this routing table are mapped to the default route entry.
Mask	Displays the subnet mask used to reach the destination network or host. Mask (0.0.0.0) is always 0 for the default route.
Gateway	Displays the IP address of the gateway used to reach the destination network or host. All outbound traffic belonging to this network is sent to this gateway. Gateway (172.20.214.1) is the default gateway address. All outbound traffic that cannot be found in this routing table or is not on the node's local subnet will be sent to this gateway.

Table B-492 Field Descriptions for the Routing Table Tab (continued)

Field	Description
Usage	Shows the number of times the listed route has been used.
Interface	Shows the ONS 15600 SONET interface used to access the destination. Values are: • cpm0—The ONS 15600 SONET Ethernet interface (that is, the RJ-45 jack on the TCC+/TCC2 and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface.

B.13.1.4.9 Internal Subnet Tab

The Internal Subnet tab allows you to change the class B subnet address for timing and shelf controller (TSC) cards. TSC cards perform all system-timing functions for each ONS 15600 SONET. To avoid IP address conflicts, you should change the class B subnet address if your internal network uses the same address range as the default subnet addresses.

Table B-493 Field Descriptions for the Internal Subnet Tab

Field	Description
TSC1	Enter the class B subnet address for the first TSC.
TSC2	If two TSCs are installed, enter the class B subnet address for the second TSC.

B.13.1.4.10 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-494 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.13.1.4.11 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-495 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.13.1.4.12 FTP Hosts Tab

The FTP Hosts tab allows you to configure database backup or restore and software download to an ENE when the firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which the FTP relay resumes blocking all FTP access for the ENEs.

Table B-496 Field Descriptions for the FTP Hosts Tab

Field	Description
Create button	Opens the Create New FTP Host dialog box, which allows you to create up to 12 new FTP hosts in a GNE/ENE firewall environment. See 5.3.10.1 Creating an FTP Host, page 5-22. **Note** You cannot create more than 12 FTP hosts.
Delete button	Deletes the selected FTP host.
FTP Host Address	Displays the FTP host IP address.
Prefix Length	Displays the FTP host subnet mask length.
Enable FTP Relay	Indicates whether FTP relay is enabled or disabled. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Displays the number of minutes that the FTP relay is configured to run, after which the FTP relay resumes blocking all FTP access for the ENEs.

B.13.1.5 DCC

The DCC Properties pane allows you to create, delete, and view SONET and SDH DCCs.

Table B-497 Field Descriptions for the DCC Properties Pane

Field	Description
SDCC	
SDCC Terminations	Displays the slot, port, and card type of an SDCC termination.

Table B-497 Field Descriptions for the DCC Properties Pane (continued)

Field	Description
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only.
OSI SNPA	If the SDCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the termination: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion. • UEQ—Unequipped; there is nothing in the slot. • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted. • SWDL—Software download in progress. • MT—Maintenance, as per the Admin State change. • AINS—Automatic in service. • DSBLD—Traffic is disabled on the entity. • LPBK—Port or connection has a loopback on it. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11 on page 11-15. See Table 11-11 on page 11-15 for the Service state-Secondary state possible values. **Note** If the NE release does not support the Service state, this field shows N/A.
LDCC	
LDCC Terminations	Displays the slot, port, and card type of an LDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the LDCCs that are provisioned as OSI only.
OSI SNPA	If the LDCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.

Table B-497 Field Descriptions for the DCC Properties Pane (continued)

Field	Description
Service State	Select the state of the LDCC termination: • IS-NR—In Service–Normal • OOS-AU—Out of Service–Autonomous • OOS-MA—Out of Service–Management • OOS-AUMA—Out of Service–Autonomous and Management In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion • UEQ—Unequipped; there is nothing in the slot • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted • SWDL—Software download in progress • MT—Maintenance, as per the Admin State change • AINS—Automatic in service • DSBLD—Traffic is disabled on the entity • LPBK—Port or connection has a loopback on it
Create button	Allows you to create new terminations on SONET or SDH cards.
Edit button	Allows you to modify existing terminations on SONET or SDH cards.
Delete button	Allows you to delete the selected SDCC or LDCC.

B.13.1.6 Timing

The Timing Properties pane contains the following tabs:

- B.13.1.6.1 General Tab, page B-366
- B.13.1.6.2 Reference List Tab, page B-368
- B.13.1.6.3 Status Tab, page B-368
- B.13.1.6.4 Timing Report Tab, page B-369

B.13.1.6.1 General Tab

The General tab displays general timing information.

Note BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.

Table B-498 Field Descriptions for the General Tab

Field	Description
General Timing	
Timing Mode	Set to External if the ONS 15600 SONET derives its timing from a BITS source wired to the backplane pins; set to Line if timing is derived from an OC-N card that is optically connected to the timing node.
SSM Message Set	Choose the SSM set level supported by your network. SSM is an SONET protocol that communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SONET Line layer. They enable SONET devices to automatically select the highest quality timing reference and to avoid timing loops. If a Generation 1 node receives a Generation 2 message, the message is mapped down to the next available Generation 1 node. For example, an ST3E message becomes an ST3.
Revertive	If checked, the ONS 15600 SONET reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
Reversion Time	Specify the reversion time in half-minute increments.
Quality of RES	If your timing source supports the reserved S1 byte, you set the timing quality here. (Most timing sources do not use RES.) Qualities are displayed in descending quality order as ranges. For example, ST3 < RES < ST2 means the timing reference is higher than a Stratum 3 and lower than a Stratum 2.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.
BITS IN Facilities	
In State	Set the BITS reference to IS (In Service) or OOS (Out of Service). For nodes set to Line timing with no equipment timed through BITS Out, set the state to OOS. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to IS.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either ESF or SF (D4). SSM is not available with Super Frame.
Sync Messaging	If checked, enables the SSM for BITS In. (SSM is not available if Framing is set to Super Frame.)
BITS OUT Facilities	
Out State	Set the BITS reference to IS or OOS. For nodes set to Line timing with no equipment timed through BITS Out, set the state to OOS. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to IS.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either ESF or SF (D4). SSM is not available with Super Frame.
AIS Threshold	If SSM is disabled or Super Frame is used, sets the quality level where a node sends an AIS from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
LBO	If you are timing an external device connected to the BITS Out pins, set the distance between it and the ONS 15600 SONET. Options are 0-133 ft (Cisco default), 134-266 ft, 267-399 ft, 400-533 ft, and 534-655 ft.

B.13.1.6.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-499 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to Internal Clock. This is the Stratum 3 clock provided on the TCC+. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal Clock. • Timing Mode set to Line—Options are the node's working optical cards and Internal Clock. **Note** For Timing Mode set to External and Timing Mode set to Line, select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1. • Timing Mode set to Mixed—Both BITS and optical cards are available, allowing you to set a mixture of external BITS and optical trunk cards as timing references.
BITS-1 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.
BITS-2 Out References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3) for equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with line nodes, so the options displayed are the working optical cards. BITS-1 and BITS-2 Out are enabled as soon as BITS-1 and BITS-2 facilities are placed in service.

B.13.1.6.3 Status Tab

The Status tab displays timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.
- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-500 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.

Table B-500 Field Descriptions for the Status Tab (continued)

Field	Description
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference.
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 out timing reference.
Operations	Execute a switch on the BITS-1 out timing reference.
BITS-2 Out	
BITS-2 Out	Set the BITS-2 out timing reference.
Status	Displays the status of the BITS-2 out timing reference.
Operations	Execute a switch on the BITS-2 out timing reference.

B.13.1.6.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

B.13.1.7 Protection

The Protection Properties pane contains the following tabs:

- B.13.1.7.1 Protection Groups Tab, page B-369
- B.13.1.7.2 Operations Tab, page B-370

B.13.1.7.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-501 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.	
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.
Type	Choose the protection type (1:1, 1:N, or 1+1) from the drop-down list. The protection selected determines the cards that are available to serve as protect and working cards. For example, if you choose 1:N protection, only DS-1N and DS-3N cards are displayed. 1+1 protection is only used for optical cards.
Protect Module	Choose the protect card if using 1:1 or 1:N protection.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.

Table B-501 Field Descriptions for the Protection Groups Tab (continued)

Field	Description
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select 1+1 (port) type.
Revertive	If checked, the ONS 15600 SONET reverts traffic to the working card or port after failure conditions are corrected and remain correct for the amount of time entered in Reversion Time.
Reversion Time	If Revertive is checked, enter the amount of time following failure condition correction that should elapse before the ONS 15600 SONET switches back to the working card or port.

B.13.1.7.2 Operations Tab

The Operations tab displays protection group operation information.

Table B-502 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock out switching, or lock on switching.

B.13.1.8 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the ONS 15600 SONET NE. You can edit NE defaults for the ONS 15600 SONET R5.0 and later.

Table B-503 Field Descriptions for the NE Defaults Properties Pane

Field	Description
Parameter	Lists the default NE parameter.
Value	Shows the default parameter value, and allows you to change the default.
Units	Lists the unit of measure that corresponds to the default NE parameter.
Range	Lists the possible range of values for the default NE parameter. **Note** This field applies to the ONS 15600 SONET R6.0 and later.
Side Effects	Lists any side effects that could occur as a result of changing the default NE parameter. **Note** This field applies to the ONS 15600 SONET R6.0 and later.

You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.13.1.9 Security

The Security Properties pane allows you to view and edit security features for the ONS 15600 SONET NE. The Security Properties pane contains the following tabs:

- B.13.1.9.1 Policy Tab, page B-371
- B.13.1.9.2 Password Tab, page B-372
- B.13.1.9.3 Access Tab, page B-372
- B.13.1.9.4 RADIUS Server Tab, page B-374
- B.13.1.9.5 Legal Disclaimer Tab, page B-375

B.13.1.9.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-504 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.
SuperUser	Set the idle user timeout for a CTC SuperUser user.
User Lockout	
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Sessions per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.
Disable Inactive User	If checked, inactive users are disabled automatically for the amount of time in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.13.1.9.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-505 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

B.13.1.9.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-506 Field Descriptions for the Access Tab

Field	Description
Access	
LAN Access	Specify the type of LAN access allowed. Values are Backplane Only, No LAN Access, Front and Backplane, or Front Only (for ONS 15454 SONET NEs only). **Note** After the LAN access to the backplane is set, the Prime Optical client is unusable for 4 to 5 minutes.
Restore Timeout	This time period begins if *No LAN Access* is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Serial Craft Access (available for ONS 15600 SONET NEs R6.0 and later)	
Enable Craft Port A	Check this check box to enable craft port A.
Enable Craft Port B	Check this check box to enable craft port B.

Table B-506 Field Descriptions for the Access Tab (continued)

Field	Description
Shell Access	
Shell Access on	Specify shell access on Telnet or SSH.
SSH Port	Indicates the SSH port number that will be used if the SSH radio button is selected.
Telnet Port	This is enabled if you selected the Telnet radio button. Enter the Telnet port number.
Use Standard Telnet Port	If checked, the standard Telnet port is used for Telnet access.
Shell Access (available for ONS 15600 SONET NEs R6.0 and later)	
Access State	Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SSH Port	Indicates the SSH port number that will be used.
SFTP Port	Indicates the SFTP port number.
Telnet Port	This is enabled if you selected the Non-secure access state. Enter the Telnet port number that will be used.
Use Standard Telnet Port	Check this check box to indicate that the standard Telnet port will be used.
Enable Shell Password	Indicates whether or not the Shell password is enabled. **Note** You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
EMS Access (available for ONS 15600 SONET NEs R6.0 and later)	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.
CORBA Listener Port	Select the port numbers for the TCC CORBA (IIOP) listener port and the TCC CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the TCC CORBA (IIOP) listener port is 683. The port number for the TCC CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.
TL1 Access (available for ONS 15600 SONET NEs R6.0 and later)	
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access (available for ONS 15600 SONET NEs R6.0 and later)	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.
Other	
PM Clearing Privilege	Select the users privilege that allows clearing PM statistics for the NE.

B.13.1.9.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for the ONS 15600 SONET R6.0 and later.

Table B-507 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.13.1.9.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-508 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.13.1.10 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual ONS 15600 SONET nodes. The Alarm Properties pane contains the following tabs:

- B.13.1.10.1 Profile Tab, page B-375
- B.13.1.10.2 Alarm Behavior Tab, page B-376

B.13.1.10.1 Profile Tab

The Profile tab allows you to select, create, or delete alarm profiles.

Table B-509 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list. Click **Create** to create a new alarm profile for the NE. Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.13.1.10.2 Alarm Behavior Tab

The Alarm behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-510 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.13.1.11 Maintenance

The ONS 15600 SONET hardware keeps track of which copies of data (backplane STS), SYNC, O&M, and CLK are currently being used by I/O and CXC cards.

B.13.1.11.1 Preferred Copy Tab

The Preferred Copy tab allows you to change the preferred data source and view the clock and SYNC copy.

Table B-511 Field Descriptions for the Preferred Copy Tab

Field	Description
Data Copy	
Preferred Data	Allows you to select the data copy (CXC) when both CXC cards are present in the system.
Selected Data	Displays the data copy currently being used.
Clock and Sync Copy	
Preferred Clock	Displays the preferred clock and SYNC copy.
Selected Clock	Displays the clock and SYNC copy currently being used.

B.13.1.12 Alarm Extenders

The Alarm Extenders Properties pane allows you to view external alarm information and create custom alarm types. The Alarm Extenders Properties pane contains the following tabs:

- B.13.1.12.1 External Alarms Tab, page B-376
- B.13.1.12.2 External Controls Tab, page B-377
- B.13.1.12.3 User-Defined Alarms Tab, page B-377

B.13.1.12.1 External Alarms Tab

The External Alarms tab allows you to view and update external alarm information.

Table B-512 Field Descriptions for the External Alarms Tab

Field	Description
Input Number	The alarm input number.
Enabled	Check to activate the fields for the alarm input number.
Alarm Type	Choose an alarm type from the provided list.
Severity	Choose a severity from the list.
Raised When	Choose the contact condition that will trigger the alarm in CTC.
Virtual Wire	To assign the external device to a virtual wire, choose a virtual wire from the list, or choose None if no assignment is required.
Description	Displays a default description for every external alarm that is enabled.
Raised	Indicates whether an alarm has been raised.
Contact Status	Indicates the current status of the contact.

B.13.1.12.2 External Controls Tab

The External Controls tab allows you to view and update external controls.

Table B-513 Field Descriptions for the External Controls Tab

Field	Description
Control Number	The control number.
Enabled	Check to activate the fields for the control number.
Control Type	Choose a control type from the provided list.
Trigger Type	Choose a trigger type: a local minor, major, or critical alarm; a remote minor, major, or critical alarm; or a virtual wire activation.
Description	Enter a description.
Current State	The current state of the control.
Auto State	The auto state of the control.
Contact Setting	The current contact setting.

B.13.1.12.3 User-Defined Alarms Tab

The User-Defined Alarms tab allows you to view, add, and delete custom alarm types on the ONS 15600 SONET.

Table B-514 Field Descriptions for the User-Defined Alarms Tab

Field	Descriptions
Alarm Types	Lists the user-defined alarm types that have been created on the ONS 15600 SONET. You can create up to 50 custom environmental alarms, which are reported in the Condition column in the Alarm Log and Alarm Browser windows.

Table B-514 Field Descriptions for the User-Defined Alarms Tab (continued)

Field	Descriptions
Add	Click the **Add** button to add a new custom alarm type. Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).
Delete	Click the **Delete** button to delete an existing alarm type.

B.13.1.13 BLSR

The BLSR Properties pane allows you to view BLSR information and create or delete BLSRs.

Table B-515 Field Descriptions for the BLSR Properties Pane

Field	Description
Fiber Type	Indicates whether the fiber type is 2-fiber or 4-fiber.
Rate	Select the BLSR rate.
Ring Name	Assign a ring ID (a number from 0 to 9999). Nodes in the same BLSR must have the same ring ID.
Node ID	Assign a node ID. The node ID identifies the node to the BLSR. Nodes in the same BLSR must have unique node IDs.
Ring Reversion	Set the amount of time that will pass before the traffic reverts to the original working path. The Cisco default is 5 minutes. All nodes in a BLSR ring should have the same ring reversion setting, particularly if *never* (nonrevertive) is selected.
Span Reversion	Set the amount of time to pass before the span reverts to the working path.
East Line	Assign the east BLSR port.
East Switch	Displays a list of switch commands for the east port.
West Line	Assign the west BLSR port.
West Switch	Displays a list of switch commands for the west port.
East Protect	Assign the east BLSR protect port.
West Protect	Assign the west BLSR protect port.

B.13.1.14 OSI

The OSI Properties pane allows you to provision ONS 15600 SONET Open System Interconnection (OSI) parameters. The Properties pane contains the following tabs:

- B.13.1.14.1 Main Setup Tab, page B-379
- B.13.1.14.2 TARP-Config Tab, page B-379
- B.13.1.14.3 TARP-TDC Tab, page B-381
- B.13.1.14.4 TARP-MAT Tab, page B-381
- B.13.1.14.5 Routers-Setup Tab, page B-381
- B.13.1.14.6 Subnets Tab, page B-382
- B.13.1.14.7 Tunnels Tab, page B-383
- B.13.1.14.8 IS-IS RIB Tab, page B-383
- B.13.1.14.9 ES-IS RIB Tab, page B-383

B.13.1.14.1 Main Setup Tab

The Main Setup tab allows you to provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-516 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI end system (ES). ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1	Provisions the node as an OSI intermediate system (IS). ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1/Level 2	The ONS 15600 SONET performs all IS functions. It communicates with other IS and ES nodes within an OSI area and broadcasts ISHs to IS nodes in other areas to which it is connected. For the ONS 15600 SONET, Intermediate System Level 1/Level 2 is the default routing mode.
Node Routing Mode	
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.13.1.14.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-517 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.

Table B-517 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial ONS 15600 SONET startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.
Timers	
LDB Entry	Sets the TARP LDB timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.13.1.14.3 TARP-TDC Tab

Table B-518 Field Descriptions for the TARP-TDC Tab

Field	Description
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.
Type	Indicates how the TARP data cache entry was created. It can be either: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Selected Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.

B.13.1.14.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-519 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.13.1.14.5 Routers-Setup Tab

The Routers-Setup tab allows you to view and manage the OSI virtual routers.

Table B-520 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. The ONS 15600 SONET provides six virtual routers, numbered 1 through 6.
System ID	Displays the NSAP system ID of the virtual router. The NSAP system identifier is set to the node's first IEEE 802.3 MAC address + *n*, where *n* = 0 through 6. For the primary router (Router 1), *n* = 0.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.

Table B-520 Field Descriptions for the Routers-Setup Tab (continued)

Field	Description
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Edit button	Click **Edit** to modify the address parameters.

B.13.1.14.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-521 Field Descriptions for the Subnets Tab

Field	Description
Slot/Port	The subnet slot and port.
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.
Edit button	Click **Edit** to modify the subnet parameters.
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.

B.13.1.14.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-522 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.13.1.14.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-523 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. The ONS 15600 SONET provides six virtual routers, numbered 1 through 6.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.13.1.14.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-524 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. The ONS 15600 SONET provides six virtual routers, numbered 1 through 6.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.14 ONS 15600 SDH NE Explorer

When you choose **Configuration > NE Explorer** for the ONS 15600 SDH, the window that Prime Optical displays consists of a tree on the left side and a properties pane on the right. The tree provides a hierarchical view and alarm status of the NE's physical shelves and slots. The properties pane shows information about the selected entity. See B.14.1 Node Properties Pane—ONS 15600 SDH, page B-384 for more information.

Note If CTC is launched from the web browser for an ONS 15600 SDH node, the CTC GUI might look different from when it is launched from Prime Optical. This discrepancy occurs because the latest version of CTC (for NE releases supported by Prime Optical) is packaged with Prime Optical. If launched from a browser, the CTC software is retrieved from the NE itself, which might be a version different from that packaged with Prime Optical.

When an NE Explorer is in autorefresh mode, all values of an entity that is being edited by the user are automatically refreshed. You will lose all of your changes unless you click the Apply button. To enable autorefresh, click the Refresh Data button in the NE Explorer.

B.14.1 Node Properties Pane—ONS 15600 SDH

The node properties pane displays information about the ONS 15600 SDH NE. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.14.1.1 Shelf View, page B-385
- B.14.1.3 Identification, page B-385
- B.14.1.4 Network, page B-386
- B.14.1.5 DCC, page B-392
- B.14.1.6 Timing, page B-394
- B.14.1.7 Protection, page B-397

- B.14.1.8 NE Defaults, page B-398
- B.14.1.9 Security, page B-398
- B.14.1.10 Alarm, page B-402
- B.14.1.11 Maintenance, page B-403
- B.14.1.12 Alarm Extenders, page B-404
- B.14.1.13 MS-SPRing, page B-405
- B.14.1.14 OSI, page B-405

B.14.1.1 Shelf View

The Shelf View Properties pane displays a graphic of the ONS 15600 SDH that is selected in the NE Explorer tree. Moving the mouse pointer over the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset, delete, or change a card. For unprovisioned slots, the right-click menu allows you to add a card.

B.14.1.2 General

The General Properties pane displays identification information, voltage thresholds, and multishelf configurations for the ONS 15600 SDH NE.

Table B-525 Field Descriptions for the General Properties Pane

Field	Description
Identification Tab	
NE ID	Displays the ID of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name and phone number of the node contact person.
Description	Enter a description of the NE.
System Description	Displays the NE type and the version of the system software.
Voltage/Temperature Tab	
Voltage	Displays the voltage (in millivolts) of the shelf that corresponds to the power supply.
Temperature	Displays the temperature (in degrees Celsius) of the shelf.

B.14.1.3 Identification

The Identification Properties pane displays identification information about the ONS 15600 SDH NE.

Table B-526 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.

Table B-526 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.
Contact	Displays the name of the node contact person and the phone number.
System Description	Displays a description of the NE.
SNTP Settings	
Use NTP/SNTP Server	If checked, CTC uses an SNTP server to set the date and time of the node. Using an SNTP server ensures that all ONS 15600 SDH network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. If you check the **Use NTP/SNTP Server** check box, enter the server's IP address in the next field. If you do not use an SNTP server, complete the Time and Time Zone fields. The ONS 15600 SDH will use these fields for alarm dates and times.
SNTP Server	Displays the SNTP server IP address.
Location	
Latitude	Allows you to set the latitude of the NE. Select **North** or **South** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Longitude	Allows you to set the longitude of the NE. Select **East** or **West** from the drop-down list; then, enter the degrees and minutes (or click the up and down arrows to increase or decrease each by 1 unit).
Date and Time	
Time	Displays the NE date and time.
Time Zone	Displays the time zone where the NE is located.
Use Daylight Savings Time	If checked, Daylight Savings Time is observed.

B.14.1.4 Network

The Network Properties pane displays information about the NE network address. The Properties pane contains the following tabs:

- B.14.1.4.1 Address Tab, page B-387
- B.14.1.4.2 Static Routes Tab, page B-387
- B.14.1.4.3 OSPF Tab, page B-387
- B.14.1.4.4 OSPF Area Range Tab, page B-388
- B.14.1.4.5 OSPF Virtual Links Tab, page B-389
- B.14.1.4.6 SNMP Tab, page B-389
- B.14.1.4.7 Firewall/Proxy Tab, page B-390
- B.14.1.4.8 Routing Table Tab, page B-390
- B.14.1.4.9 Internal Subnet Tab, page B-391
- B.14.1.4.10 Proxy Tunnels Tab, page B-391
- B.14.1.4.11 Firewall Tunnels Tab, page B-392
- B.14.1.4.12 FTP Hosts Tab, page B-392

B.14.1.4.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-527 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.
MAC Address	Displays the ONS 15600 SDH address as it is identified on the IEEE 802 MAC layer.
Forward DHCP Requests	If checked, forwards DHCP requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.
IPv6 Config	
Enable IPv6	If checked, allows you to configure the node to use the IPv6 protocol and to assign an IPv6 address to the node.
IPv6 Address	Enter the IPv6 address of the node.
Default IPv6 Router	Enter the IPv6 default router of the node.
IPv6 Subnet Mask	Enter the IPv6 subnetwork mask length.

B.14.1.4.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and ONS 15600 SDH connectivity and create or delete static routes.

Table B-528 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the ONS 15600 SDH and the computer.

B.14.1.4.3 OSPF Tab

The OSPF tab displays OSPF information. OSPF is a link-state Internet routing protocol.

Table B-529 Field Descriptions for the OSPF Tab

Field	Description
DCC/GCC OSPF Area ID Table	
Slot	Displays the slot number.
Port	Displays the port number.

Table B-529 Field Descriptions for the OSPF Tab (continued)

Field	Description
DCC OSPF Area ID	Displays the number that identifies the ONS 15600 SDH as a unique OSPF area. The OSPF area number can be from 0.0.0.0 to 255.255.255.255. The number must be unique to the LAN OSPF area.
RS-DCC Metric	Sets a cost for sending packets across the RS-DCC, which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
MS-DCC Metric	Sets a cost for sending packets across the MS-DCC, which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
OSPF on LAN	
OSPF Active on LAN	If checked, enables the ONS 15600 SDH OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15600 SDHs that directly connect to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the ONS 15600 SDH is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the value used for this NE in designated router election. The Cisco default value is zero (0). A router that has Router Priority set to 0 is ineligible to become a designated router on the attached network.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
OSPF Authentication	
Authentication Type	Displays Simple Password if the router where the ONS 15600 SDH is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.14.1.4.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-530 Field Descriptions for the OSPF Area Range Tab

Field	Description
Range Address	Displays the area IP address for the ONS 15600 SDHs that reside within the OSPF area. For example, if the ONS 15600 SDH OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the ONS 15600 SDH NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF routing table is advertised.

B.14.1.4.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-531 Field Descriptions for the OSPF Virtual Links Tab

Field	Description
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.14.1.4.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-532 Field Descriptions for the SNMP Tab

Field	Description
IP Address	The IP address of the NMS.
Community Name	The SNMP community name. **Note** The SNMP community string cannot be blank in Prime Optical. If a blank community string is required in CTC builds earlier than R4.6, you must set the blank community string in CTC.

Table B-532 Field Descriptions for the SNMP Tab (continued)

Field	Description
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.

B.14.1.4.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-533 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Gateway Settings	
Enable Proxy Server on Port	If checked, the ONS 15600 SDH serves as a proxy for connections between the Prime Optical server and ONS 15600s that are DCC-connected to the proxy ONS 15600 SDH. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server port number (display-only) is shown following the Enable Proxy Server on Port field. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Enables the ONS 15600 SDH to proxy as an ENE. Note that an alternate expansion for ENE is *external network element*. • Gateway Network Element (GNE)—Enables the ONS 15600 SDH to proxy as a GNE. • Proxy-only—Enables proxy only. If unchecked, the node does not proxy.

B.14.1.4.8 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-534 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host. Destination (0.0.0.0) is the default route entry. All undefined destination network or host entries on this routing table are mapped to the default route entry.
Mask	Displays the subnet mask used to reach the destination network or host. Mask (0.0.0.0) is always 0 for the default route.
Gateway	Displays the IP address of the gateway used to reach the destination network or host. All outbound traffic belonging to this network is sent to this gateway. Gateway (172.20.214.1) is the default gateway address. All outbound traffic that cannot be found in this routing table or is not on the nodes local subnet will be sent to this gateway.

Table B-534 Field Descriptions for the Routing Table Tab (continued)

Field	Description
Usage	Shows the number of times the listed route has been used.
Interface	Shows the ONS 15600 SDH interface used to access the destination. Values are: • cpm0—The ONS 15600 SDH Ethernet interface (that is, the RJ-45 jack on the TCC+/TCC2 and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface.

B.14.1.4.9 Internal Subnet Tab

The Internal Subnet tab allows you to change the class B subnet address for TSC cards. TSC cards perform all system-timing functions for each ONS 15600 SDH. To avoid IP address conflicts, you should change the class B subnet address if your internal network uses the same address range as the default subnet addresses.

Table B-535 Field Descriptions for the Internal Subnet Tab

Field	Description
TSC1	Enter the class B subnet address for the first TSC.
TSC2	If two TSCs are installed, enter the class B subnet address for the second TSC.

B.14.1.4.10 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-536 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.14.1.4.11 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-537 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.14.1.4.12 FTP Hosts Tab

The FTP Hosts tab allows you to configure database backup or restore and software download to an ENE when the firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which the FTP relay resumes blocking all FTP access for the ENEs.

Table B-538 Field Descriptions for the FTP Hosts Tab

Field	Description
Create button	Opens the Create New FTP Host dialog box, which allows you to create up to 12 new FTP hosts in a GNE/ENE firewall environment. See 5.3.10.1 Creating an FTP Host, page 5-22. **Note** You cannot create more than 12 FTP hosts.
Delete button	Deletes the selected FTP host.
FTP Host Address	Displays the FTP host IP address.
Prefix Length	Displays the FTP host subnet mask length.
Enable FTP Relay	Indicates whether FTP relay is enabled or disabled. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Displays the number of minutes that the FTP relay is configured to run, after which the FTP relay resumes blocking all FTP access for the ENEs.

B.14.1.5 DCC

The DCC Properties pane allows you to create, delete, and view SONET and SDH DCCs.

Table B-539 Field Descriptions for the DCC Properties Pane

Field	Description
RS-DCC	
SDCC Terminations	Displays the slot, port, and card type of an SDCC termination.

Table B-539 Field Descriptions for the DCC Properties Pane (continued)

Field	Description
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only.
OSI SNPA	If the SDCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the termination: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion. • UEQ—Unequipped; there is nothing in the slot. • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted. • SWDL—Software download in progress. • MT—Maintenance, as per the Admin State change. • AINS—Automatic in service. • DSBLD—Traffic is disabled on the entity. • LPBK—Port or connection has a loopback on it. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11 on page 11-15. See Table 11-11 on page 11-15 for the Service state-Secondary state possible values. **Note** If the NE release does not support the Service state, this field shows N/A.
MS-DCC	
LDCC Terminations	Displays the slot, port, and card type of an LDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the LDCCs that are provisioned as OSI only.
OSI SNPA	If the LDCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.

Table B-539 Field Descriptions for the DCC Properties Pane (continued)

Field	Description
Service State	Select the state of the MS-DCC termination: • IS-NR—In Service–Normal • OOS-AU—Out of Service–Autonomous • OOS-MA—Out of Service–Management • OOS-AUMA—Out of Service–Autonomous and Management In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion • UEQ—Unequipped; there is nothing in the slot • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted • SWDL—Software download in progress • MT—Maintenance, as per the Admin State change • AINS—Automatic in service • DSBLD—Traffic is disabled on the entity • LPBK—Port or connection has a loopback on it
Create button	Allows you to create new terminations on SONET or SDH cards.
Edit button	Allows you to modify existing terminations on SONET or SDH cards.
Delete button	Allows you to delete the selected RS-DCC or MS-DCC.

B.14.1.6 Timing

The Timing Properties pane contains the following tabs:

- B.14.1.6.1 General Tab, page B-394
- B.14.1.6.2 Reference List Tab, page B-396
- B.14.1.6.3 Status Tab, page B-396
- B.14.1.6.4 Timing Report Tab, page B-397

B.14.1.6.1 General Tab

The General tab displays general timing information.

Table B-540 Field Descriptions for the General Tab

Field	Description
General Timing	
Timing Mode	Set the node timing mode: • External—The ONS 15600 SDH derives its timing from a BITS source wired to the backplane pins. • Line—Timing is derived from an STM-N card that is optically connected to the timing node. • Mixed—Timing is set to external and line timing references. **Caution** Mixed timing might cause timing loops. Use this mode with care.
SSM Message Set	Choose the SSM set level supported by your network. SSM is an SONET protocol that communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SONET Line layer. They enable SONET devices to automatically select the highest quality timing reference and to avoid timing loops. If a Generation 1 node receives a Generation 2 message, the message is mapped down to the next available Generation 1 node. For example, an ST3E message becomes an ST3.
Revertive	If checked, the ONS 15600 SDH reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
Reversion Time	Specify the reversion time in half-minute increments.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.
BITS In/Out Facilities	
E1, T1, 2.048 MHz, 64 KHz	Select the speed of the BITS facility.
In/Out State	Set the BITS reference to IS or OOS. For nodes set to Line timing with no equipment timed through BITS Out, set the state to OOS. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to IS. **Note** BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either ESF or SF (D4). SSM is not available with Super Frame.
Sync Messaging	If checked, enables the SSM for BITS In. (SSM is not available if Framing is set to Super Frame.)
Admin SSM	If the Sync Messaging check box is not checked, you can choose the SSM Generation 2 type from the drop-down list.
AIS Threshold	If SSM is disabled or Super Frame is used, set the quality level where a node sends an alarm indication signal (AIS) from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
Cable Type	Type of cable. Values are 75 ohm or 120 ohm.
Sa Bit	The Sa Bit is used to transmit the SSM message. Available Sa bits are Sa4, Sa5, Sa6, Sa7, and Sa8.

B.14.1.6.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-541 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to Internal Clock. This is the Stratum 3 clock provided on the TCC+. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal Clock. • Timing Mode set to Line—Options are the node's working optical cards and Internal Clock. Select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1.

B.14.1.6.3 Status Tab

The Status tab displays timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.
- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-542 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference.
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 out timing reference.
Operations	Execute a switch on the BITS-1 out timing reference.
BITS-2 Out	
BITS-2 Out	Set the BITS-2 out timing reference.

Table B-542 Field Descriptions for the Status Tab (continued)

Field	Description
Status	Displays the status of the BITS-2 out timing reference.
Operations	Execute a switch on the BITS-2 out timing reference.

B.14.1.6.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

B.14.1.7 Protection

The Protection Properties pane contains the following tabs:

- B.14.1.7.1 Protection Groups Tab, page B-397
- B.14.1.7.2 Operations Tab, page B-398

B.14.1.7.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-543 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.	
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.
Type	Choose the protection type (1:1, 1:N, or 1+1) from the drop-down list. The protection selected determines the cards that are available to serve as protect and working cards. For example, if you choose 1:N protection, only DS-1N and DS-3N cards are displayed. 1+1 protection is only used for optical cards.
Protect Module	Choose the protect card if using 1:1 or 1:N protection.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select 1+1 (port) type.
Revertive	If checked, the ONS 15600 SDH reverts traffic to the working card or port after failure conditions are corrected and remain correct for the amount of time entered in Reversion Time.
Reversion Time	If Revertive is checked, enter the amount of time following failure condition correction that should elapse before the ONS 15600 SDH switches back to the working card or port.

B.14.1.7.2 Operations Tab

The Operations tab displays protection group operation information.

Table B-544 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock out switching, or lock on switching.

B.14.1.8 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the ONS 15600 SDH NE. You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.14.1.9 Security

The Security Properties pane allows you to view and edit the security advisory message for the ONS 15600 SDH NE. The Security Properties pane contains the following tabs:

- B.14.1.9.1 Policy Tab, page B-398
- B.14.1.9.2 Password Tab, page B-399
- B.14.1.9.3 Access Tab, page B-400
- B.14.1.9.4 RADIUS Server Tab, page B-401
- B.14.1.9.5 Legal Disclaimer Tab, page B-402

B.14.1.9.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-545 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	

Table B-545 Field Descriptions for the Policy Tab (continued)

Field	Description
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.
SuperUser	Set the idle user timeout for a CTC SuperUser user.
User Lockout	
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Sessions per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.
Disable Inactive User	If checked, inactive users are disabled automatically for the amount of time in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.14.1.9.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-546 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.

Table B-546 Field Descriptions for the Password Tab (continued)

Field	Description
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

B.14.1.9.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-547 Field Descriptions for the Access Tab

Field	Description
Access	
LAN Access	Specify the type of LAN access allowed. Values are Backplane Only, No LAN Access, Front and Backplane, or Front Only. **Note** After the LAN access to the backplane is set, the Prime Optical client is unusable for 4 to 5 minutes.
Restore Timeout	This time period begins if *No LAN Access* is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Serial Craft Access	
Enable Craft Port A	Check this check box to enable craft port A.
Enable Craft Port B	Check this check box to enable craft port B.
Shell Access	
Access State	Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SSH Port	Indicates the SSH port number that will be used.
SFTP Port	Indicates the SFTP port number.
Telnet Port	This is enabled if you selected the Non-secure access state. Enter the Telnet port number that will be used.
Use Standard Telnet Port	Check this check box to indicate that the standard Telnet port will be used.
Enable Shell Password	Indicates whether or not the Shell password is enabled. **Note** You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
EMS Access	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.

Table B-547 Field Descriptions for the Access Tab (continued)

Field	Description
CORBA Listener Port	Select the port numbers for the TSC CORBA (IIOP) listener port and the TSC CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the TSC CORBA (IIOP) listener port is 683. The port number for the TSC CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.
TL1 Access	
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.
Other	
PM Clearing Privilege	Select the users privilege that allows clearing PM statistics for the NE.

B.14.1.9.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for the ONS 15600 SDH R8.0 and later.

Table B-548 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.

Table B-548 Field Descriptions for the RADIUS Server Tab (continued)

Field	Description
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.14.1.9.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-549 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.14.1.10 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual ONS 15600 SDH nodes. The Alarm Properties pane contains the following tabs:

- B.14.1.10.1 Profile Tab, page B-402
- B.14.1.10.2 Alarm Behavior Tab, page B-403

B.14.1.10.1 Profile Tab

The Profile tab allows you to select, create, or delete alarm profiles.

Table B-550 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list. Click **Create** to create a new alarm profile for the NE. Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.14.1.10.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-551 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.14.1.11 Maintenance

The ONS 15600 SDH hardware keeps track of which copies of data (backplane STS), SYNC, O&M, and CLK are currently being used by I/O and CXC cards.

B.14.1.11.1 Preferred Copy Tab

The Preferred Copy tab allows you to change the preferred data source and view the clock and SYNC copy.

Table B-552 Field Descriptions for the Preferred Copy Tab

Field	Description
Data Copy	
Preferred Data	Allows you to select the data copy (CXC) when both the CXC cards are present in the system.
Selected Data	Displays the data copy currently being used.
Clock and Sync Copy	
Preferred Clock	Displays the preferred clock and SYNC copy.
Selected Clock	Displays the clock and SYNC copy currently being used.

B.14.1.12 Alarm Extenders

The Alarm Extenders Properties pane allows you to view external alarm information and create custom alarm types. The Alarm Extenders Properties pane contains the following tabs:

- B.14.1.12.1 External Alarms Tab, page B-404
- B.14.1.12.2 External Controls Tab, page B-404
- B.14.1.12.3 User-Defined Alarms Tab, page B-405

B.14.1.12.1 External Alarms Tab

The External Alarms tab allows you to view and update external alarm information.

Table B-553 Field Descriptions for the External Alarms Tab

Field	Description
Input Number	The alarm input number.
Enabled	Check to activate the fields for the alarm input number.
Alarm Type	Choose an alarm type from the provided list.
Severity	Choose a severity from the list.
Raised When	Choose the contact condition that will trigger the alarm in CTC.
Virtual Wire	To assign the external device to a virtual wire, choose a virtual wire from the list, or choose None if no assignment is required.
Description	Displays a default description for every external alarm that is enabled.
Raised	Indicates whether an alarm has been raised.
Contact Status	Indicates the current status of the contact.

B.14.1.12.2 External Controls Tab

The External Controls tab allows you to view and update external controls.

Table B-554 Field Descriptions for the External Controls Tab

Field	Description
Control Number	The control number.
Enabled	Check to activate the fields for the control number.
Control Type	Choose a control type from the provided list.
Trigger Type	Choose a trigger type: a local minor, major, or critical alarm; a remote minor, major, or critical alarm; or a virtual wire activation.
Description	Enter a description.
Current State	The current state of the control.
Auto State	The auto state of the control.
Contact Setting	The current contact setting.

B.14.1.12.3 User-Defined Alarms Tab

The User-Defined Alarms tab allows you to view, add, and delete custom alarm types on the ONS 15600 SDH.

Table B-555 Field Descriptions for the User-Defined Alarms Tab

Field	Descriptions
Alarm Types	Lists the user-defined alarm types that have been created on the ONS 15600 SDH. You can create up to 50 custom environmental alarms, which are reported in the Condition column in the Alarm Log and Alarm Browser windows.
Add	Click the **Add** button to add a new custom alarm type. Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).
Delete	Click the **Delete** button to delete an existing alarm type.

B.14.1.13 MS-SPRing

The MS-SPRing Properties pane allows you to view MS-SPRing information and create new MS-SPRings. MS-SPRings share the ring bandwidth equally between working and protection traffic. Half of the payload bandwidth is reserved for protection in each direction, making the communication pipe half-full under normal operation. Click **Create** to create a new MS-SPRing; click **Delete** to delete an existing MS-SPRing; click **Ring Map** to open the Ring Map; click **Squelch Table** to open the Squelch table.

Table B-556 Field Descriptions for the MS-SPRing Properties Pane

Field	Description
Fiber Type	Indicates whether the fiber type is 2-fiber or 4-fiber.
Rate	Select the MS-SPRing rate.
Ring Name	Assign a ring name. Nodes in the same MS-SPRing must have the same ring name.
Node ID	Assign a node ID. The node ID identifies the node to the MS-SPRing. Nodes in the same MS-SPRing must have unique node IDs.
Ring Reversion	Set the amount of time that will pass before the traffic reverts to the original working path. The Cisco default is 5 minutes. All nodes in an MS-SPRing should have the same ring reversion setting, particularly if *never* (nonrevertive) is selected.
Span Reversion	Set the amount of time to pass before the span reverts to the working path.
East Line	Assign the east MS-SPRing port.
East Switch	Displays a list of switch commands for the east port.
West Line	Assign the west MS-SPRing port.
West Switch	Displays a list of switch commands for the west port.
East Protect	For the 4-fiber MS-SPRing, assign the east MS-SPRing protect port.
West Protect	For the 4-fiber MS-SPRing, assign the west MS-SPRing protect port.

B.14.1.14 OSI

The OSI Properties pane allows you to provision ONS 15600 SDH Open System Interconnection (OSI) parameters. The Properties pane contains the following tabs:

- B.14.1.14.1 Main Setup Tab, page B-406
- B.14.1.14.2 TARP-Config Tab, page B-406
- B.14.1.14.3 TARP-TDC Tab, page B-408
- B.14.1.14.4 TARP-MAT Tab, page B-408
- B.14.1.14.5 Routers-Setup Tab, page B-409
- B.14.1.14.6 Subnets Tab, page B-409
- B.14.1.14.7 Tunnels Tab, page B-410
- B.14.1.14.8 IS-IS RIB Tab, page B-411
- B.14.1.14.9 ES-IS RIB Tab, page B-411

B.14.1.14.1 Main Setup Tab

The Main Setup tab allows you to provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-557 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI end system (ES). ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1	Provisions the node as an OSI intermediate system (IS). ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1/Level 2	The ONS 15600 SDH performs all IS functions. It communicates with other IS and ES nodes within an OSI area and broadcasts ISHs to IS nodes in other areas to which it is connected. For the ONS 15600 SDH, Intermediate System Level 1/Level 2 is the default routing mode.
Node Routing Mode	
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.14.1.14.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-558 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial ONS 15600 SDH startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.
Timers	
LDB Entry	Sets the TARP LDB timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.

Table B-558 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.14.1.14.3 TARP-TDC Tab

Table B-559 Field Descriptions for the TARP-TDC Tab

Field	Description
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.
Type	Indicates how the TARP data cache entry was created. It can be either: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Selected Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.

B.14.1.14.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-560 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.

Table B-560 Field Descriptions for the TARP-MAT Tab (continued)

Field	Description
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.14.1.14.5 Routers-Setup Tab

The Routers-Setup tab allows you to view and manage the OSI virtual routers.

Table B-561 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. The ONS 15600 SDH provides six virtual routers, numbered 1 through 6.
System ID	Displays the NSAP system ID of the virtual router. The NSAP system identifier is set to the node's first IEEE 802.3 MAC address + *n*, where *n* = 0 through 6. For the primary router (Router 1), *n* = 0.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Edit button	Click **Edit** to modify the address parameters.

B.14.1.14.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-562 Field Descriptions for the Subnets Tab

Field	Description
Slot/Port	The subnet slot and port.
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets

Table B-562 Field Descriptions for the Subnets Tab (continued)

Field	Description
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.
Edit button	Click **Edit** to modify the subnet parameters.
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.

B.14.1.14.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-563 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.14.1.14.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-564 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. The ONS 15600 SDH provides six virtual routers, numbered 1 through 6.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.14.1.14.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-565 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. The ONS 15600 SDH provides six virtual routers, numbered 1 through 6.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.15 CPT 200 NE Explorer

The node properties pane displays information about the CPT 200 NE. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.15.0.1 Shelf View, page B-412
- B.15.0.2 Alarm, page B-412
- B.15.0.3 DCC/GCC/OSC, page B-413
- B.15.0.4 DWDM, page B-415
- B.15.0.5 General, page B-419
- B.15.0.6 NE Defaults, page B-420
- B.15.0.7 Network, page B-420
- B.15.0.8 OSI, page B-426
- B.15.0.9 Protection, page B-432
- B.15.0.10 Security, page B-433
- B.15.0.11 Timing, page B-437

B.15.0.1 Shelf View

The Shelf View Properties pane displays a graphic of the CPT 200 NE that is selected in the NE Explorer tree. Moving the mouse pointer over the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset, delete, or change a card. For unprovisioned slots, the right-click menu allows you to add a card.

B.15.0.2 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual CPT 200 NE nodes. The Alarm Properties pane contains the following tabs:

- B.15.0.2.1 Profile Tab, page B-412
- B.15.0.2.2 Alarm Behavior Tab, page B-413

B.15.0.2.1 Profile Tab

The Profile tab allows you to select, create, or delete alarm profiles.

Table B-566 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list. Click **Create** to create a new alarm profile for the NE. Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.15.0.2.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-567 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.15.0.3 DCC/GCC/OSC

The DCC/GCC/OSC Properties pane allows you to create, delete, and view SDCCs, LDCCs, Generic Communications Channels (GCCs), Optical Service Channels (OSCs), and DWDM ring IDs.

Table B-568 Field Descriptions for the DCC/GCC/OSC Properties Pane

Field	Description
Create	Click the **Create** button to create new terminations on SONET or SDH cards.
Edit	Click the **Edit** button to modify existing terminations on SONET or SDH cards.
Delete	Click the **Delete** button to delete the selected SDCC, LDCC, GCC, OSC, or DWDM ring ID.
RS-DCC/SDCC	
SDCC Terminations	Displays the slot, port, and card type of an SDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.

Table B-568 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the termination: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion. • UEQ—Unequipped; there is nothing in the slot. • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted. • SWDL—Software download in progress. • MT—Maintenance, as per the Admin State change. • AINS—Automatic in service. • DSBLD—Traffic is disabled on the entity. • LPBK—Port or connection has a loopback on it. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11 on page 11-15. See Table 11-11 on page 11-15 for the Service state-Secondary state possible values. **Note** If the NE release does not support the Service state, this field shows N/A.
MS-DCC/LDCC	
LDCC Terminations	Displays the slot, port, and card type of an LDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only. For GCCs, this column is always N/A.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the LDCC termination (IS-NR, OOS-AU, OOS-MA, OOS-AUMA) plus the secondary state (MEA, UEQ, UAS, SWDL, MT, AINS, DSBLD, LPBK).
GCC	

Table B-568 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
GCC Terminations	Displays the slot, port, and card type of a GCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
GCC Rate	Displays the GCC rate.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only. For GCCs, this column is always N/A.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and SNPA address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the GCC termination (IS-NR, OOS-AU, OOS-MA, OOS-AUMA) plus the secondary state (MEA, UEQ, UAS, SWDL, MT, AINS, DSBLD, LPBK).
OSC	
OSC Terminations	Displays the slot, port, and card type of an OSC termination.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only.
OSI SNPA	If the OSC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Displays the state of the OSC termination.
DWDM Ring ID	
Ring ID	Displays the ring ID.
West Direction	Lists the OSCM or OSC-CSM port that supports the ring in the west direction. The value is N/A if there are no ports in the west direction.
East Direction	Lists the OSCM or OSC-CSM port that supports the ring in the east direction. The value is N/A if there are no ports in the east direction.

B.15.0.4 DWDM

The DWDM Properties pane allows you to manage and provision DWDM connections. The DWDM Properties pane contains the following tabs:

- B.15.0.4.1 Provisioning Tab, page B-416
- B.15.0.4.2 Connections Tab, page B-416
- B.15.0.4.3 Span Check Tab, page B-417
- B.15.0.4.4 APC Tab, page B-417
- B.15.0.4.5 Node Setup Tab, page B-418
- B.15.0.4.6 Side Tab, page B-418
- B.15.0.4.7 All Facilities Tab, page B-418
- B.15.0.4.8 Passive Cards Tab, page B-419

B.15.0.4.1 Provisioning Tab

The Provisioning tab allows you to view and change the optical parameters for the CPT 200 NE. The optical parameters might have already been provisioned manually or by automatic node setup (ANS).

Table B-569 Field Descriptions for the Provisioning Tab

Field	Description
Attribute Name	Displays the Properties pane name that is imported from or exported to the Cisco MetroPlanner configuration file.
Value	Displays the default value of the corresponding Properties pane name imported from or exported to the Cisco MetroPlanner configuration file.
Origin	Shows how the parameter is set. Possible values are: • Default • Automatic • Provisioned • Imported
Note	Displays error details if ANS fails to set the parameter. Possible errors are: • Error during NE board navigation; value is not calculated • Cannot send the parameter request to far-end node; value is not calculated • No response from far-end node; value is not calculated • Configuration is not supported; value is not calculated • Far-end node configuration is not supported; value is not calculated • OSC far-end launch power is not available; value is not calculated • Far-end launch power is not available; value is not calculated • Span loss value is not available; value is not calculated • Fiber stage insertion loss is not available; value is not calculated • Preamplifier tilt is not available; value is not calculated • Add/drop output power is not available; value is not calculated • NE node launch power is not available; value is not calculated • WXC degree is not available; value is not calculated • Value is out of range • Read-only attribute; value is not calculated

B.15.0.4.2 Connections Tab

The Connections tab allows you retrieve internal patchcords and calculate DWDM connections.

Table B-570 Field Descriptions for the Connections Tab

Field	Description
Slot-From	The slot from which the DWDM connection originates.
Unit-From	The unit from which the DWDM connection originates.

Table B-570 Field Descriptions for the Connections Tab (continued)

Field	Description
Port-From	The port from which the DWDM connection originates.
Slot-To	The slot at which the DWDM connection terminates.
Unit-To	The unit at which the DWDM connection terminates.
Port-To	The port at which the DWDM connection terminates.
State	The state of the DWDM connection.
From	The unit or port from which the internal patchcord originates.
To	The unit or port at which the internal patchcord terminates.
Wavelength	Shows the wavelength value if the internal patchcord is between two channel ports. Otherwise, it shows *N/A*.

B.15.0.4.3 Span Check Tab

The Span Check tab allows you to check the span loss between the selected node and the previous node in the chain. The span check is always in reception.

Note If the Measured Span Loss value crosses the Min or Max Expected Span Loss threshold, a condition is raised.

Table B-571 Field Descriptions for the Span Check Tab

Field	Description
Retrieve Span Loss Values button	Runs the span loss verification function and retrieves values for the Measure Span Loss column.
Side	Specifies the side for which span loss information is displayed (east-to-west or west-to-east).
Min Exp. Span Loss	Specifies the minimum expected span loss (in dBm) for the incoming span. This value is imported from MetroPlanner, but can be modified manually.
Max Exp. Span Loss	Specifies the maximum expected span loss (in dBm) for the incoming span.
Meas. Span Loss	The measured span loss value.
Resolution	The resolution or accuracy of the span loss measurement.

B.15.0.4.4 APC Tab

The APC tab allows you to view the automatic power control (APC) parameters.

Table B-572 Field Descriptions for the APC Tab

Field	Description
Port	Port number.
Last Modification	Date and time the power control setpoint was last modified.
Param	All the APC parameters associated with the port.
Last Check	Date and time the power control setpoint was last verified.

Table B-572 Field Descriptions for the APC Tab (continued)

Field	Description
Side	Lists all the NEs and their sides that belong to the APC domain.
APC State	Displays the actual state of the APC. Values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.

B.15.0.4.5 Node Setup Tab

The Node Setup tab allows you to automatically preprovision NEs from a selected XML configuration file.

Table B-573 Field Descriptions for the Node Setup Tab

Field	Description
XML Settings	
Select XML File	Click **Browse** to select an XML file (generated by the MetroPlanner application). Prime Optical parses the XML file selected by the operator and checks the accuracy of its content.
Log Settings	
Select Log File	Click **Browse** to select a log file to which the results of the operations you perform will be saved.
Launch ANS Wizard button	Click the **Launch ANS Wizard** button to launch the Automatic Node Setup wizard. See 7.12.11 Configuring Automatic Node Setup, page 7-340 for more information.

B.15.0.4.6 Side Tab

The Side tab allows you to view, edit, and delete sides defined for a CPT 200 NE.

Table B-574 Field Descriptions for the Side Tab

Field	Description
Create button	Allows you to create side objects for the NE.
Modify button	Allows you to modify the side ID of an existing side object.
Delete button	Allows you to delete side objects.
Side	Displays the NE's side ID.
Line In	Displays the index of the receive side of the OTS port.
Line Out	Displays the index of the transmit side of the OTS port.

B.15.0.4.7 All Facilities Tab

The All Facilities tab allows you to view the DWDM and optical ports for the CPT 200 NE.

Table B-575 Field Descriptions for the All Facilities Tab

Field	Description
Port	Displays the card port number, shelf ID, and slot number.
Power	Displays the current power for the port.
State	Displays the administrative state of the port.
Service State	Displays the service state of the port.
Retain Selected	Displays only the ports that you selected.
Show All	Retrieves and displays all the optical and DWDM ports for the NE.

B.15.0.4.8 Passive Cards Tab

The Passive Cards tab allows you to view information about passive units provisioned in CTC.

Note Passive units can be provisioned in CTC only.

Table B-576 Field Descriptions for the Passive Cards Tab

Field	Description
Passive Cards	
ID	Displays the passive card shelf ID.
Equipment Name	Displays the general card type/name.
Location	Displays the location of the passive card.
Description	Displays the passive card description.
Optical Ports	
Port	Displays the port number.
Type	Displays the port type.
MPO	Displays any physical multifiber push connectors.
Wavelength	Displays the port wavelength.

B.15.0.5 General

The General Properties pane displays identification information, voltage thresholds, and multishelf configurations for the CPT 200 NE.

Table B-577 Field Descriptions for the General Properties Pane

Field	Description
Identification Tab	
NE ID	Displays the ID of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.

Table B-577 Field Descriptions for the General Properties Pane (continued)

Field	Description
Contact	Displays the name and phone number of the node contact person.
Description	Enter a description of the NE.
System Description	Displays the NE type and the version of the system software.
Voltage/Temperature Tab	
Voltage	Displays the voltage (in millivolts) of the shelf that corresponds to the power supply.
Temperature	Displays the temperature (in degrees Celsius) of the shelf.

B.15.0.6 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the CPT 200 NE. You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.15.0.7 Network

The Network Properties pane displays information about the NE network address. The Properties pane contains the following tabs:

- B.15.0.7.1 Address Tab, page B-420
- B.15.0.7.2 Static Routes Tab, page B-421
- B.15.0.7.3 OSPF Tab, page B-421
- B.15.0.7.4 OSPF Area Range Tab, page B-422
- B.15.0.7.5 OSPF Virtual Links Tab, page B-423
- B.15.0.7.6 SNMP Tab, page B-423
- B.15.0.7.7 Firewall/Proxy Tab, page B-424
- B.15.0.7.8 Routing Table Tab, page B-424
- B.15.0.7.9 Internal Subnet Tab, page B-425
- B.15.0.7.10 Proxy Tunnels Tab, page B-425
- B.15.0.7.11 Firewall Tunnels Tab, page B-425
- B.15.0.7.12 FTP Hosts Tab, page B-426

B.15.0.7.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-578 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.

Table B-578 Field Descriptions for the Address Tab (continued)

Field	Description
MAC Address	Displays the CPT 200 NE address as it is identified on the IEEE 802 MAC layer.
Forward DHCP Requests	If checked, forwards DHCP requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.
IPv6 Config	
Enable IPv6	If checked, allows you to configure the node to use the IPv6 protocol and to assign an IPv6 address to the node.
IPv6 Address	Enter the IPv6 address of the node.
Default IPv6 Router	Enter the IPv6 default router of the node.
IPv6 Subnet Mask	Enter the IPv6 subnetwork mask length.

B.15.0.7.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and CPT 200 NE connectivity and create or delete static routes.

Table B-579 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the CPT 200 NE and the computer.

B.15.0.7.3 OSPF Tab

The OSPF tab displays OSPF information. OSPF is a link-state Internet routing protocol.

Table B-580 Field Descriptions for the OSPF Tab

Field	Description
DCC/GCC OSPF Area ID Table	
Slot	Displays the slot number.
Port	Displays the port number.
DCC OSPF Area ID	Displays the number that identifies the CPT 200 NE as a unique OSPF area. The OSPF area number can be from 0.0.0.0 to 255.255.255.255. The number must be unique to the LAN OSPF area.
RS-DCC Metric	Sets a cost for sending packets across the RS-DCC, which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
MS-DCC Metric	Sets a cost for sending packets across the MS-DCC, which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.

Table B-580 Field Descriptions for the OSPF Tab (continued)

Field	Description
OSPF on LAN	
OSPF Active on LAN	If checked, enables the CPT 200 NE OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on CPT 200 NEs that directly connect to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the CPT 200 NE is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the value used for this NE in designated router election. The Cisco default value is zero (0). A router that has Router Priority set to 0 is ineligible to become a designated router on the attached network.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
OSPF Authentication	
Authentication Type	Displays Simple Password if the router where the CPT 200 NE is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.15.0.7.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-581 Field Descriptions for the OSPF Area Range Tab

Field	Description
Range Address	Displays the area IP address for the CPT 600 NEs that reside within the OSPF area. For example, if the CPT 600 NE OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the CPT 200 NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF routing table is advertised.

B.15.0.7.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-582 Field Descriptions for the OSPF Virtual Links Tab

Field	Description
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.15.0.7.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-583 Field Descriptions for the SNMP Tab

Field	Description
IP Address	The IP address of the NMS.
Community Name	The SNMP community name. **Note** The SNMP community string cannot be blank in Prime Optical. If a blank community string is required in CTC builds earlier than R4.6, you must set the blank community string in CTC.
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.

B.15.0.7.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-584 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Gateway Settings	
Enable Proxy Server on Port	If checked, the CPT 200 NE serves as a proxy for connections between the Prime Optical server and CPT 200s that are DCC-connected to the proxy CPT 200 NE. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server port number (display-only) is shown following the Enable Proxy Server on Port field. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Enables the CPT 200 NE to proxy as an ENE. Note that an alternate expansion for ENE is *external network element*. • Gateway Network Element (GNE)—Enables the CPT 200 NE to proxy as a GNE. • Proxy-only—Enables proxy only. If unchecked, the node does not proxy.

B.15.0.7.8 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-585 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host. Destination (0.0.0.0) is the default route entry. All undefined destination network or host entries on this routing table are mapped to the default route entry.
Mask	Displays the subnet mask used to reach the destination network or host. Mask (0.0.0.0) is always 0 for the default route.
Gateway	Displays the IP address of the gateway used to reach the destination network or host. All outbound traffic belonging to this network is sent to this gateway. Gateway (172.20.214.1) is the default gateway address. All outbound traffic that cannot be found in this routing table or is not on the nodes local subnet will be sent to this gateway.
Usage	Shows the number of times the listed route has been used.
Interface	Shows the CPT 200 NE interface used to access the destination. Values are: • cpm0—The CPT 200 NE Ethernet interface (that is, the RJ-45 jack on the TCC+/TCC2 and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface.

B.15.0.7.9 Internal Subnet Tab

The Internal Subnet tab allows you to change the class B subnet address for TSC cards. TSC cards perform all system-timing functions for each CPT 200 NE. To avoid IP address conflicts, you should change the class B subnet address if your internal network uses the same address range as the default subnet addresses.

Table B-586 Field Descriptions for the Internal Subnet Tab

Field	Description
TSC1	Enter the class B subnet address for the first TSC.
TSC2	If two TSCs are installed, enter the class B subnet address for the second TSC.

B.15.0.7.10 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-587 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.15.0.7.11 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-588 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.15.0.7.12 FTP Hosts Tab

The FTP Hosts tab allows you to configure database backup or restore and software download to an ENE when the firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which the FTP relay resumes blocking all FTP access for the ENEs.

Table B-589 Field Descriptions for the FTP Hosts Tab

Field	Description
Create button	Opens the Create New FTP Host dialog box, which allows you to create up to 12 new FTP hosts in a GNE/ENE firewall environment. See 5.3.10.1 Creating an FTP Host, page 5-22. **Note** You cannot create more than 12 FTP hosts.
Delete button	Deletes the selected FTP host.
FTP Host Address	Displays the FTP host IP address.
Prefix Length	Displays the FTP host subnet mask length.
Enable FTP Relay	Indicates whether FTP relay is enabled or disabled. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Displays the number of minutes that the FTP relay is configured to run, after which the FTP relay resumes blocking all FTP access for the ENEs.

B.15.0.8 OSI

The OSI Properties pane allows you to provision CPT 200 NE Open System Interconnection (OSI) parameters. The Properties pane contains the following tabs:

- B.15.0.8.1 Main Setup Tab, page B-426
- B.15.0.8.2 TARP-Config Tab, page B-427
- B.15.0.8.3 TARP-TDC Tab, page B-428
- B.15.0.8.4 TARP-MAT Tab, page B-429
- B.15.0.8.5 Routers-Setup Tab, page B-429
- B.15.0.8.6 Subnets Tab, page B-430
- B.15.0.8.7 Tunnels Tab, page B-430
- B.15.0.8.8 IS-IS RIB Tab, page B-431
- B.15.0.8.9 ES-IS RIB Tab, page B-431

B.15.0.8.1 Main Setup Tab

The Main Setup tab allows you to provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-590 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI end system (ES). ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1	Provisions the node as an OSI intermediate system (IS). ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1/Level 2	The CPT 200 NE performs all IS functions. It communicates with other IS and ES nodes within an OSI area and broadcasts ISHs to IS nodes in other areas to which it is connected. For the CPT 200 NE, Intermediate System Level 1/Level 2 is the default routing mode.
Node Routing Mode	
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.15.0.8.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-591 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.

Table B-591 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial CPT 200 NE startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.
Timers	
LDB Entry	Sets the TARP LDB timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.15.0.8.3 TARP-TDC Tab

Table B-592 Field Descriptions for the TARP-TDC Tab

Field	Description
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.
Type	Indicates how the TARP data cache entry was created. It can be either: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.

Table B-592 Field Descriptions for the TARP-TDC Tab (continued)

Field	Description
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Selected Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.

B.15.0.8.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-593 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.15.0.8.5 Routers-Setup Tab

The Routers-Setup tab allows you to view and manage the OSI virtual routers.

Table B-594 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. The CPT 200 NE provides six virtual routers, numbered 1 through 6.
System ID	Displays the NSAP system ID of the virtual router. The NSAP system identifier is set to the node's first IEEE 802.3 MAC address + *n*, where *n* = 0 through 6. For the primary router (Router 1), *n* = 0.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Edit button	Click **Edit** to modify the address parameters.

B.15.0.8.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-595 Field Descriptions for the Subnets Tab

Field	Description
Slot/Port	The subnet slot and port.
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.
Edit button	Click **Edit** to modify the subnet parameters.
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.

B.15.0.8.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-596 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.

Table B-596 Field Descriptions for the Tunnels Tab (continued)

Field	Description
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.15.0.8.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-597 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. The CPT 200 NE provides six virtual routers, numbered 1 through 6.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.15.0.8.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-598 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. The CPT 200 NE provides six virtual routers, numbered 1 through 6.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.

Table B-598 Field Descriptions for the ES-IS RIB Tab (continued)

Field	Description
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.15.0.9 Protection

The Protection Properties pane contains the following tabs:

- B.15.0.9.1 Protection Groups Tab, page B-432
- B.15.0.9.2 Operations Tab, page B-433

B.15.0.9.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-599 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.	
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.
Type	Choose the protection type (1:1, 1:N, or 1+1) from the drop-down list. The protection selected determines the cards that are available to serve as protect and working cards. For example, if you choose 1:N protection, only DS-1N and DS-3N cards are displayed. 1+1 protection is only used for optical cards.
Protect Module	Choose the protect card if using 1:1 or 1:N protection.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select 1+1 (port) type.
Revertive	If checked, the CPT 200 NE reverts traffic to the working card or port after failure conditions are corrected and remain correct for the amount of time entered in Reversion Time.
Reversion Time	If Revertive is checked, enter the amount of time following failure condition correction that should elapse before the CPT 200 NE switches back to the working card or port.

B.15.0.9.2 Operations Tab

The Operations tab displays protection group operation information.

Table B-600 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock out switching, or lock on switching.

B.15.0.10 Security

The Security Properties pane allows you to view and edit the security advisory message for the CPT 200 NE. The Security Properties pane contains the following tabs:

- B.15.0.10.1 Policy Tab, page B-433
- B.15.0.10.2 Password Tab, page B-434
- B.15.0.10.3 Access Tab, page B-435
- B.15.0.10.4 RADIUS Server Tab, page B-436
- B.15.0.10.5 Legal Disclaimer Tab, page B-437

B.15.0.10.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-601 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.
SuperUser	Set the idle user timeout for a CTC SuperUser user.
User Lockout	

Table B-601 Field Descriptions for the Policy Tab (continued)

Field	Description
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Sessions per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.
Disable Inactive User	If checked, inactive users are disabled automatically for the amount of time in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.15.0.10.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-602 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

B.15.0.10.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-603 Field Descriptions for the Access Tab

Field	Description
Access	
LAN Access	Specify the type of LAN access allowed. Values are Backplane Only, No LAN Access, Front and Backplane, or Front Only. **Note** After the LAN access to the backplane is set, the Prime Optical client is unusable for 4 to 5 minutes.
Restore Timeout	This time period begins if *No LAN Access* is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Serial Craft Access	
Enable Craft Port A	Check this check box to enable craft port A.
Enable Craft Port B	Check this check box to enable craft port B.
Shell Access	
Access State	Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SSH Port	Indicates the SSH port number that will be used.
SFTP Port	Indicates the SFTP port number.
Telnet Port	This is enabled if you selected the Non-secure access state. Enter the Telnet port number that will be used.
Use Standard Telnet Port	Check this check box to indicate that the standard Telnet port will be used.
Enable Shell Password	Indicates whether or not the Shell password is enabled. **Note** You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
EMS Access	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.
CORBA Listener Port	Select the port numbers for the TSC CORBA (IIOP) listener port and the TSC CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the TSC CORBA (IIOP) listener port is 683. The port number for the TSC CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.
TL1 Access	
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.

Table B-603 Field Descriptions for the Access Tab (continued)

Field	Description
Other	
PM Clearing Privilege	Select the users privilege that allows clearing PM statistics for the NE.

B.15.0.10.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for the CPT 200 NE and later.

Table B-604 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.15.0.10.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-605 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.15.0.11 Timing

The Timing Properties pane contains the following tabs:

- B.15.0.11.1 General Tab, page B-437
- B.15.0.11.2 Reference List Tab, page B-439
- B.15.0.11.3 Status Tab, page B-439
- B.15.0.11.4 Timing Report Tab, page B-440

B.15.0.11.1 General Tab

The General tab displays general timing information.

Table B-606 Field Descriptions for the General Tab

Field	Description
General Timing	
Timing Mode	Set the node timing mode: • External—The CPT 200 NE derives its timing from a BITS source wired to the backplane pins. • Line—Timing is derived from an STM-N card that is optically connected to the timing node. • Mixed—Timing is set to external and line timing references. **Caution** Mixed timing might cause timing loops. Use this mode with care.
SSM Message Set	Choose the SSM set level supported by your network. SSM is an SONET protocol that communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SONET Line layer. They enable SONET devices to automatically select the highest quality timing reference and to avoid timing loops. If a Generation 1 node receives a Generation 2 message, the message is mapped down to the next available Generation 1 node. For example, an ST3E message becomes an ST3.
Revertive	If checked, the CPT 200 NE reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
Reversion Time	Specify the reversion time in half-minute increments.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.
BITS In/Out Facilities	
E1, T1, 2.048 MHz, 64 KHz	Select the speed of the BITS facility.
In/Out State	Set the BITS reference to IS or OOS. For nodes set to Line timing with no equipment timed through BITS Out, set the state to OOS. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to IS. **Note** BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either ESF or SF (D4). SSM is not available with Super Frame.
Sync Messaging	If checked, enables the SSM for BITS In. (SSM is not available if Framing is set to Super Frame.)
Admin SSM	If the Sync Messaging check box is not checked, you can choose the SSM Generation 2 type from the drop-down list.
AIS Threshold	If SSM is disabled or Super Frame is used, set the quality level where a node sends an alarm indication signal (AIS) from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
Cable Type	Type of cable. Values are 75 ohm or 120 ohm.
Sa Bit	The Sa Bit is used to transmit the SSM message. Available Sa bits are Sa4, Sa5, Sa6, Sa7, and Sa8.

B.15.0.11.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-607 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to Internal Clock. This is the Stratum 3 clock provided on the TCC+. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal Clock. • Timing Mode set to Line—Options are the node's working optical cards and Internal Clock. Select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1.

B.15.0.11.3 Status Tab

The Status tab displays timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.
- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-608 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference.
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 out timing reference.
Operations	Execute a switch on the BITS-1 out timing reference.
BITS-2 Out	
BITS-2 Out	Set the BITS-2 out timing reference.

Table B-608 Field Descriptions for the Status Tab (continued)

Field	Description
Status	Displays the status of the BITS-2 out timing reference.
Operations	Execute a switch on the BITS-2 out timing reference.

B.15.0.11.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

B.16 CPT 600 NE Explorer

The node properties pane displays information about the CPT 600 NE. The properties pane contains the following tabs, some of which apply only to a specific NE version:

- B.16.0.1 Shelf View, page B-441
- B.16.0.2 Alarm, page B-441
- B.16.0.3 Alarm Extenders, page B-442
- B.16.0.4 DCC/GCC/OSC, page B-443
- B.16.0.5 DWDM, page B-446
- B.16.0.6 ECU Ports Alarms Suppression, page B-450
- B.16.0.7 General, page B-450
- B.16.0.8 NE Defaults, page B-451
- B.16.0.9 Network, page B-451
- B.16.0.10 OSI, page B-457
- B.16.0.11 Protection, page B-463
- B.16.0.12 Security, page B-464
- B.16.0.13 Timing, page B-468

B.16.0.1 Shelf View

The Shelf View Properties pane displays a graphic of the CPT 600 NE that is selected in the NE Explorer tree. Moving the mouse pointer over the NE, its shelves, slots, or cards displays the current alarms for the highlighted item. Double-clicking a slot or card displays the slot or card in the properties pane. The right-click menu allows you to reset, delete, or change a card. For unprovisioned slots, the right-click menu allows you to add a card.

B.16.0.2 Alarm

The Alarm Properties pane allows you to change default alarm severities by creating unique alarm profiles for individual CPT 600 NE nodes. The Alarm Properties pane contains the following tabs:

- B.14.1.10.1 Profile Tab, page B-402
- B.14.1.10.2 Alarm Behavior Tab, page B-403

B.16.0.2.1 Profile Tab

The Profile tab allows you to select, create, or delete alarm profiles.

Table B-609 Field Descriptions for the Profile Tab

Field	Description
Alarm Profile Name	Choose an alarm profile for the NE from the drop-down list. Click **Create** to create a new alarm profile for the NE. Click **Delete** to delete an alarm profile from the NE.
Condition	Displays the alarm condition.
Severity	Displays the alarm severity.

B.16.0.2.2 Alarm Behavior Tab

The Alarm Behavior tab allows you to change default alarm severities by creating unique alarm profiles.

Table B-610 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Choose a global alarm profile for the NE from the drop-down list.
Suppress Alarms	If checked, all alarms are suppressed.
Slot Number	Displays the location of the module.
Equipment Type	Displays the type of module in the slot.
Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms are suppressed for the port.

B.16.0.3 Alarm Extenders

The Alarm Extenders Properties pane allows you to view external alarm information and create custom alarm types. The Alarm Extenders Properties pane contains the following tabs:

- B.16.0.3.1 External Alarms Tab, page B-442
- B.16.0.3.2 External Controls Tab, page B-442
- B.16.0.3.3 User-Defined Alarms Tab, page B-443

B.16.0.3.1 External Alarms Tab

The External Alarms tab allows you to view and update external alarm information.

Table B-611 Field Descriptions for the External Alarms Tab

Field	Description
Input Number	The alarm input number.
Enabled	Check to activate the fields for the alarm input number.
Alarm Type	Choose an alarm type from the provided list.
Severity	Choose a severity from the list.
Raised When	Choose the contact condition that will trigger the alarm in CTC.
Virtual Wire	To assign the external device to a virtual wire, choose a virtual wire from the list, or choose None if no assignment is required.
Description	Displays a default description for every external alarm that is enabled.
Raised	Indicates whether an alarm has been raised.
Contact Status	Indicates the current status of the contact.

B.16.0.3.2 External Controls Tab

The External Controls tab allows you to view and update external controls.

Table B-612 Field Descriptions for the External Controls Tab

Field	Description
Control Number	The control number.
Enabled	Check to activate the fields for the control number.
Control Type	Choose a control type from the provided list.
Trigger Type	Choose a trigger type: a local minor, major, or critical alarm; a remote minor, major, or critical alarm; or a virtual wire activation.
Description	Enter a description.
Current State	The current state of the control.
Auto State	The auto state of the control.
Contact Setting	The current contact setting.

B.16.0.3.3 User-Defined Alarms Tab

The User-Defined Alarms tab allows you to view, add, and delete custom alarm types on the CPT 600 NE.

Table B-613 Field Descriptions for the User-Defined Alarms Tab

Field	Descriptions
Alarm Types	Lists the user-defined alarm types that have been created on the CPT 600 NE. You can create up to 50 custom environmental alarms, which are reported in the Condition column in the Alarm Log and Alarm Browser windows.
Add	Click the **Add** button to add a new custom alarm type. Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).
Delete	Click the **Delete** button to delete an existing alarm type.

B.16.0.4 DCC/GCC/OSC

The DCC/GCC/OSC Properties pane allows you to create, delete, and view SDCCs, LDCCs, Generic Communications Channels (GCCs), Optical Service Channels (OSCs), and DWDM ring IDs.

Table B-614 Field Descriptions for the DCC/GCC/OSC Properties Pane

Field	Description
Create	Click the **Create** button to create new terminations on SONET or SDH cards.
Edit	Click the **Edit** button to modify existing terminations on SONET or SDH cards.
Delete	Click the **Delete** button to delete the selected SDCC, LDCC, GCC, OSC, or DWDM ring ID.
RS-DCC/SDCC	
SDCC Terminations	Displays the slot, port, and card type of an SDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.

Table B-614 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
LAPD Config	If the SDCC is provisioned as OSI only, the following SDCC LAP-D parameters are displayed: • AITS/UITS—Indicates the LAP-D acknowledgement type, either Acknowledged Information Transfer Service (AITS) or Unacknowledged Transfer Service (UITS). • Network/User—Indicates the LAP-D frame command/response role, either Network or User. • MTU—Shows the size of the maximum transfer unit (MTU). The range is from 512 to 1500 octets. • T2000—Shows the time between Set Asynchronous Balanced Mode (SABME) frame transmission. The range is from 0.2 to 20 seconds. • T203—Shows the maximum time between LAP-D frame exchanges. The range is from 4 to 120 seconds.
OSI SNPA	If the SDCC is provisioned for OSI, the following subnetwork point-of-attachment (SNPA) information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the termination: • IS-NR—In Service–Normal. • OOS-AU—Out of Service–Autonomous. • OOS-MA—Out of Service–Management. • OOS-AUMA—Out of Service–Autonomous and Management. In addition, a secondary state provides additional information about the status of the entity. Values for secondary state are: • MEA—Mismatch of equipment due to invalid equipment insertion. • UEQ—Unequipped; there is nothing in the slot. • UAS—Unassigned; the entity does not exist, has not been created, or has been deleted. • SWDL—Software download in progress. • MT—Maintenance, as per the Admin State change. • AINS—Automatic in service. • DSBLD—Traffic is disabled on the entity. • LPBK—Port or connection has a loopback on it. • FLT—Fault secondary state. When an entity is faulted, an FLT state is raised. Equipment and ports in FLT state should be cleared as they transition. Transition states are listed in Table 11-11 on page 11-15. See Table 11-11 on page 11-15 for the Service state-Secondary state possible values. **Note** If the NE release does not support the Service state, this field shows N/A.
MS-DCC/LDCC	
LDCC Terminations	Displays the slot, port, and card type of an LDCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
Foreign	A check mark indicates that the far-end node is a non-ONS node.

Table B-614 Field Descriptions for the DCC/GCC/OSC Properties Pane (continued)

Field	Description
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only. For GCCs, this column is always N/A.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the LDCC termination (IS-NR, OOS-AU, OOS-MA, OOS-AUMA) plus the secondary state (MEA, UEQ, UAS, SWDL, MT, AINS, DSBLD, LPBK).
GCC	
GCC Terminations	Displays the slot, port, and card type of a GCC termination.
OSPF Disabled on Link	Check to prevent the advertisement of the OSPF routing table.
GCC Rate	Displays the GCC rate.
Foreign	A check mark indicates that the far-end node is a non-ONS node.
Foreign IP	Displays the foreign node IP address.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only. For GCCs, this column is always N/A.
OSI SNPA	If the GCC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and SNPA address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Select the state of the GCC termination (IS-NR, OOS-AU, OOS-MA, OOS-AUMA) plus the secondary state (MEA, UEQ, UAS, SWDL, MT, AINS, DSBLD, LPBK).
OSC	
OSC Terminations	Displays the slot, port, and card type of an OSC termination.
LAPD Config	Displays the LAP-D parameters for the SDCCs that are provisioned as OSI only.
OSI SNPA	If the OSC is provisioned for OSI, the following SNPA information is displayed: • Router—Indicates the ONS router and NSAP address. • Router State—Indicates whether the router is enabled or disabled.
Service State	Displays the state of the OSC termination.
DWDM Ring ID	
Ring ID	Displays the ring ID.
West Direction	Lists the OSCM or OSC-CSM port that supports the ring in the west direction. The value is N/A if there are no ports in the west direction.
East Direction	Lists the OSCM or OSC-CSM port that supports the ring in the east direction. The value is N/A if there are no ports in the east direction.

B.16.0.5 DWDM

The DWDM Properties pane allows you to manage and provision DWDM connections. The DWDM Properties pane contains the following tabs:

- B.16.0.5.1 Provisioning Tab, page B-446
- B.16.0.5.2 Connections Tab, page B-447
- B.16.0.5.3 Span Check Tab, page B-448
- B.16.0.5.4 APC Tab, page B-448
- B.16.0.5.5 Node Setup Tab, page B-449
- B.16.0.5.6 Side Tab, page B-449
- B.16.0.5.7 All Facilities Tab, page B-449
- B.16.0.5.8 Passive Cards Tab, page B-450

B.16.0.5.1 Provisioning Tab

The Provisioning tab allows you to view and change the optical parameters for the CPT 600 NE. The optical parameters might have already been provisioned manually or by automatic node setup (ANS).

Table B-615 Field Descriptions for the Provisioning Tab

Field	Description
Attribute Name	Displays the Properties pane name that is imported from or exported to the Cisco MetroPlanner configuration file.
Value	Displays the default value of the corresponding Properties pane name imported from or exported to the Cisco MetroPlanner configuration file.

Table B-615 Field Descriptions for the Provisioning Tab (continued)

Field	Description
Origin	Shows how the parameter is set. Possible values are: • Default • Automatic • Provisioned • Imported
Note	Displays error details if ANS fails to set the parameter. Possible errors are: • Error during NE board navigation; value is not calculated • Cannot send the parameter request to far-end node; value is not calculated • No response from far-end node; value is not calculated • Configuration is not supported; value is not calculated • Far-end node configuration is not supported; value is not calculated • OSC far-end launch power is not available; value is not calculated • Far-end launch power is not available; value is not calculated • Span loss value is not available; value is not calculated • Fiber stage insertion loss is not available; value is not calculated • Preamplifier tilt is not available; value is not calculated • Add/drop output power is not available; value is not calculated • NE node launch power is not available; value is not calculated • WXC degree is not available; value is not calculated • Value is out of range • Read-only attribute; value is not calculated

B.16.0.5.2 Connections Tab

The Connections tab allows you retrieve internal patchcords and calculate DWDM connections.

Table B-616 Field Descriptions for the Connections Tab

Field	Description
Slot-From	The slot from which the DWDM connection originates.
Unit-From	The unit from which the DWDM connection originates.
Port-From	The port from which the DWDM connection originates.
Slot-To	The slot at which the DWDM connection terminates.
Unit-To	The unit at which the DWDM connection terminates.
Port-To	The port at which the DWDM connection terminates.
State	The state of the DWDM connection.
From	The unit or port from which the internal patchcord originates.

Table B-616 Field Descriptions for the Connections Tab (continued)

Field	Description
To	The unit or port at which the internal patchcord terminates.
Wavelength	Shows the wavelength value if the internal patchcord is between two channel ports. Otherwise, it shows *N/A*.

B.16.0.5.3 Span Check Tab

The Span Check tab allows you to check the span loss between the selected node and the previous node in the chain. The span check is always in reception.

Note If the Measured Span Loss value crosses the Min or Max Expected Span Loss threshold, a condition is raised.

Table B-617 Field Descriptions for the Span Check Tab

Field	Description
Retrieve Span Loss Values button	Runs the span loss verification function and retrieves values for the Measure Span Loss column.
Side	Specifies the side for which span loss information is displayed (east-to-west or west-to-east).
Min Exp. Span Loss	Specifies the minimum expected span loss (in dBm) for the incoming span. This value is imported from MetroPlanner, but can be modified manually.
Max Exp. Span Loss	Specifies the maximum expected span loss (in dBm) for the incoming span.
Meas. Span Loss	The measured span loss value.
Resolution	The resolution or accuracy of the span loss measurement.

B.16.0.5.4 APC Tab

The APC tab allows you to view the automatic power control (APC) parameters.

Table B-618 Field Descriptions for the APC Tab

Field	Description
Port	Port number.
Last Modification	Date and time the power control setpoint was last modified.
Param	All the APC parameters associated with the port.
Last Check	Date and time the power control setpoint was last verified.
Side	Lists all the NEs and their sides that belong to the APC domain.
APC State	Displays the actual state of the APC. Values are: • Enabled—APC is enabled. • Disabled—APC is disabled. • Force Disabled—APC is disabled by the user. • Not Applicable—APC domain is incomplete.

B.16.0.5.5 Node Setup Tab

The Node Setup tab allows you to automatically preprovision NEs from a selected XML configuration file.

Table B-619 Field Descriptions for the Node Setup Tab

Field	Description
XML Settings	
Select XML File	Click **Browse** to select an XML file (generated by the MetroPlanner application). Prime Optical parses the XML file selected by the operator and checks the accuracy of its content.
Log Settings	
Select Log File	Click **Browse** to select a log file to which the results of the operations you perform will be saved.
Launch ANS Wizard button	Click the **Launch ANS Wizard** button to launch the Automatic Node Setup wizard. See 7.12.11 Configuring Automatic Node Setup, page 7-340 for more information.

B.16.0.5.6 Side Tab

The Side tab allows you to view, edit, and delete sides defined for a CPT 600 NE.

Table B-620 Field Descriptions for the Side Tab

Field	Description
Create button	Allows you to create side objects for the NE.
Modify button	Allows you to modify the side ID of an existing side object.
Delete button	Allows you to delete side objects.
Side	Displays the NE's side ID.
Line In	Displays the index of the receive side of the OTS port.
Line Out	Displays the index of the transmit side of the OTS port.

B.16.0.5.7 All Facilities Tab

The All Facilities tab allows you to view the DWDM and optical ports for the CPT 600 NE.

Table B-621 Field Descriptions for the All Facilities Tab

Field	Description
Port	Displays the card port number, shelf ID, and slot number.
Power	Displays the current power for the port.
State	Displays the administrative state of the port.
Service State	Displays the service state of the port.
Retain Selected	Displays only the ports that you selected.
Show All	Retrieves and displays all the optical and DWDM ports for the NE.

B.16.0.5.8 Passive Cards Tab

The Passive Cards tab allows you to view information about passive units provisioned in CTC.

Note Passive units can be provisioned in CTC only.

Table B-622 Field Descriptions for the Passive Cards Tab

Field	Description
Passive Cards	
ID	Displays the passive card shelf ID.
Equipment Name	Displays the general card type/name.
Location	Displays the location of the passive card.
Description	Displays the passive card description.
Optical Ports	
Port	Displays the port number.
Type	Displays the port type.
MPO	Displays any physical multifiber push connectors.
Wavelength	Displays the port wavelength.

B.16.0.6 ECU Ports Alarms Suppression

The External Control Unit (ECU) Ports Alarms Suppression Properties pane allows you to suppress the alarms for the MS_ISC ports of the ECU.

Table B-623 Field Descriptions for the ECU Ports Alarms Suppression Properties Pane

Field	Description
Ports	The port number.
Suppress Alarms	Indicates whether or not the alarms for a particular card are suppressed. If checked, all alarms for the MS_ISC ports of the ECU are suppressed.

B.16.0.7 General

The General Properties pane displays identification information, voltage thresholds, and multishelf configurations for the CPT 600 NE.

Table B-624 Field Descriptions for the General Properties Pane

Field	Description
Identification Tab	
NE ID	Displays the ID of the NE from the Domain Explorer.
NE Model	Displays the NE model type.
Software Version	Displays the current running version of the system software.

Table B-624 Field Descriptions for the General Properties Pane (continued)

Field	Description
Contact	Displays the name and phone number of the node contact person.
Description	Enter a description of the NE.
System Description	Displays the NE type and the version of the system software.
Voltage/Temperature Tab	
Voltage	Displays the voltage (in millivolts) of the shelf that corresponds to the power supply.
Temperature	Displays the temperature (in degrees Celsius) of the shelf.

B.16.0.8 NE Defaults

The NE Defaults Properties pane displays a list of default thresholds for the CPT 600 NE. You can load different NE defaults using the NE Defaults Management window. See 4.5.9 Restoring NE Defaults, page 4-86.

B.16.0.9 Network

The Network Properties pane displays information about the NE network address. The Properties pane contains the following tabs:

- B.16.0.9.1 Address Tab, page B-451
- B.16.0.9.2 Static Routes Tab, page B-452
- B.16.0.9.3 OSPF Tab, page B-452
- B.16.0.9.4 OSPF Area Range Tab, page B-453
- B.16.0.9.5 OSPF Virtual Links Tab, page B-454
- B.16.0.9.6 SNMP Tab, page B-454
- B.16.0.9.7 Firewall/Proxy Tab, page B-455
- B.16.0.9.8 Routing Table Tab, page B-455
- B.16.0.9.9 Internal Subnet Tab, page B-456
- B.16.0.9.10 Proxy Tunnels Tab, page B-456
- B.16.0.9.11 Firewall Tunnels Tab, page B-456
- B.16.0.9.12 FTP Hosts Tab, page B-457

B.16.0.9.1 Address Tab

The Address tab allows you to view and change information about the NE network address.

Table B-625 Field Descriptions for the Address Tab

Field	Description
IP Address	Displays the IP address of the NE.
Default Router	Displays the IP address of the default router.
Subnet Mask	Displays the subnetwork mask ID of the NE.

Table B-625 Field Descriptions for the Address Tab (continued)

Field	Description
MAC Address	Displays the CPT 600 NE address as it is identified on the IEEE 802 MAC layer.
Forward DHCP Requests	If checked, forwards DHCP requests to the IP address entered in the DHCP Server field. When the Forward DHCP Requests check box is unchecked, the DHCP Server field is display-only.
DHCP Server	Displays the IP address of the DHCP server.
IPv6 Config	
Enable IPv6	If checked, allows you to configure the node to use the IPv6 protocol and to assign an IPv6 address to the node.
IPv6 Address	Enter the IPv6 address of the node.
Default IPv6 Router	Enter the IPv6 default router of the node.
IPv6 Subnet Mask	Enter the IPv6 subnetwork mask length.

B.16.0.9.2 Static Routes Tab

The Static Routes tab allows you to view information about Prime Optical and CPT 600 NE connectivity and create or delete static routes.

Table B-626 Field Descriptions for the Static Routes Tab

Field	Description
Destination IP	Displays the IP address of the computer running Prime Optical.
Subnet Mask	Displays the subnetwork mask.
Next Hop	Displays the IP address of the router port or the node IP address if the Prime Optical computer is connected to the node directly.
Cost	Displays the number of hops between the CPT 600 NE and the computer.

B.16.0.9.3 OSPF Tab

The OSPF tab displays OSPF information. OSPF is a link-state Internet routing protocol.

Table B-627 Field Descriptions for the OSPF Tab

Field	Description
DCC/GCC OSPF Area ID Table	
Slot	Displays the slot number.
Port	Displays the port number.
DCC OSPF Area ID	Displays the number that identifies the CPT 600 NE as a unique OSPF area. The OSPF area number can be from 0.0.0.0 to 255.255.255.255. The number must be unique to the LAN OSPF area.
RS-DCC Metric	Sets a cost for sending packets across the RS-DCC, which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.
MS-DCC Metric	Sets a cost for sending packets across the MS-DCC, which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. This value is normally unchanged.

Table B-627 Field Descriptions for the OSPF Tab (continued)

Field	Description
OSPF on LAN	
OSPF Active on LAN	If checked, enables the CPT 600 NE OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on CPT 600 NEs that directly connect to OSPF routers.
LAN Port Area ID	Displays the OSPF area ID for the router port where the CPT 600 NE is connected. (This number is different from the DCC OSPF area ID.)
Router Priority	Displays the value used for this NE in designated router election. The Cisco default value is zero (0). A router that has Router Priority set to 0 is ineligible to become a designated router on the attached network.
Dead Interval	Displays the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Transit Delay	Displays the service speed. One second is the Cisco default.
LAN Metric	Displays a cost for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the Cisco default.
OSPF Authentication	
Authentication Type	Displays Simple Password if the router where the CPT 600 NE is connected uses authentication. Otherwise, it displays No Authentication.
Authentication Key	Displays the OSPF key (password) if authentication is enabled.
Confirm Authentication Key	Retype the authentication key to confirm it.

B.16.0.9.4 OSPF Area Range Tab

The OSPF Area Range tab allows you to view information about OSPF area ranges and create or delete area ranges.

Table B-628 Field Descriptions for the OSPF Area Range Tab

Field	Description
Range Address	Displays the area IP address for the CPT 600 NEs that reside within the OSPF area. For example, if the CPT 600 NE OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
Range Area ID	Displays the OSPF area ID for the CPT 600 NEs. This is either the ID in the DCC OSPF Area ID field or the ID in the LAN Port Area ID field.
Mask Length	Displays the subnet mask length.
Mask	Displays the subnet mask IP address.
Advertise	Indicates whether the OSPF routing table is advertised.

B.16.0.9.5 OSPF Virtual Links Tab

The OSPF Virtual Links tab allows you to view information about OSPF virtual links and create or delete virtual links.

Note You cannot create a new virtual link unless OSPF is active on the LAN.

Table B-629 Field Descriptions for the OSPF Virtual Links Tab

Field	Description
Neighbor	Displays the router ID of the Area 0 router.
Transit Delay	Displays the service speed. One second is the Cisco default.
Retransmit Interval	Displays the time that will elapse before a packet is resent. Five seconds is the Cisco default.
Hello Interval	Displays the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the Cisco default.
Dead Interval	Displays the number of seconds that will pass while the packets of an OSPF router are not visible before its neighbors declare the router down. Forty seconds is the Cisco default.
Authentication Type	Displays the authentication type.
Authentication Key	Displays the authentication key.

B.16.0.9.6 SNMP Tab

The SNMP tab allows you to view SNMP information and create or delete SNMP trap destinations.

Table B-630 Field Descriptions for the SNMP Tab

Field	Description
IP Address	The IP address of the NMS.
Community Name	The SNMP community name. **Note** The SNMP community string cannot be blank in Prime Optical. If a blank community string is required in CTC builds earlier than R4.6, you must set the blank community string in CTC.
UDP Port	The UDP port for SNMP. The Cisco default UDP port is 162.
Trap Version	The trap version, either SNMP version 1 or version 2. See your NMS documentation to determine whether to use SNMP version 1 or version 2.

B.16.0.9.7 Firewall/Proxy Tab

The Firewall/Proxy tab allows you to use an NE as a proxy server or as a firewall.

Table B-631 Field Descriptions for the Firewall/Proxy Tab

Field	Description
Gateway Settings	
Enable Proxy Server on Port	If checked, the CPT 600 NE serves as a proxy for connections between the Prime Optical server and CPT 600s that are DCC-connected to the proxy CPT 600 NE. The Prime Optical server establishes connections to DCC-connected nodes through the proxy node. The Prime Optical server can connect to nodes that it cannot directly reach from the host on which it runs. The proxy server port number (display-only) is shown following the Enable Proxy Server on Port field. The proxy server uses port 1080. If checked, the following radio buttons are enabled: • End Network Element (ENE)—Enables the CPT 600 NE to proxy as an ENE. Note that an alternate expansion for ENE is *external network element*. • Gateway Network Element (GNE)—Enables the CPT 600 NE to proxy as a GNE. • Proxy-only—Enables proxy only. If unchecked, the node does not proxy.

B.16.0.9.8 Routing Table Tab

The Routing Table tab allows you to view the OSPF routing table.

Table B-632 Field Descriptions for the Routing Table Tab

Field	Description
Destination	Displays the IP address of the destination network or host. Destination (0.0.0.0) is the default route entry. All undefined destination network or host entries on this routing table are mapped to the default route entry.
Mask	Displays the subnet mask used to reach the destination network or host. Mask (0.0.0.0) is always 0 for the default route.
Gateway	Displays the IP address of the gateway used to reach the destination network or host. All outbound traffic belonging to this network is sent to this gateway. Gateway (172.20.214.1) is the default gateway address. All outbound traffic that cannot be found in this routing table or is not on the nodes local subnet will be sent to this gateway.
Usage	Shows the number of times the listed route has been used.
Interface	Shows the CPT 600 NE interface used to access the destination. Values are: • cpm0—The CPT 600 NE Ethernet interface (that is, the RJ-45 jack on the TCC+/TCC2 and the LAN 1 pins on the backplane). • pdcc0—An SDCC interface (that is, an OC-N trunk card identified as the SDCC termination). • lo0—A loopback interface.

B.16.0.9.9 Internal Subnet Tab

The Internal Subnet tab allows you to change the class B subnet address for TSC cards. TSC cards perform all system-timing functions for each CPT 600 NE. To avoid IP address conflicts, you should change the class B subnet address if your internal network uses the same address range as the default subnet addresses.

Table B-633 Field Descriptions for the Internal Subnet Tab

Field	Description
TSC1	Enter the class B subnet address for the first TSC.
TSC2	If two TSCs are installed, enter the class B subnet address for the second TSC.

B.16.0.9.10 Proxy Tunnels Tab

The Proxy Tunnels tab allows you to configure source and destination information and create or delete proxy tunnels.

Table B-634 Field Descriptions for the Proxy Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

B.16.0.9.11 Firewall Tunnels Tab

The Firewall Tunnels tab allows you to configure source and destination information and create and delete firewall tunnels.

Table B-635 Field Descriptions for the Firewall Tunnels Tab

Field	Description
Source Address	Specify the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask	Specify the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Specify the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask	Specify the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

B.16.0.9.12 FTP Hosts Tab

The FTP Hosts tab allows you to configure database backup or restore and software download to an ENE when the firewall is enabled. You can provision a list of legal FTP hosts for which the firewall opens for all FTP commands. You can configure the FTP hosts to expire after a certain amount of time, after which the FTP relay resumes blocking all FTP access for the ENEs.

Table B-636 Field Descriptions for the FTP Hosts Tab

Field	Description
Create button	Opens the Create New FTP Host dialog box, which allows you to create up to 12 new FTP hosts in a GNE/ENE firewall environment. See 5.3.10.1 Creating an FTP Host, page 5-22. **Note** You cannot create more than 12 FTP hosts.
Delete button	Deletes the selected FTP host.
FTP Host Address	Displays the FTP host IP address.
Prefix Length	Displays the FTP host subnet mask length.
Enable FTP Relay	Indicates whether FTP relay is enabled or disabled. If FTP relay is disabled, the FTP Relay Timer field is dimmed.
FTP Relay Timer	Displays the number of minutes that the FTP relay is configured to run, after which the FTP relay resumes blocking all FTP access for the ENEs.

B.16.0.10 OSI

The OSI Properties pane allows you to provision CPT 600 NE Open System Interconnection (OSI) parameters. The Properties pane contains the following tabs:

- B.16.0.10.1 Main Setup Tab, page B-457
- B.16.0.10.2 TARP-Config Tab, page B-458
- B.16.0.10.3 TARP-TDC Tab, page B-459
- B.16.0.10.4 TARP-MAT Tab, page B-460
- B.16.0.10.5 Routers-Setup Tab, page B-460
- B.16.0.10.6 Subnets Tab, page B-461
- B.16.0.10.7 Tunnels Tab, page B-461
- B.16.0.10.8 IS-IS RIB Tab, page B-462
- B.16.0.10.9 ES-IS RIB Tab, page B-462

B.16.0.10.1 Main Setup Tab

The Main Setup tab allows you to provision the OSI Network Entity Title (NET) address and the OSI routing mode.

Table B-637 Field Descriptions for the Main Setup Tab

Field	Description
Main Network Entity Title	Displays the node NET. The NET is used in OSI networks to identify the node to the end system (ES) or intermediate system (IS).
End System	Provisions the node as an OSI end system (ES). ESs send end system hello (ESH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1	Provisions the node as an OSI intermediate system (IS). ISs send intermediate system hello (ISH) messages regularly to announce their presence to neighboring ISs and ESs.
Intermediate System Level 1/Level 2	The CPT 600 NE performs all IS functions. It communicates with other IS and ES nodes within an OSI area and broadcasts ISHs to IS nodes in other areas to which it is connected. For the CPT 600 NE, Intermediate System Level 1/Level 2 is the default routing mode.
Node Routing Mode	
L1 LSP Buffer Size	Sets the Level 1 Link State Protocol (LSP) data unit buffer size. The Cisco default is 512.
L2 LSP Buffer Size	Sets the Level 2 LSP data unit buffer size. The Cisco default is 512.

B.16.0.10.2 TARP-Config Tab

The TARP-Config tab allows you to provision the TID Address Resolution Protocol (TARP). TARP is used when TL1 TIDs must be translated to an NSAP address. During the TID-to-NSAP translation, the TID is mapped to a NET; then, the NSAP is derived from the NET based on the NSAP selector value.

Table B-638 Field Descriptions for the TARP-Config Tab

Field	Description
TARP PDUs L1 Propagation	If checked (default), TARP Type 1 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 1 area. Type 1 PDUs request a protocol address that matches a target TID within a Level 1 routing area. The propagation does not occur if the NE is the target of the Type 1 PDU and the PDUs are not propagated to the NE from which the PDU was received. **Note** This parameter is not used when the node is set to End System.
TARP PDUs Origination	If checked (default), the node performs all TARP configuration functions, including: • TID-to-NSAP resolution requests • NSAP-to-TID requests • TARP address changes **Note** TARP Echo and NSAP to TID are not supported.
L2 TARP Data Cache	If checked (default), the TIDs and NSAPs are added to the TDC before the node propagates the requests to other NEs. **Note** This parameter is designed for IS Level 1/Level 2 nodes that are connected to other IS Level 1/Level 2 nodes. Enabling the parameter for IS Level 1 nodes is not recommended.
LAN TARP Storm Suppression	If checked (default), enables the TARP storm suppression to prevent redundant TARP PDUs from being propagated across the network.
Type 4 PDU Delay	Sets the amount of time that will pass before the Type 4 PDU is generated. The Cisco default value is 60 seconds; the range is from 0 to 255 seconds.

Table B-638 Field Descriptions for the TARP-Config Tab (continued)

Field	Description
TARP PDUs L2 Propagation	If checked (default), TARP Type 2 PDUs received by the node that are not excluded by the loop detection buffer are propagated to other NEs within the OSI Level 2 area. Type 2 PDUs request a protocol address that matches a target TID within a Level 2 routing area. The propagation occurs if the NE is the target of the Type 2 PDU and the PDUs are not propagated to the NE from which the PDU was received.
L1 TARP Data Cache	If checked, the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node. TARP Type 3 PDUs are responses to Type 1 and Type 2 PDUs and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections).
LDB	If checked, enables the TARP loop detection buffer (LDB). The LDB prevents TARP PDUs from being sent more than once on the same subnet.
Send Type 4 PDU on Startup	If checked, a TARP Type 4 PDU is originated during the initial CPT 600 NE startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. This option is disabled by default.
Timers	
LDB Entry	Sets the TARP LDB timer. The LDB buffer time is assigned to each LDB entry for which the TARP sequence number is zero. The Cisco default is 5 minutes; the range is from 1 to 10 minutes.
T1 Timer	Sets the amount of time to wait for response to a Type 1 Request PDU. Type 1 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 15 seconds; the range is from 0 to 3600 seconds.
T3 Timer	Sets the amount of time to wait for an address resolution request. The Cisco default is 40 seconds; the range is from 0 to 3600 seconds.
LDB Flush	Sets the frequency period for flushing the LDB. The Cisco default is 5 minutes; the range is from 0 to 1440 minutes.
T2 Timer	Sets the amount of time to wait for a Type 2 Request PDU. TARP Type 2 requests seek a specific NE TID within an OSI Level 1 area. The Cisco default is 25 seconds; the range is from 0 to 3600 seconds.
T4 Timer	Sets the amount of time to wait for an error recovery. The timer begins after the T2 timer expires without successfully finding the NE TID. The Cisco default is 20 seconds; the range is from 0 to 3600 seconds.

B.16.0.10.3 TARP-TDC Tab

Table B-639 Field Descriptions for the TARP-TDC Tab

Field	Description
TID	Target ID that is statistically linked to an NSAP or NET. For ONS nodes, the TID is the node name.
NSAP/NET	The NSAP that is statistically linked to the TID.
Type	Indicates how the TARP data cache entry was created. It can be either: • Dynamic—The entry was created through the TARP propagation process. • Static—The entry was manually created and is a static entry.

Table B-639 Field Descriptions for the TARP-TDC Tab (continued)

Field	Description
Add Static Entry button	Click **Add Static Entry** to statically link a TID to an NSAP or NET.
Delete Selected Entry button	Click **Delete Selected Entry** to delete the selected TID-to-NSAP/NET static entry.
TID to NSAP button	Click **TID to NSAP** to query the network for an NSAP that matches a TID.
Flush Dynamic Entries button	Click **Flush Dynamic Entries** to delete all dynamically generated TDC entries.

B.16.0.10.4 TARP-MAT Tab

The TARP-MAT tab allows you to manually provision a TARP adjacency.

Table B-640 Field Descriptions for the TARP-MAT Tab

Field	Description
Level	Sets the TARP Type Code that will be sent. • Level 1—Indicates that the manual area adjacency is within the same area as the node. The entry generates Type 1 PDUs. • Level 2—Indicates that the manual area adjacency is in an area different from that of the node. The entry generates Type 2 PDUs.
NSAP	The NSAP address of the node at the other end of the TARP manual adjacency.
Add button	Click **Add** to create a TARP manual area adjacency.
Remove button	Click **Remove** to delete the selected TID-to-NSAP/NET static entry.

B.16.0.10.5 Routers-Setup Tab

The Routers-Setup tab allows you to view and manage the OSI virtual routers.

Table B-641 Field Descriptions for the Routers-Setup Tab

Field	Description
Router Number	Displays the virtual router number. The CPT 600 NE provides six virtual routers, numbered 1 through 6.
System ID	Displays the NSAP system ID of the virtual router. The NSAP system identifier is set to the node's first IEEE 802.3 MAC address + *n*, where *n* = 0 through 6. For the primary router (Router 1), *n* = 0.
Status	Indicates the virtual router status. Select Enabled or Disabled from the drop-down list. **Note** Router 1 must be enabled before additional routers can be enabled.
Primary Area Address	Indicates the primary manual area address. For Router 1, this is the main NET for the node; that is, the NSAP without the system ID and selector (set to 00) fields.
Manual Area Address 1	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Manual Area Address 2	Indicates the address of any additional manual areas that are created. **Note** An OSI area allows up to two additional manual areas in addition to the primary manual area.
Edit button	Click **Edit** to modify the address parameters.

B.16.0.10.6 Subnets Tab

The Subnets tab allows you to view and manage OSI subnetwork point-of-attachment parameters. The parameters are initially provisioned when you enable a subnet on an SDCC, LDCC, GCC, OSC, or LAN interface.

Table B-642 Field Descriptions for the Subnets Tab

Field	Description
Slot/Port	The subnet slot and port.
Router Number	The OSI virtual router where the subnet (SDCC, LDCC, GCC, or OSC) is provisioned.
Type	The interface where the subnet is provisioned: SDCC, LDCC, GCC, OSC, or LAN.
Protocol	The data link protocol that is provisioned for the subnet. It can be: • Point to Point Protocol (PPP) • Link Access Protocol on the D channel (LAP-D) • 802.3 for LAN subnets
ISH	The intermediate system hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the NETs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
ESH	The end system hello (ESH) PDU propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The Cisco default is 10 seconds; the range is from 10 to 1000 seconds.
IIH	The intermediate system-to-intermediate system hello (IIH) PDU propagation frequency. The IS-IS hello PDUs establish and maintain adjacencies between ISs. The Cisco default is 3 seconds; the range is from 1 to 600 seconds.
DIS Priority	The designated intermediate system (DIS) priority. In IS-IS networks, one router is elected as the DIS. For Cisco routers, the DIS priority is 64.
IS-IS Cost	The cost for sending packets on the subnet. This is used by OSPF routers to calculate the shortest path. The Cisco default value is 20.
Enable LAN Subnet button	*Router 1 only.* Enables OSI over the LAN; that is, it activates the IS-IS protocol on the LAN so OSI traffic is enabled on the LAN.
Edit button	Click **Edit** to modify the subnet parameters.
Disable LAN Subnet button	*Router 1 only.* Disables OSI over the LAN if it has been enabled.

B.16.0.10.7 Tunnels Tab

The Tunnels tab allows you to view, create, edit, and delete Generic Routing Encapsulation (GRE) and Cisco tunnels. GRE tunnels encapsulate one network protocol for transfer across another network layer. Within a mixed TCP/IP and OSI network, GRE tunnels tunnel IP traffic over an OSI NE and OSI traffic over an IP NE.

Table B-643 Field Descriptions for the Tunnels Tab

Field	Description
IP Address	Displays the IP address of the GRE destination Prime Optical or CTC computer.
Netmask Address	Displays the IP address subnet mask of the destination Prime Optical or CTC computer.

Table B-643 Field Descriptions for the Tunnels Tab (continued)

Field	Description
NSAP Address	The destination NE NSAP address. The NSAP selector (last two NSAP characters) must be 2f (GRE tunnel) or cc (proprietary Cisco tunnel), depending on which tunnel type you want to create. The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add an encapsulation header for each IP packet, while the GRE tunnel adds a small header to the packets. The two tunnel types are incompatible. **Note** Most Cisco routers support the Cisco tunnel, while only a few support both GRE and Cisco IP tunnels.
OSPF Metric	Displays the cost for sending packets across the GRE tunnel. Cost is used by OSPF routers to calculate the shortest path.
Create button	Click **Create** to create a new GRE tunnel route.
Edit button	Click **Edit** to edit an existing GRE tunnel.
Delete button	Click **Delete** to delete an existing GRE tunnel.

B.16.0.10.8 IS-IS RIB Tab

The IS-IS RIB tab allows you to view the intermediate system-to-intermediate system (IS-IS) protocol routing information base (RIB). IS-IS is an OSI link-state hierarchical routing protocol that floods the network with link-state information that enables the NEs to build a complete and consistent picture of a network topology.

Table B-644 Field Descriptions for the IS-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. The CPT 600 NE provides six virtual routers, numbered 1 through 6.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.
Destination Address	Displays the Network Service Access Point (NSAP).
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

B.16.0.10.9 ES-IS RIB Tab

The ES-IS RIB tab allows you to view the end system-to-intermediate system (ES-IS) protocol RIB. ES-IS is an OSI protocol that defines how end systems (hosts) and intermediate systems (routers) learn about each other.

Table B-645 Field Descriptions for the ES-IS RIB Tab

Field	Description
Router Number	Displays the virtual router number. The CPT 600 NE provides six virtual routers, numbered 1 through 6.
Subnet Type	Indicates the OSI subnetwork point-of-attachment type used to access the destination address. It includes SDCC, LDCC, GCC, OSC, and LAN.

Table B-645 Field Descriptions for the ES-IS RIB Tab (continued)

Field	Description
Destination Address	Displays the NSAP of the destination ES.
MAC Address	Displays the NE's MAC address for destinations that are accessed by the LAN subnets.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

B.16.0.11 Protection

The Protection Properties pane contains the following tabs:

- B.16.0.11.1 Protection Groups Tab, page B-463
- B.16.0.11.2 Operations Tab, page B-464

B.16.0.11.1 Protection Groups Tab

The Protection Groups tab displays a list of available protection groups and allows you to create, delete, and view protection groups.

Table B-646 Field Descriptions for the Protection Groups Tab

Field	Description
Protection Groups	
Displays a list of available protection groups. Click the **Create** or **Delete** button to create a new protection group or delete an existing one.	
Selected Protection Group	
Name	Modify the name of the selected protection group. The name can have up to 32 alphanumeric characters.
Type	Choose the protection type (1:1, 1:N, or 1+1) from the drop-down list. The protection selected determines the cards that are available to serve as protect and working cards. For example, if you choose 1:N protection, only DS-1N and DS-3N cards are displayed. 1+1 protection is used for optical cards only.
Protect Module	Choose the protect card if using 1:1 or 1:N protection.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	Click if you want both the transmit and the receive channels to switch if a failure occurs on one. This option is available only if you select 1+1 (port) type.
Revertive	If checked, the CPT 600 NE reverts traffic to the working card or port after failure conditions are corrected and remain correct for the amount of time entered in Reversion Time.
Reversion Time	If Revertive is checked, enter the amount of time following failure condition correction that should elapse before the CPT 600 NE switches back to the working card or port.

B.16.0.11.2 Operations Tab

The Operations tab displays protection group operation information.

Table B-647 Field Descriptions for the Operations Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock out switching, or lock on switching.

B.16.0.12 Security

The Security Properties pane allows you to view and edit the security advisory message for the CPT 600 NE. The Security Properties pane contains the following tabs:

- B.16.0.12.1 Policy Tab, page B-464
- B.16.0.12.2 Password Tab, page B-465
- B.16.0.12.3 Access Tab, page B-466
- B.16.0.12.4 RADIUS Server Tab, page B-467
- B.16.0.12.5 Legal Disclaimer Tab, page B-468

B.16.0.12.1 Policy Tab

The Policy tab allows you to specify user security parameters.

Note If the user is already logged in, any changes to the NE user type settings take effect only when the user next logs in.

Table B-648 Field Descriptions for the Policy Tab

Field	Description
Idle User Timeout	
Each CTC or TL1 user can be idle during his or her login session for a specified amount of time before the CTC window is locked. The lockouts prevent unauthorized users from making changes. Higher-level users have shorter default idle periods and lower-level users have longer or unlimited default idle periods. The user idle period can be modified by a SuperUser. **Note** A user already logged into the node is not affected by a change to the Idle User Timeout policy.	
Retrieve	Set the idle user timeout for a CTC Retrieve user.
Maintenance	Set the idle user timeout for a CTC Maintenance user.
Provisioner	Set the idle user timeout for a CTC Provisioner user.
SuperUser	Set the idle user timeout for a CTC SuperUser user.
User Lockout	

Table B-648 Field Descriptions for the Policy Tab (continued)

Field	Description
Manual Unlock by SuperUser	If checked, the CTC SuperUser user must manually unlock locked out CTC users. If unchecked, locked out CTC users are automatically unlocked after the lockout duration period elapses.
Lockout Duration	Set the lockout duration period for locked out CTC users. This field is enabled only if the Manual Unlock by SuperUser check box is unchecked.
Failed Logins Allowed	Set the number of failed logins before the CTC user is automatically locked out.
Other	
Single Sessions per User	If checked, each CTC user can launch only one session at a time.
Prevent Disabling the SuperUser	If checked, inactive CTC SuperUsers are never disabled.
Disable Inactive User	If checked, inactive users are disabled automatically for the amount of time in the Inactive Duration field.
Inactive Duration	Specify the inactive duration in days. The range is from 1 to 90 days; the Cisco default is 45 days. A value of 0 implies the inactive duration is disabled and invalid.

B.16.0.12.2 Password Tab

The Password tab allows you to specify user password security parameters.

Table B-649 Field Descriptions for the Password Tab

Field	Description
Password Change	
Prevent Reusing Last	Prevents setting a CTC user's current password to one of the most recent passwords. You can set the number of most recent passwords that cannot be reused.
Disable Password Flipping	If checked, users are not allowed to change passwords for the number of days specified in the Can Change Password After field.
Can Change Password After	Enter the number of days that must elapse before the user can change the password.
Force Password Change After Assigned	If checked, during the first successful login, the user is forced to change the password.
Password Difference	Allows SuperUsers to specify the number of characters by which the new password of a user must differ from the old password, while performing a password change. The default value is 1; the range is from 1 to 5 characters.
Password Aging	
Enable Password Aging	Check this check box to enable password aging.
Aging Period	Enter the aging period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the aging period expires, CTC users are forced to change their passwords.
Warning Period	Enter the warning period, in days, for Retrieve, Maintenance, Provisioner, and SuperUser CTC users. After the warning period expires, CTC users are warned that their passwords will soon expire.

B.16.0.12.3 Access Tab

The Access tab allows you to configure LAN and shell access to the NE.

Table B-650 Field Descriptions for the Access Tab

Field	Description
Access	
LAN Access	Specify the type of LAN access allowed. Values are Backplane Only, No LAN Access, Front and Backplane, or Front Only. **Note** After the LAN access to the backplane is set, the Prime Optical client is unusable for 4 to 5 minutes.
Restore Timeout	This time period begins if *No LAN Access* is selected and all DCC connections are lost. If the time expires before a DCC is restored, LAN access is restored so that the node is not isolated. When the DCC comes back, LAN access returns to its specified settings. The range is from 0 (never) to 60 minutes; the Cisco default is 5 minutes.
Serial Craft Access	
Enable Craft Port A	Check this check box to enable craft port A.
Enable Craft Port B	Check this check box to enable craft port B.
Shell Access	
Access State	Select the Shell access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SSH Port	Indicates the SSH port number that will be used.
SFTP Port	Indicates the SFTP port number.
Telnet Port	This is enabled if you selected the Non-secure access state. Enter the Telnet port number that will be used.
Use Standard Telnet Port	Check this check box to indicate that the standard Telnet port will be used.
Enable Shell Password	Indicates whether or not the Shell password is enabled. **Note** You cannot enable the Shell password in Prime Optical. Enabling and providing a Shell password is currently done in CTC.
EMS Access	
Access State	Select the EMS access state from the drop-down list. You can select either Non-secure or Secure.
CORBA Listener Port	Select the port numbers for the TSC CORBA (IIOP) listener port and the TSC CORBA (SSLIOP) listener port. Select one of the following radio buttons: • Default-Fixed—Assigns a default port number. • Standard Constant—The port number for the TSC CORBA (IIOP) listener port is 683. The port number for the TSC CORBA (SSLIOP) listener port is 684. • Other Constant—When selected, enter the port number that will be used.
TL1 Access	
Access State	Select the TL1 access state from the drop-down list. You can select Disable, Non-secure, or Secure.
SNMP Access	
Access State	Select the SNMP access state from the drop-down list. You can select either Disable or Non-secure.

Table B-650 Field Descriptions for the Access Tab (continued)

Field	Description
Other	
PM Clearing Privilege	Select the users privilege that allows clearing PM statistics for the NE.

B.16.0.12.4 RADIUS Server Tab

The RADIUS Server tab allows you to configure, create, modify, and delete RADIUS servers for the CPT 200 NE and later.

Table B-651 Field Descriptions for the RADIUS Server Tab

Field	Description
Enable RADIUS Authentication	Check this check box to enable RADIUS authentication.
Enable RADIUS Accounting	Check this check box to enable RADIUS accounting. This is enabled if the Enable RADIUS Authentication check box is checked.
Enable the Node as the Final Authenticator When no RADIUS Server is Reachable	Select a row from the RADIUS Servers in Order of Authentication table; then, check this check box. This indicates that the RADIUS server that you selected will be the final authenticator when there are no more RADIUS servers that can be reached.
Create button	Click **Create** to create a RADIUS server. See 8.4.2.1.1 Creating a RADIUS Server, page 8-46.
Edit button	Click **Edit** to modify an existing RADIUS server's information. See 8.4.2.1.2 Modifying a RADIUS Server, page 8-47.
Delete button	Click **Delete** to delete an existing RADIUS server. See 8.4.2.1.3 Deleting a RADIUS Server, page 8-47.
Move Up/Move Down buttons	Click **Move Up** or **Move Down** to reorder the list of RADIUS servers in the RADIUS Servers in Order of Authentication table.
RADIUS Servers in Order of Authentication	
IP Address	Displays the IP address of the RADIUS server.
Shared Secret	Displays a text string that serves as a password between a RADIUS client and RADIUS server.
Authentication Port	Displays the authentication port number of the RADIUS server. Default access is through port number 1812.
Accounting Port	Displays the accounting port number of the RADIUS server. Default access is through port number 1813.

B.16.0.12.5 Legal Disclaimer Tab

The Legal Disclaimer tab allows you to edit the NE's advisory message and preview the disclaimer.

Table B-652 Field Descriptions for the Legal Disclaimer Tab

Tab	Description
Advisory Message	The existing message is a default, noncustomer-specific disclaimer. If you want to edit this statement with specifics for your company, you can change the text. You can also use the following HTML commands to format the text: • ****—Begins boldface font • ****—Ends boldface font • ** **—Aligns type in the center of the window • ** **—Ends the center alignment • **<font=*n*, where *n* = point size>**—Changes the font to the new size • ****—Ends the font size command • **<p>**—Creates a line break • **_{**—Begins subscript • **}**—Ends subscript • **^{**—Begins superscript • **}**—Ends superscript • **<u>**—Starts underline • **</u>**—Ends underline
Preview	Allows you to view the advisory message before saving it.

B.16.0.13 Timing

The Timing Properties pane contains the following tabs:

- B.16.0.13.1 General Tab, page B-468
- B.16.0.13.2 Reference List Tab, page B-470
- B.16.0.13.3 Status Tab, page B-470
- B.16.0.13.4 Timing Report Tab, page B-471

B.16.0.13.1 General Tab

The General tab displays general timing information.

Table B-653 Field Descriptions for the General Tab

Field	Description
General Timing	
Timing Mode	Set the node timing mode: • External—The CPT 600 NE derives its timing from a BITS source wired to the backplane pins. • Line—Timing is derived from an STM-N card that is optically connected to the timing node. • Mixed—Timing is set to external and line timing references. **Caution** Mixed timing might cause timing loops. Use this mode with care.
SSM Message Set	Choose the SSM set level supported by your network. SSM is an SONET protocol that communicates information about the quality of the timing source. SSM messages are carried on the S1 byte of the SONET Line layer. They enable SONET devices to automatically select the highest quality timing reference and to avoid timing loops. If a Generation 1 node receives a Generation 2 message, the message is mapped down to the next available Generation 1 node. For example, an ST3E message becomes an ST3.
Revertive	If checked, the CPT 600 NE reverts to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
Reversion Time	Specify the reversion time in half-minute increments.
BITS-IN-OUT Facility Type	
In Facility Type	Provisions the BITS In facility type.
Out Facility Type	Provisions the BITS Out facility type.
BITS In/Out Facilities	
E1, T1, 2.048 MHz, 64 KHz	Select the speed of the BITS facility.
In/Out State	Set the BITS reference to IS or OOS. For nodes set to Line timing with no equipment timed through BITS Out, set the state to OOS. For nodes using External timing or Line timing with equipment timed through BITS Out, set the state to IS. **Note** BITS IN Facilities and BITS OUT Facilities values apply to both BITS-1 and BITS-2.
Coding	Set to the coding used by your BITS reference, either B8ZS or AMI.
Framing	Set to the framing used by your BITS reference, either ESF or SF (D4). SSM is not available with Super Frame.
Sync Messaging	If checked, enables the SSM for BITS In. (SSM is not available if Framing is set to Super Frame.)
Admin SSM	If the Sync Messaging check box is not checked, you can choose the SSM Generation 2 type from the drop-down list.
AIS Threshold	If SSM is disabled or Super Frame is used, set the quality level where a node sends an alarm indication signal (AIS) from the BITS-1 Out and BITS-2 Out backplane pins. An AIS is raised when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
Cable Type	Type of cable. Values are 75 ohm or 120 ohm.
Sa Bit	The Sa Bit is used to transmit the SSM message. Available Sa bits are Sa4, Sa5, Sa6, Sa7, and Sa8.

B.16.0.13.2 Reference List Tab

The Reference List tab provides timing reference information.

Table B-654 Field Descriptions for the Reference List Tab

Field	Description
NE References	Allows you to define three timing references (Ref-1, Ref-2, and Ref-3). The node uses Reference 1 unless a failure occurs on that reference, in which case, the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to Internal Clock. This is the Stratum 3 clock provided on the TCC+. The options displayed depend on the Timing Mode setting: • Timing Mode set to External—Options are BITS-1, BITS-2, and Internal Clock. • Timing Mode set to Line—Options are the node's working optical cards and Internal Clock. Select the cards/ports that are directly or indirectly connected to the node wired to the BITS source; that is, the node's trunk cards. Set Reference 1 to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, select Slot 5 as Reference 1.

B.16.0.13.3 Status Tab

The Status tab displays timing status information.

Note If you change any values in the Status tab and click Apply at the bottom of the screen, the values are not set. Instead, use the following buttons to apply changes:

- Clear—Releases any existing switch request. For example, if you issue a Force Switch and then issue a Clear, the Force Switch request is released.
- Manual Switch—Switches the timing reference from one source to another.
- Force Switch—Switches the timing reference from one source to another. This request has a higher priority than the Manual Switch request.

Table B-655 Field Descriptions for the Status Tab

Field	Description
NE Clock	
NE Reference	Set the NE timing reference to internal, BITS-1, or BITS-2.
Status	Displays the status of the NE clock.
Operations	Execute a switch on the NE timing reference.
BITS-1 Out	
BITS-1 Out	Set the BITS-1 out timing reference.
Status	Displays the status of the BITS-1 out timing reference.
Operations	Execute a switch on the BITS-1 out timing reference.
BITS-2 Out	
BITS-2 Out	Set the BITS-2 out timing reference.

Table B-655 Field Descriptions for the Status Tab (continued)

Field	Description
Status	Displays the status of the BITS-2 out timing reference.
Operations	Execute a switch on the BITS-2 out timing reference.

B.16.0.13.4 Timing Report Tab

The Timing Report tab summarizes the NE's current timing settings.

B.17 CRS-1/3 NE Explorer

When you choose **Configuration > NE Explorer** for the CRS-1/3, the window that Prime Optical displays consists of a tree on the left side and a properties pane on the right. The properties pane shows information about the selected entity. See B.17.1 Node Properties Pane—CRS-1/3 for more information.

B.17.1 Node Properties Pane—CRS-1/3

The node properties pane displays information about the CRS-1/3 NE. The properties pane contains the following tabs:

- B.17.1.1 General, page B-471
- B.17.1.2 OTN, page B-472
- B.17.1.3 PM, page B-472
- B.17.1.4 Proactive Protection Regen, page B-473
- B.17.1.5 Status Tab, page B-474

B.17.1.1 General

The General Properties pane displays admin state, wavelength, and loopback information for the CRS-1/3 NE.

Note Wavelength and Loopback fields are editable only if the Admin State is not IS.

Table B-656 Field Descriptions for the General Properties Pane

Field	Description
Filter	Click the **Filter** button to filter the data displayed in the table.
Refresh	Click the **Refresh Data** button to refresh the table.

Table B-656 Field Descriptions for the General Properties Pane

Field	Description
Admin State	The port administration state. It can be: • IS—In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Wavelength	Displays the number of wavelengths for this NE.
Loopback	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

B.17.1.2 OTN

The OTN Properties pane allows you to change the line optical transport network (OTN) settings.

Table B-657 Field Descriptions for the OTN Tab

Field	Description
Filter	Click the **Filter** button to filter the data displayed in the table.
Refresh	Click the **Refresh Data** button to refresh the table.
G.709 OTN	Disables or enables the G.709 OTN feature.
FEC	Disables or enables forward error correction. **Note** OTN must be enabled before you can enable FEC.
SF BER	Displays the signal fail bit error rate.
SD BER	Displays the signal degrade bit error rate.

B.17.1.3 PM

The PM tab allows you to view the optics in the current interval of a PM parameter. The interval is 15 minutes or 1 day.

Note The parameters displayed depend on the PM type selected.

Click the **Refresh** button to refresh the parameters. You can save the data displayed in the text area to your local disk by clicking the **Export** button.

Table B-658 Field Descriptions for the PM Tab

Field	Description
PM Type	Choose Interval or History to display the performance monitor parameters. 1. If you choose Interval PM type, the Interval PM area is displayed: • Intervals – 15-Minute—Displays a collection of PM data every 15 minutes. – 1 Day—Displays a collection of PM data every 24 hours. • PM Layer—Choose the performance monitor layer. Values are: – FEC – Optics – OTN 2. If you choose History PM type, the History PM area is displayed. Possible values are: – All – 15-Minute – 1 Day – FEC – Optics – OTN

B.17.1.4 Proactive Protection Regen

The Proactive Protection Regen tab allows you to provision proactive protection regen.

Table B-659 Field Description for the Proactive Protection Regen Tab

Field	Description
Filter	Click the **Filter** button to filter the data displayed in the table.
Refresh	Click the **Refresh Data** button to refresh the table.
Trigger Threshold	Sets the maximum BER threshold to trigger proactive protection.

Table B-659 Field Description for the Proactive Protection Regen Tab

Field	Description
Trigger Window (ms)	Sets the duration for which BER is monitored before triggering proactive protection. The trigger window value must be a multiple of: • 10 ms for trigger thresholds between 1E-3 and 6E-6 • 100 ms for trigger threshold between 5E-6 and 1E-7 The trigger window must be less than or equal to 10000 ms.
Revert Threshold	Sets the revert threshold value of BER. **Note** The Revert Threshold settings must be less than the Trigger Threshold values.
Revert Window (ms)	Sets the duration for which BER is monitored for settings that are less than the revert threshold value before which proactive protection provided to the router is removed. The Revert Window value must be at least 2000 ms and a multiple of: • 10ms for a revert threshold of 1E-4 to 6E-7 • 100ms for a revert threshold of 5E-7 to 5E-8 The revert window must be less than or equal to 10000 ms.

B.17.1.5 Status Tab

The status tab allows you to view the current status of the CRS-1/3 NE. The Status tab provides details on loopback, controller state, FEC, OTU, ODU, and alarm.

B.18 Unmanaged NE/Other Vendor Node Properties Pane

The Unmanaged NE/Other Vendor node properties pane displays information about unmanaged NEs or nodes from other vendors. The properties pane contains an Identification Properties pane.

B.18.1 Identification

The Identification Properties pane displays identification information about the unmanaged or other-vendor NE.

Table B-660 Field Descriptions for the Identification Properties Pane

Field	Description
NE ID	Displays the ID of the NE from the Domain Explorer.
Description	Displays the description of the NE from the Domain Explorer.
NE Model	Displays *Unmanaged* as the NE model type.
NE Type	Displays *Not Applicable* as the NE type.
NE Version	Displays the NE version.
Serial Number	Displays the serial number of the NE.
Location Name	Displays the name of the physical location of the NE.
Subnetwork ID	Displays the assigned subnetwork ID of the NE.
Network Partition ID	Displays the network partition ID of the NE.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

Slot Properties Pane Information—Common, DWDM, Electrical, and Ethernet Cards

This appendix provides information on the cards supported in Cisco Prime Optical. This appendix contains the following sections:

- C.1 Common Cards, page C-1
- C.2 DWDM Cards, page C-111
- C.3 Electrical Cards, page C-651
- C.4 Ethernet Cards, page C-832

Note

- In the Prime Optical GUI, display-only fields have a gray background.
- Slot properties are alphabetically displayed under the Overview and Provisioning drawers in the NE Explorer. For more information, see the "1.5.7 NE Explorer" section on page 1-30.

C.1 Common Cards

This section describes the following common cards supported within Prime Optical:

- C.1.1 Slot Properties—AIC, page C-2
- C.1.2 Slot Properties—AIC-I, page C-5
- C.1.3 Slot Properties—CTX-2500, page C-9
- C.1.4 Slot Properties—CTX-CL600, page C-26
- C.1.5 Slot Properties—FILLER, page C-59
- C.1.6 Slot Properties—MIC-28-3-A and MIC-28-3-B, page C-59
- C.1.7 Slot Properties—MMU (ONS 15454 SONET and ONS 15454 SDH), page C-60
- C.1.8 Slot Properties—OSCM (ONS 15454 SONET and ONS 15454 SDH), page C-65
- C.1.9 Slot Properties—SSXC, page C-70
- C.1.10 Slot Properties—TCC+, page C-71
- C.1.11 Slot Properties—TCC-I, page C-72
- C.1.12 Slot Properties—TCC2, page C-73

- C.1.13 Slot Properties—TCC2P, page C-75
- C.1.14 Slot Properties—TCC3, page C-77
- C.1.15 Slot Properties—TNC and TNCE, page C-79
- C.1.16 Slot Properties—TSC and TSCE, page C-90
- C.1.17 Slot Properties—TSC (ONS 15600 SONET and ONS 15600 SDH), page C-92
- C.1.18 Slot Properties—Unprovisioned Slot (ONS 15327 and ONS 15454 SONET), page C-93
- C.1.19 Slot Properties—Unprovisioned Slot (ONS 15454 SDH), page C-94
- C.1.20 Slot Properties—XC, page C-94
- C.1.21 Slot Properties—XC-VXL-10G, page C-95
- C.1.22 Slot Properties—XC10G, page C-96
- C.1.23 Slot Properties—XCVT, page C-98
- C.1.24 Slot Properties—XCVXC, page C-100
- C.1.25 Slot Properties—XTC (ONS 15305), page C-101
- C.1.26 Slot Properties—XTC (ONS 15327), page C-102

C.1.1 Slot Properties—AIC

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The optional Alarm Interface Controller (AIC) card provides customer-defined alarm input/output (I/O) and supports local and express orderwire.

For the AIC module, the slot properties pane displays the following properties: Module View, Identification, Alarm Extenders, Local Orderwire, Express Orderwire, and Info.

C.1.1.1 Module View

The Module View displays a graphic of the AIC that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.1.1.2 Identification

The Identification Properties pane allows you to view and update AIC identification information.

Table C-1 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.

Table C-1 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the Common Language Equipment Identifier (CLEI) code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.1.3 Alarm Extenders

The Alarm Extenders Properties pane allows you view AIC alarm information and create custom alarm types. The Alarm Extenders Properties pane contains the following tabs:

- C.1.1.3.1 External Alarms Tab, page C-3
- C.1.1.3.2 External Controls Tab, page C-4
- C.1.1.3.3 User-Defined Alarms Tab, page C-4

C.1.1.3.1 External Alarms Tab

The External Alarms tab allows you to view and update external alarm information.

Table C-2 Field Descriptions for the External Alarms Tab

Field	Description
Input Number	Displays the alarm input number.
Enabled	Check to activate the fields for the alarm input number.
Alarm Type	Choose an alarm type from the provided list.
Severity	Choose a severity from the list.
Raised When	Choose the contact condition that will trigger the alarm in CTC.

Table C-2 Field Descriptions for the External Alarms Tab (continued)

Field	Description
Virtual Wire	To assign the external device to a virtual wire, choose a virtual wire from the list, or choose None if no assignment is required.
Description	Displays a default description that is provided for every enabled external alarm.
Raised	Indicates if an alarm has been raised.
Contact Status	Indicates the current status of the contact.

C.1.1.3.2 External Controls Tab

The External Controls tab allows you to view and update external controls.

Table C-3 Field Descriptions for the External Controls Tab

Field	Description
Control Number	Displays the control number.
Enabled	Check to activate the fields for the control number.
Control Type	Choose a control type from the provided list.
Trigger Type	Choose a trigger type: a local minor, major, or critical alarm; a remote minor, major, or critical alarm; or a virtual wire activation.
Description	Enter a description.
Current State	Displays the current state of the control.
Auto State	Displays the auto state of the control.
Contact Setting	Displays the current contact setting.

C.1.1.3.3 User-Defined Alarms Tab

The User-Defined Alarms tab allows you to view, add, and delete custom alarm types on AIC cards.

Table C-4 Field Descriptions for the User-Defined Alarms Tab

Field	Description
Alarm Types	Lists the user-defined alarm types that have been created on the AIC card. You can create up to 50 custom environmental alarms, which are reported in the Condition column in the Alarm Log and Alarm Browser windows.
Add	Click the **Add** button to add a new custom alarm type. Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).
Delete	Click the **Delete** button to delete an existing alarm type.

C.1.1.4 Local Orderwire

Local Orderwire allows a craftsperson to plug a phoneset into a node and communicate with craftspeople working at other nodes or other facility equipment. The orderwire is a pulse code modulation (PCM) encoded voice channel that uses E1 or E2 bytes in section/line overhead. The AIC allows simultaneous

use of both local (section overhead signal) and express (line overhead channel) orderwire channels on a SONET ring or particular optics facility. Local orderwire also allows communication at regeneration sites when the regenerator is not a Cisco device.

Table C-5 Field Descriptions for the Local Orderwire Properties Pane

Field	Description
4-Wire Level	If needed, adjust the Tx and Rx dBm (decibels referenced per milliwatt) by moving the slider to the right or left for the four-wire headset that you will use. In general, you should not need to adjust the dBm.
2-Wire Level	If needed, adjust the Tx and Rx dBm by moving the slider to the right or left for the two-wire headset that you will use. In general, you should not need to adjust the dBm.

C.1.1.5 Express Orderwire

The Express Orderwire Properties pane allows you to configure express orderwire settings.

Table C-6 Field Descriptions for the Express Orderwire Properties Pane

Field	Description
4-Wire Level	If needed, adjust the Tx and Rx dBm by moving the slider to the right or left for the four-wire headset that you will use. In general, you should not need to adjust the dBm.
2-Wire Level	If needed, adjust the Tx and Rx dBm by moving the slider to the right or left for the two-wire headset that you will use. In general, you should not need to adjust the dBm.

C.1.1.6 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the AIC card.

Table C-7 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.2 Slot Properties—AIC-I

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The optional Alarm Interface Controller-International (AIC-I) card provides customer-defined (environmental) alarms and controls and supports local and express orderwire. It provides twelve customer-defined input and four customer-defined input/output contacts. The physical connections are through the backplane wire-wrap pin terminals.

For the AIC-I module, the slot properties pane displays the following properties: Module View, Identification, Card, Alarm Extenders, Local Orderwire, Express Orderwire, and Info.

C.1.2.1 Module View

The Module View displays a graphic of the AIC-I that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.1.2.2 Identification

The Identification Properties pane allows you to view and update AIC-I identification information.

Table C-8 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.2.3 Card

The Card Properties pane allows you to view and update AIC-I card information.

Table C-9 Field Descriptions for the Card Properties Pane

Field	Description
Add Extension	Check this check box if you are using the Alarm Expansion Panel (AEP).
Extended Type	The AEP radio button is automatically selected if you checked the Add Extension check box.
Input/Output	Select External Alarm if you use external alarms only; select External Control if you use both external alarms and external controls. Selecting only External Alarm gives you 16 external alarm ports and no external control ports. If you select External control, four of the ports are converted to external control ports, leaving you with 12 external alarm ports.
Station Number	Enter a four-digit station number. The valid range is from 0 to 9999.

C.1.2.4 Alarm Extenders

The Alarm Extenders Properties pane allows you view AIC-I alarm information. The Alarm Extenders Properties pane contains the following tabs:

- C.1.2.4.1 External Alarms Tab, page C-7
- C.1.2.4.2 External Controls Tab, page C-7
- C.1.2.4.3 User-Defined Alarms Tab, page C-8

C.1.2.4.1 External Alarms Tab

The External Alarms tab allows you to view and update external alarm information.

Table C-10 Field Descriptions for the External Alarms Tab

Field	Description
Input Number	The alarm input number.
Enabled	Check to activate the fields for the alarm input number.
Alarm Type	Choose an alarm type from the provided list.
Severity	Choose a severity from the list.
Raised When	Choose the contact condition that will trigger the alarm in CTC.
Virtual Wire	To assign the external device to a virtual wire, choose a virtual wire from the list, or choose None if no assignment is required.
Description	A default description is provided in this line for every external alarm that is enabled.
Raised	Indicates if an alarm has been raised.
Contact Status	Indicates the current status of the contact.

C.1.2.4.2 External Controls Tab

The External Controls tab allows you to view and update external controls.

Table C-11 Field Descriptions for the External Controls Tab

Field	Description
Control Number	The control number.
Enabled	Check to activate the fields for the control number.
Control Type	Choose a control type from the provided list.
Trigger Type	Choose a trigger type: a local minor, major, or critical alarm; a remote minor, major, or critical alarm; or a virtual wire activation.
Description	Enter a description.
Current State	The current state of the control.
Auto State	The auto state of the control.
Contact Setting	The current contact setting.

C.1.2.4.3 User-Defined Alarms Tab

The User-Defined Alarms tab allows you to view, add, and delete custom alarm types on AIC-I cards.

Table C-12 Field Descriptions for the User-Defined Alarms Tab

Field	Description
Alarm Types	Lists the user-defined alarm types that have been created on the AIC-I card. You can create up to 50 custom environmental alarms, which are reported in the Condition column in the Alarm Log and Alarm Browser windows.
Add	Click the **Add** button to add a new custom alarm type. Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).
Delete	Click the **Delete** button to delete an existing alarm type.

C.1.2.5 Local Orderwire

Orderwire allows a craftsperson to plug a phoneset into a node and communicate with craftspeople working at other nodes or other facility equipment. The orderwire is a pulse code modulation (PCM) encoded voice channel that uses E1 or E2 bytes in section/line overhead. The AIC-I allows simultaneous use of both local (section overhead signal) and express (line overhead channel) orderwire channels on a SONET ring or particular optics facility. Local orderwire also allows communication at regeneration sites when the regenerator is not a Cisco device.

Table C-13 Field Descriptions for the Local Orderwire Properties Pane

Field	Description
Buzzer	The AIC-I supports selective dual tone multifrequency (DTMF) dialing for telephony connectivity, which causes one AIC-I card or all AIC-I cards on the orderwire subnetwork to ring. The ringer/buzzer resides on the AIC-I. If you want to turn on the audible alert (buzzer) for the orderwire, check the **Buzzer** check box.

Table C-13 Field Descriptions for the Local Orderwire Properties Pane (continued)

Field	Description
4-Wire Level	If needed, adjust the Tx and Rx dBm by moving the slider to the right or left for the four-wire headset that you will use. In general, you should not need to adjust the dBm.
2-Wire Level	If needed, adjust the Tx and Rx dBm by moving the slider to the right or left for the two-wire headset that you will use. In general, you should not need to adjust the dBm.

C.1.2.6 Express Orderwire

The Express Orderwire Properties pane allows you to configure express orderwire settings.

Table C-14 Field Descriptions for the Express Orderwire Properties Pane

Field	Description
Buzzer	If you want to turn on the audible alert (buzzer) for the orderwire, check the **Buzzer** check box.
4-Wire Level	If needed, adjust the Tx and Rx dBm by moving the slider to the right or left for the four-wire headset that you will use. In general, you should not need to adjust the dBm.
2-Wire Level	If needed, adjust the Tx and Rx dBm by moving the slider to the right or left for the two-wire headset that you will use. In general, you should not need to adjust the dBm.

C.1.2.7 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the AIC-I card.

Table C-15 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.3 Slot Properties—CTX-2500

The slot properties pane displays information about the Cisco ONS 15310 MA SONET or ONS 15310 MA SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The CTX-2500 card, for use with the ONS 15310 MA SONET or ONS 15310 MA SDH, is a fully nonblocking cross-connect card that operates in a redundant configuration. It performs system initialization, provisioning, alarm reporting, maintenance, diagnostics, IP address detection/resolution, SONET data communications channel (DCC) termination, system fault detection, and cross-connect

maintenance and management for the ONS 15310 MA SONET and ONS 15310 MA SDH. The card also provides the circuitry for the OC-3/OC-12/OC-48 interfaces, and ensures that the system maintains timing with SMC stability.

The CTX-2500 card provides 576 x 576 STS-1 level cross-connections, 96 x 96 TU-3 level cross-connections, 2688 x 2688 VT1.5s, or 2016 x 2016 VT2s.

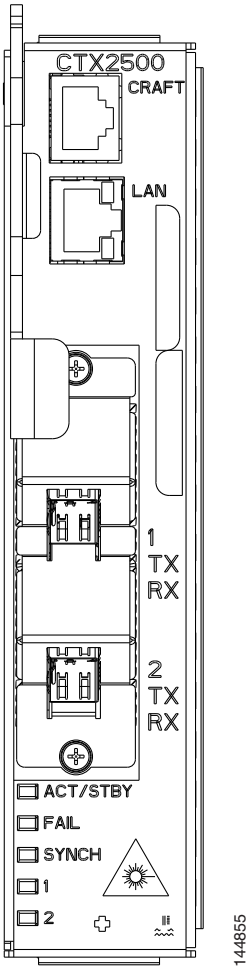
The CTX-2500 card can be installed in slots 3 or 4. Protection switches between the active and standby CTX-2500 are hitless (less than a 50-ms impact to any traffic).

The CTX-2500 supports errorless side switches (switching from one CTX-2500 on one side of the shelf to the other CTX-2500 on the other side of the shelf) when the switch is initiated through software and is caused by a software upgrade.

There are two PPM (small form factor pluggable [SFP]) slots on the CTX-2500 faceplate. Each slot can contain a one-port PPM. Cisco-qualified SFPs can be single-rate (OC-3, OC-12, or OC-48) or multirate (OC-3, OC-12, and OC-48). Single-rate PPMs are autoprovisioned when they are installed, but multirate PPMs must be provisioned. This behavior can be controlled by NE defaults.

The following figure shows the CTX-2500 card faceplate.

Figure C-1 CTX-2500 Faceplate



For the CTX-2500 module, the slot properties pane displays the following properties: Module View, Identification, Pluggable Provisioning, Line, STS, VT, Loopback, Alarm Behavior, Transceiver, Auto Laser Shutdown, Protection, J1 Path Trace, and Section Trace.

C.1.3.1 Module View

The Module View displays a graphic of the CTX-2500 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.1.3.2 Identification

The Identification Properties pane allows you to view and update CTX-2500 identification information.

Table C-16 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Card State	
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.3.3 Pluggable Provisioning

The Pluggable Provisioning Properties pane allows you to view and provision pluggable entities; for example, the pluggable port module (PPM) and pluggable I/O module (PIM) and the ports inside these entities.

Table C-17 Field Descriptions for the Pluggable Provisioning Properties Pane

Field	Description
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Equipment State	Displays the equipment state of the card.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Pluggable Number	Displays the identifier of the plugin module and the port number.
Rate	Displays the rate of the port inside the pluggable entity.

C.1.3.3.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision pluggable entities such as the PPM and PIM, and to create the ports inside these entities.

- Table C-18 describes the fields displayed in the Provision Pluggable dialog box when provisioning a PPM.
- Table C-19 applies only to the ONS 15600 SONET/SDH ASAP_4 card and describes the fields displayed in the Provision Pluggable dialog box when provisioning a PIM.
- Table C-20 describes the fields displayed in the Provision Pluggable dialog box when provisioning a PPM.
- Table C-21 describes the fields displayed in the Provision Pluggable dialog box when creating the ports inside the PPM and PIM.

Table C-18 Field Descriptions for the Provision Pluggable Dialog Box—PPM

Field	Description
PPM #	Sets the PPM number.
No. of Ports	Sets the number of ports inside the PPM.
PPM Type	Sets the type of PPM.

Table C-19 Field Descriptions for the Provision Pluggable Dialog Box—PIM (ONS 15600 SONET/SDH ASAP_4 Card)

Field	Description
PIM #	Sets the PIM number.
No. of Ports	Sets the number of ports inside the PIM.
PIM Type	Sets the type of PIM.

Table C-20 Field Descriptions for the Provision Pluggable Dialog Box—PPM (ONS 15454 SONET/SDH MRC-12 Card)

Field	Description
PPM	Select the PPM for which you want to create the port.
PPM Type	Sets the PPM type.

Table C-21 Field Descriptions for the Provision Pluggable Dialog Box

Field	Description
PPM	Select the PPM for which you want to create the port.
Port Number	Sets the port number.
Port Rate	Sets the rate of the new port.

C.1.3.4 Line

The Line Properties pane allows you to view and update line card information. The Line Properties pane displays the following tabs:

- C.1.3.4.1 Line Config Tab, page C-13
- C.1.3.4.2 Line Thresh 15 Min Tab, page C-15
- C.1.3.4.3 Line Thresh 1 Day Tab, page C-16
- C.1.3.4.4 Section Thresh 15 Min Tab, page C-17
- C.1.3.4.5 Section Thresh 1 Day Tab, page C-18
- C.1.3.4.6 Physical Thresh 15 Min Tab, page C-18
- C.1.3.4.7 Physical Thresh 1 Day Tab, page C-18
- C.1.3.4.8 Alarm Thresholds Tab, page C-19

C.1.3.4.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of an optical card.

Table C-22 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Port Rate	Sets the rate of the new port.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.

Table C-22 Field Descriptions for the Line Config Tab (continued)

Field	Description
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
SendDoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Send <FF> DoNotUse	When checked, sends a do not use (DUS) (0xff) message on the S1 byte.
Type	Defines the port as SONET or SDH.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Admin SSM	If the node does not receive an SSM signal, it defaults to synchronization traceability unknown (STU). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default)–3 (OC-3, per port) • 0 (default)–12 (OC-12) • 0 (default)–48 (OC-48)

Table C-22 Field Descriptions for the Line Config Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected.

C.1.3.4.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute threshold settings of an optical card.

Table C-23 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.

Table C-23 Field Descriptions for the Line Thresh 15 Min Tab (continued)

Field	Description
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Failure count line (FC-L) lists a count of the number of near-end line failure events. A failure event begins when an AIS-L failure is declared, or when a lower-layer, traffic-related, near-end failure is declared. This failure event ends when the failure is cleared. A failure event that begins in one period and ends in another period is counted only in the period where it begins.
PSC	In a 1 + 1 protection scheme for a working card, protection switching count (PSC) is a count of the number of times service switches from a working card to a protection card plus the number of times service switches back to the working card. For a protection card, PSC is a count of the number of times service switches to a working card from a protection card plus the number of times service switches back to the protection card. The PSC PM is applicable only if revertive line-level protection switching is used. PSC is supported in revertive and nonrevertive modes. **Note** This parameter is not supported for transponder or muxponder cards.
PSD	Protection switching duration (PSD) applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, it is a count of the seconds that the line was used to carry service. The PSD PM is applicable only if revertive line-level protection switching is used. PSD is supported in revertive and nonrevertive modes. **Note** This parameter is not supported for transponder or muxponder cards.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Failure count line (FC-L) lists a count of the number of near-end line failure events. A failure event begins when an AIS-L failure is declared, or when a lower-layer, traffic-related, near-end failure is declared. This failure event ends when the failure is cleared. A failure event that begins in one period and ends in another period is counted only in the period where it begins.

C.1.3.4.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the near- and far-end 1-day threshold settings of an optical card.

Table C-24 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.

Table C-24 Field Descriptions for the Line Thresh 1 Day Tab (continued)

Field	Description
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Failure count line (FC-L) lists a count of the number of near-end line failure events. A failure event begins when an AIS-L failure is declared, or when a lower-layer, traffic-related, near-end failure is declared. This failure event ends when the failure is cleared. A failure event that begins in one period and ends in another period is counted only in the period where it begins.
PSC	In a 1 + 1 protection scheme for a working card, protection switching count (PSC) is a count of the number of times service switches from a working card to a protection card plus the number of times service switches back to the working card. For a protection card, PSC is a count of the number of times service switches to a working card from a protection card plus the number of times service switches back to the protection card. The PSC PM is applicable only if revertive line-level protection switching is used. PSC is supported in revertive and nonrevertive modes. **Note** This parameter is not supported for transponder or muxponder cards.
PSD	Protection switching duration (PSD) applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, it is a count of the seconds that the line was used to carry service. The PSD PM is applicable only if revertive line-level protection switching is used. PSD is supported in revertive and nonrevertive modes. **Note** This parameter is not supported for transponder or muxponder cards.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Failure count line (FC-L) lists a count of the number of near-end line failure events. A failure event begins when an AIS-L failure is declared, or when a lower-layer, traffic-related, near-end failure is declared. This failure event ends when the failure is cleared. A failure event that begins in one period and ends in another period is counted only in the period where it begins.

C.1.3.4.4 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the near-end 15-minute section threshold settings of an optical card.

Table C-25 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.

Table C-25 Field Descriptions for the Section Thresh 15 Min Tab (continued)

Field	Description
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.

C.1.3.4.5 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the near-end 1-day section threshold settings of an optical card.

Table C-26 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.

C.1.3.4.6 Physical Thresh 15 Min Tab

The Physical Thresh 15 Min tab allows you to view and change 15-minute physical threshold information on an optical card.

Table C-27 Field Descriptions for the Physical Thresh 15 Min Tab

Field	Description
Port No.	Pluggable entity number and port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 200 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 20 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the optical power received (OPR) establishes the received power level as 100 percent. If the received power decreases, then the OPR percentage decreases to reflect the loss in received power. For example, if the received power decreases 3-dBm, the OPR decreases 50 percent.

C.1.3.4.7 Physical Thresh 1 Day Tab

The Physical Thresh 1 Day tab allows you to view and change 1-day physical threshold information on an optical card.

Table C-28 Field Descriptions for the Physical Thresh 1 Day Tab

Field	Description
Port No.	Pluggable entity number and port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 200 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 20 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the received power decreases, then the OPR percentage decreases to reflect the loss in received power. For example, if the received power decreases 3-dBm, the OPR decreases 50 percent.

C.1.3.4.8 Alarm Thresholds Tab

The Alarm Thresholds tab allows you to select thresholds for alarm generation.

Table C-29 Field Descriptions for the Alarm Thresholds Tab

Field	Description
Port Number	The port number.
LBC-High	Maximum laser bias current. The default is (15 min): 200 percent.
LBC-Low	Minimum laser bias current. The default is (15 min): 20 percent.
OPT-High	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-Low	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-High	Maximum optical power received. The default is (15 min): 200 percent.
OPR-Low	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the received power decreases, then the OPR percentage decreases to reflect the loss in received power. For example, if the received power decreases 3-dBm, the OPR decreases 50 percent.

C.1.3.5 STS

The STS Properties pane allows you to view and update synchronous transport signal (STS) information. The STS Properties pane displays the following tabs:

- C.1.3.5.1 STS Config Tab, page C-19
- C.1.3.5.2 Path Thresh 15 Min Tab, page C-20
- C.1.3.5.3 Path Thresh 1 Day Tab, page C-20
- C.1.3.5.4 Customer Info Tab, page C-21

C.1.3.5.1 STS Config Tab

The STS Config tab allows you to view and change the STS settings of the EC1 port.

Table C-30 Field Descriptions for the STS Config Tab

Field	Description
STS Number	Displays the synchronous transport signal number information.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.
XC Loopback	Displays the cross-connect loopback status.

C.1.3.5.2 Path Thresh 15 Min Tab

The Path Thresh 15 Min tab allows you to view and change the 15-minute path threshold information for the CTX-2500 card.

Table C-31 Field Descriptions for the Path Thresh 15 Min Tab

Field	Description
Near End	
STS No.	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
UAS-P	Displays the unavailable seconds path information.
PPJC-Pdet	Displays positive pointer justification count-VC4 path detected.
NPJC-Pdet	Displays negative pointer justification count-VC4 path detected.
PPJC-Pgen	Displays positive pointer justification count-VC4 path generated.
NPJC-Pgen	Displays negative pointer justification count-VC4 path generated.
PJCS-Pdet	Indicates the number of pointer justification count seconds (PJCS) detected on a particular path.
PJCS-Pgen	Indicates the number of pointer justification count seconds generated for a particular path.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS No.	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.

C.1.3.5.3 Path Thresh 1 Day Tab

The Path Thresh 1 Day tab allows you to view and change the 1-day path threshold information for the CTX-2500 card.

Table C-32 Field Descriptions for the Path Thresh 1 Day Tab

Field	Description
Near End	
STS No.	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
PPJC-Pdet	Displays positive pointer justification count-VC4 path detected.
NPJC-Pdet	Displays negative pointer justification count-VC4 path detected.
PPJC-Pgen	Displays positive pointer justification count-VC4 path generated.
NPJC-Pgen	Displays negative pointer justification count-VC4 path generated.
PJCS-Pdet	Indicates the number of pointer justification count seconds (PJCS) detected on a particular path.
PJCS-Pgen	Indicates the number of pointer justification count seconds generated for a particular path.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS No.	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.1.3.5.4 Customer Info Tab

The Customer Info tab displays customer information.

Table C-33 Field Descriptions for the Customer Info Tab

Field	Description
STS No.	Displays the STS number.
Customer ID	The customer ID.
Service ID	The service ID.

C.1.3.6 VT

The VT Properties pane allows you to view and update VT line information. The VT Properties pane displays the following tabs:

- C.1.3.6.1 VT Config Tab, page C-22
- C.1.3.6.2 VT Thresh 15 Min Tab, page C-22
- C.1.3.6.3 VT Thresh 1 Day Tab, page C-22
- C.1.3.6.4 Customer Info Tab, page C-23

C.1.3.6.1 VT Config Tab

The VT Config tab allows you to view and change the VT settings of the card.

Table C-34 Field Descriptions for the VT Config Tab

Field	Description
VT No.	Displays VT number information.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.

C.1.3.6.2 VT Thresh 15 Min Tab

The VT Thresh 15 Min tab displays near- and far-end 15-minute VT threshold information.

Table C-35 Field Descriptions for the VT Thresh 15 Min Tab

Field	Description
VT No.	Displays VT number information.
CV	Displays the coding violations information.
ES	Displays the errored seconds information.
SES	Displays the severely errored seconds information.
UAS	Displays the unavailable seconds information.
FC	Displays the failure count information.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.1.3.6.3 VT Thresh 1 Day Tab

The VT Thresh 1 Day tab displays near- and far-end 1-day VT threshold information.

Table C-36 Field Descriptions for the VT Thresh 1 Day Tab

Field	Description
VT No.	Displays VT number information.
CV	Displays the coding violations information.
ES	Displays the errored seconds information.
SES	Displays the severely errored seconds information.
UAS	Displays the unavailable seconds information.
FC	Displays the failure count information.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.1.3.6.4 Customer Info Tab

The Customer Info tab displays customer information.

Table C-37 Field Descriptions for the Customer Info Tab

Field	Description
STS No.	Displays the STS number.
Customer ID	The customer ID.
Service ID	The service ID.

C.1.3.7 Loopback

The Loopback Properties pane allows you to view and update CTX-2500 loopback information.

Table C-38 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	Allows you to select the administration state of the port: In Service (IS) or Out of Service (OOS).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

C.1.3.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update alarm profiles assigned to cards on the ONS 15310 MA SONET or ONS 15310 MA SDH node.

Table C-39 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.1.3.9 Transceiver

The Transceiver Properties pane shows OC-N port optical power received (OPR), optical power transmitted (OPT), and laser bias current (LBC) from the line card and stores these values with the PM counts for the 15-minute and 1-day periods. The physical layer performance parameters consist of normalized and non-normalized values of LBC, OPT, and OPR.

Table C-40 Field Descriptions for the Transceiver Properties Pane

Field	Description
Port No.	Displays the port number.
Non-Normalized LBC (mA)	Displays the actual operating value of laser bias current (mA) for the specified card port. This value should be somewhat consistent from port to port and cannot be configured.
Non-Normalized OPT (dBm)	Displays the actual operating value of optical power transmitted (dBm) for the specified card port. This value should be somewhat consistent from port to port and cannot be configured.
Non-Normalized OPR (dBm)	Displays the actual operating value of optical power received (dBm) for the specified card port. This value varies from port to port because of received optical signal power differences.

C.1.3.10 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-41 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.1.3.11 Protection

The Protection Properties pane allows you to view and update protection group information.

Table C-42 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.1.3.12 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-43 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS/VC Number	Displays the STS or VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.6 Using the Circuit Trace Window to Apply Protection to the Ports in a Splitter-Protection Group, page 7-171 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.1.3.13 Section Trace

The Section Trace Properties pane is used to provision section trace.

Table C-44 Field Descriptions for the Section Trace Properties Pane

Field	Description
Port No.	Displays the port number.
Trace Mode	Displays the trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.4 Slot Properties—CTX-CL600

The slot properties pane displays information about the Cisco ONS 15310 CL slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The CTX-CL600 card is an unpluggable card on the ONS 15310 CL NE. It has a total of 26 ports that are either mounted or pluggable.

For the CTX-CL600 module, the slot properties pane displays the following properties: Module View, Identification, Wideband Ports, Broadband Ports, Pluggable Provisioning, DS-1, DS-3, EC1, Optical, Alarm Extenders, and Info.

C.1.4.1 Module View

The Module View displays a graphic of the CTX-CL600 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.1.4.2 Identification

The Identification Properties pane allows you to view and update CTX-CL600 identification information.

Table C-45 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.4.3 Wideband Ports

The Wideband Ports Properties pane allows you to view the wideband port information.

Table C-46 Field Descriptions for the Wideband Ports Properties Pane

Field	Description
Port Number	Displays the port number.
Rate	Displays the rate that the slot is provisioned for.

C.1.4.4 Broadband Ports

The Broadband Ports Properties pane allows you to view, create, and delete DS-3 and EC1 broadband ports.

Table C-47 Field Descriptions for the Broadband Ports Properties Pane

Field	Description
Create	Click the **Create** button to launch the Create Port dialog box and create a new broadband port. Use the **Port Number** drop-down list to choose an available port. Use the **Port Rate** drop-down list to specify the port rate (DS-3 or EC1). After making your selections, click **OK**.
Delete	Click the **Delete** button to delete an existing DS-3 or EC1 broadband port.
DS-3	
Port Number	Displays the DS-3 port number.
Rate	Displays the rate that the slot is provisioned for.
EC1	
Port Number	Displays the EC1 port number.
Rate	Displays the rate that the slot is provisioned for.

C.1.4.5 Pluggable Provisioning

The Pluggable Provisioning Properties pane allows you to view and provision pluggable entities; for example, the pluggable port module (PPM) and pluggable I/O module (PIM) and the ports inside these entities.

Table C-48 Field Descriptions for the Pluggable Provisioning Properties Pane

Field	Description
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Pluggable Number	Displays the identifier of the plugin module and the port number.
Rate	Displays the rate of the port inside the pluggable entity.

C.1.4.5.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision pluggable entities such as the PPM and PIM, and to create the ports inside these entities.

- Table C-49 applies only to the ONS 15600 SONET/SDH ASAP_4 card and describes the fields displayed in the Provision Pluggable dialog box when provisioning a PIM.
- Table C-50 applies only to the ONS 15600 SONET/SDH ASAP_4 card and describes the fields displayed in the Provision Pluggable dialog box when creating the ports inside the PPM and PIM.
- Table C-51 describes the fields displayed in the Provision Pluggable dialog box when provisioning a PPM.
- Table C-52 describes the fields displayed in the Provision Pluggable dialog box when creating the ports inside the PPM.
- Table C-53 describes the fields displayed in the Provision Pluggable dialog box when creating the lanes inside the PPM for CFP_LC card.

Table C-49 Field Descriptions for the Provision Pluggable Dialog Box—PIM (ONS 15600 SONET/SDH ASAP_4 Card)

Field	Description
PIM #	Sets the PIM number.
PIM Type	Sets the type of PIM.

Table C-50 Field Descriptions for the Provision Pluggable Dialog Box—PPM (ONS 15600 SONET/SDH ASAP_4 Card)

Field	Description
PIM	Select the PIM for which you want to create the port.
PPM	Select the PPM for which you want to create the port.
Port Rate	Sets the rate of the new port.

Table C-51 Field Descriptions for the Provision Pluggable Dialog Box—PPM (ONS 15454 SONET/SDH MRC-12 Card)

Field	Description
PPM	Select the PPM for which you want to create the port.
PPM Type	Sets the PPM type.

Table C-52 Field Descriptions for the Provision Pluggable Dialog Box

Field	Description
PPM	Select the PPM for which you want to create the port.
Port Rate	Sets the rate of the new port.

Table C-53 Field Descriptions for the Provision Pluggable Dialog Box (ONS 15454 SONET/SDH CFP_LC Card)

Field	Description
Port	Select the PPM for which you want to create the port.
Port Type	Sets the type of the port.
No of Lanes	Number of sublanes that can be created based on the pluggable type. Values are: • 4 (card mode is TXP) • 1 and 4 (card mode is MXP)

C.1.4.6 DS-1

The DS-1 Properties pane allows you to view node near-end and far-end performance on a DS-1 card to detect possible performance problems. The DS-1 Properties pane contains the following tabs:

- C.1.4.6.1 Line Config Tab, page C-29
- C.1.4.6.2 Line Thresh 15 Min Tab, page C-30
- C.1.4.6.3 Line Thresh 1 Day Tab, page C-31
- C.1.4.6.4 Electric Path Thresh 15 Min Tab, page C-31
- C.1.4.6.5 Electric Path Thresh 1 Day Tab, page C-32
- C.1.4.6.6 STS Thresh 15 Min Tab, page C-33
- C.1.4.6.7 STS Thresh 1 Day Tab, page C-33
- C.1.4.6.8 VT Thresh 15 Min Tab, page C-34
- C.1.4.6.9 VT Thresh 1 Day Tab, page C-34
- C.1.4.6.10 Alarm Behavior Tab, page C-35
- C.1.4.6.11 Loopback Tab, page C-35
- C.1.4.6.12 J1 Path Trace Tab, page C-35
- C.1.4.6.13 Customer Info Tab, page C-36

C.1.4.6.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the DS-1 card.

Table C-54 Field Descriptions for the Line Config Tab

Field	Description
Port Name	Allows you to add a name for the optical port.
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the DS-1 transmission coding type.

Table C-54 Field Descriptions for the Line Config Tab (continued)

Field	Description
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. • 0–131 (default) • 132–262 • 263–393 • 394–524 • 525–655
Administration State	Displays the status of the line: In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Send Do Not Use	When checked, sends a do not use (DUS) message on the S1 byte.
Provide Sync	When checked, the card is provisioned as an NE timing reference.
Enable Sync Message	When checked, enables synchronization status messages, which allow the node to choose the best timing source.
Enable Retiming	When checked, enables retiming. Retiming removes accumulated jitter and wander from synchronous transport network payload signals. Retiming should not be enabled when accumulated jitter and wander is not present.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS-V for DS-1 AIS	When checked, sends an Alarm Indication Signal VT (AIS-V) instead of a DS-1 AIS (from the line side toward the backplane/system side) when a line-side trigger occurs.
Raise AIS for LOF	Sends an AIS when a loss of frame (LOF) occurs.

C.1.4.6.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute threshold settings of the DS-1 card.

Table C-55 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.

Table C-55 Field Descriptions for the Line Thresh 15 Min Tab (continued)

Field	Description
LOSS-L	Displays the loss of signal seconds line.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.

C.1.4.6.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the near- and far-end 1-day threshold settings of the DS-1 card.

Table C-56 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
LOSS-L	Displays the loss of signal seconds line.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.

C.1.4.6.4 Electric Path Thresh 15 Min Tab

The Electric Path Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute electrical path threshold settings for the DS-1 card.

Table C-57 Field Descriptions for the Electric Path Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	

Table C-57 Field Descriptions for the Electric Path Thresh 15 Min Tab (continued)

Field	Description
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
ESA-P	Displays the errored seconds type A path information.
ESB-P	Displays the errored seconds type B path information.
CSS-P	Displays the controlled slip seconds path information.
SEFS-P	Displays the severely errored framing seconds path information.

C.1.4.6.5 Electric Path Thresh 1 Day Tab

The Electric Path Thresh 1 Day tab allows you to view and change the near- and far-end 1-day electrical path threshold settings for the DS-1 card.

Table C-58 Field Descriptions for the Electric Path Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal–path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
ESA-P	Displays the errored seconds type A path information.
ESB-P	Displays the errored seconds type B path information.
CSS-P	Displays the controlled slip seconds path information.
SEFS-P	Displays the severely errored framing seconds path information.

C.1.4.6.6 STS Thresh 15 Min Tab

The STS Thresh 15 Min tab allows you to view and change near- and far-end 15-minute STS information for the DS-1 card.

Table C-59 Field Descriptions for the STS Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.1.4.6.7 STS Thresh 1 Day Tab

The STS Thresh 1 Day tab allows you to view and change near- and far-end 1-day STS information for the DS-1 card.

Table C-60 Field Descriptions for the STS Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.

Table C-60 Field Descriptions for the STS Thresh 1 Day Tab (continued)

Field	Description
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.1.4.6.8 VT Thresh 15 Min Tab

The VT Thresh 15 Min tab displays near- and far-end 15-minute VT threshold information.

Table C-61 Field Descriptions for the VT Thresh 15 Min Tab

Field	Description
Near End	
VT Number	Displays VT number information.
CV-V	Displays the coding violations–VT path information.
ES-V	Displays the errored seconds–VT path information.
SES-V	Displays the severely errored seconds–VT path information.
UAS-V	Displays the unavailable seconds–VT path information.
Far End	
VT Number	Displays VT number information.
CV-V	Displays the coding violations–VT path information.
ES-V	Displays the errored seconds–VT path information.
SES-V	Displays the severely errored seconds–VT path information.
UAS-V	Displays the unavailable seconds–VT path information.

C.1.4.6.9 VT Thresh 1 Day Tab

The VT Thresh 1 Day tab displays near- and far-end 1-day VT threshold information.

Table C-62 Field Descriptions for the VT Thresh 1 Day Tab

Field	Description
Near End	
VT Number	Displays VT number information.
CV-V	Displays the coding violations–VT path information.
ES-V	Displays the errored seconds–VT path information.
SES-V	Displays the severely errored seconds–VT path information.
UAS-V	Displays the unavailable seconds–VT path information.
Far End	
VT Number	Displays VT number information.
CV-V	Displays the coding violations–VT path information.
ES-V	Displays the errored seconds–VT path information.

Table C-62 Field Descriptions for the VT Thresh 1 Day Tab (continued)

Field	Description
SES-V	Displays the severely errored seconds–VT path information.
UAS-V	Displays the unavailable seconds–VT path information.

C.1.4.6.10 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update DS-1 alarm profile information.

Table C-63 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.1.4.6.11 Loopback Tab

The Loopback tab allows you to view and update DS-1 loopback information.

Table C-64 Field Descriptions for the Loopback Tab

Field	Description
Line Number	Displays the line number.
Administration State	Allows you to configure the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT)
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send Code	Allows you to send loopback commands to the far end.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

C.1.4.6.12 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information.

Table C-65 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.1.4.6.13 Customer Info Tab

The Customer Info tab displays customer information.

Table C-66 Field Descriptions for the Customer Info Tab

Field	Description
STS Number, VT Number	Displays the STS or VT number.
Customer ID	The customer ID.
Service ID	The service ID.

C.1.4.7 DS-3

The DS-3 Properties pane allows you to view node near-end and far-end performance on a DS-3 card to detect possible performance problems. The DS-3 Properties pane contains the following tabs:

- C.1.4.7.1 Line Config Tab, page C-37
- C.1.4.7.2 Line Thresh 15 Min Tab, page C-37
- C.1.4.7.3 Line Thresh 1 Day Tab, page C-37
- C.1.4.7.4 PBit Thresh 15 Min Tab, page C-38
- C.1.4.7.5 PBit Thresh 1 Day Tab, page C-38
- C.1.4.7.6 CPBit Thresh 15 Min Tab, page C-39
- C.1.4.7.7 CPBit Thresh 1 Day Tab, page C-39
- C.1.4.7.8 STS Thresh 15 Min Tab, page C-40
- C.1.4.7.9 STS Thresh 1 Day Tab, page C-40
- C.1.4.7.10 Alarm Behavior Tab, page C-41
- C.1.4.7.11 Loopback Tab, page C-41
- C.1.4.7.12 J1 Path Trace Tab, page C-41
- C.1.4.7.13 Customer Info Tab, page C-42

C.1.4.7.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the DS-3 card.

Table C-67 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number for the optical port.
Port Name	Allows you to add a name for the optical port.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. • 0 - 225 (default) • 226 - 450
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the transmission coding type.
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.1.4.7.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute threshold settings of the DS-3 card.

Table C-68 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line (near-end only).
ES-L	Displays the errored seconds lines line.
SES-L	Displays the severely errored seconds line (near-end only).
LOSS-L	Displays the loss of signal seconds line (near-end only).

C.1.4.7.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the near- and far-end 1-day threshold settings of the DS-3 card.

Table C-69 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line (near-end only).
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line (near-end only).
LOSS-L	Displays the loss of signal seconds line (near-end only).

C.1.4.7.4 PBit Thresh 15 Min Tab

The PBit Thresh 15 Min tab displays near-end 15-minute PBit path threshold information on the DS-3 card.

Table C-70 Field Descriptions for the PBit Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Severely errored frame/alarm indication signal–path
AISS-P	Alarm indication signal seconds path
UAS-P	Displays the unavailable seconds path information.

C.1.4.7.5 PBit Thresh 1 Day Tab

The PBit Thresh 1 Day tab displays near- and far-end 1-day PBit path threshold information on the DS-3 card.

Table C-71 Field Descriptions for the PBit Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Severely errored frame/alarm indication signal–path information.
AISS-P	Alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.

C.1.4.7.6 CPBit Thresh 15 Min Tab

The CPBit Thresh 15 Min tab displays near- and far-end 15-minute CPBit path threshold information on the DS-3 card.

Table C-72 Field Descriptions for the CPBit Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
Far End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal–path information.
UAS-P	Displays the unavailable seconds path information.

C.1.4.7.7 CPBit Thresh 1 Day Tab

The CPBit Thresh 1 Day tab displays near- and far-end 1-day CPBit path threshold information on the DS-3 card.

Table C-73 Field Descriptions for the CPBit Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
Far End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
UAS-P	Displays the unavailable seconds path information.

C.1.4.7.8 STS Thresh 15 Min Tab

The STS Thresh 15 Min tab allows you to view and change near- and far-end 15-minute STS information on the card.

Table C-74 Field Descriptions for the STS Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.1.4.7.9 STS Thresh 1 Day Tab

The STS Thresh 1 Day tab allows you to view and change near- and far-end 1-day STS information on the DS-3 card.

Table C-75 Field Descriptions for the STS Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.

Table C-75 Field Descriptions for the STS Thresh 1 Day Tab (continued)

Field	Description
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.1.4.7.10 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update DS-3 alarm profile information.

Table C-76 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.1.4.7.11 Loopback Tab

The Loopback tab allows you to view and update DS-3 loopback information.

Table C-77 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Inhibit FE Loopback	When selected, inhibits far-end loopback.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

C.1.4.7.12 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information.

Table C-78 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.1.4.7.13 Customer Info Tab

The Customer Info tab displays customer information.

Table C-79 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the STS number.
Customer ID	The customer ID.
Service ID	The service ID.

C.1.4.8 EC1

The EC1 Properties pane allows you to view node near-end and far-end performance on an EC1 card to detect possible performance problems. The EC1 Properties pane contains the following tabs:

- C.1.4.8.1 Line Config Tab, page C-43
- C.1.4.8.2 Line Thresh 15 Min Tab, page C-43
- C.1.4.8.3 Line Thresh 1 Day Tab, page C-44
- C.1.4.8.4 Section Thresh 15 Min Tab, page C-44
- C.1.4.8.5 Section Thresh 1 Day Tab, page C-45
- C.1.4.8.6 Path Thresh 15 Min Tab, page C-45
- C.1.4.8.7 Path Thresh 1 Day Tab, page C-46
- C.1.4.8.8 STS Config Tab, page C-47
- C.1.4.8.9 Alarm Behavior Tab, page C-47
- C.1.4.8.10 Loopback Tab, page C-48
- C.1.4.8.11 J1 Path Trace Tab, page C-48
- C.1.4.8.12 Customer Info Tab, page C-48

C.1.4.8.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the EC1 card.

Table C-80 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number for the optical port.
Port Name	Allows you to add a name for the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default)–3 (OC-3, per port) • 0 (default)–12 (OC-12) • 0 (default)–48 (OC-48)
Line Length (feet)	Defines the distance (in feet) from backplane connection to the next termination point. Values are 0 through 225 (default) or 226 through 450.
Rx Equalization	For early EC1 card versions, equalization can be turned off if the line length is short or the environment is extremely cold; Rx Equalization should normally be set to On (checked, default).
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.1.4.8.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute threshold settings of the EC1 card.

Table C-81 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.

Table C-81 Field Descriptions for the Line Thresh 15 Min Tab (continued)

Field	Description
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.

C.1.4.8.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the near- and far-end 1-day threshold settings of the EC1 card.

Table C-82 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.

C.1.4.8.4 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the near-end 15-minute section threshold information on the EC1 card.

Table C-83 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.

Table C-83 Field Descriptions for the Section Thresh 15 Min Tab (continued)

Field	Description
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.

C.1.4.8.5 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the near-end 1-day section threshold information on the EC1 card.

Table C-84 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.

C.1.4.8.6 Path Thresh 15 Min Tab

The Path Thresh 15 Min tab allows you to view and change near- and far-end 15-minute path threshold information on the EC1 card.

Table C-85 Field Descriptions for the Path Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
PPJC-Pdet	Displays positive pointer justification count-VC4 path detected.
NPJC-Pdet	Displays negative pointer justification count-VC4 path detected.
PPJC-Pgen	Displays positive pointer justification count-VC4 path generated.
NPJC-Pgen	Displays negative pointer justification count-VC4 path generated.
PJCS-Pdet	Indicates the number of pointer justification count seconds (PJCS) detected on a particular path.
PJCS-Pgen	Indicates the number of pointer justification count seconds generated for a particular path.

Table C-85 Field Descriptions for the Path Thresh 15 Min Tab (continued)

Field	Description
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
PPJC-Pdet	Displays positive pointer justification count-VC4 path detected.
NPJC-Pdet	Displays negative pointer justification count-VC4 path detected.
PPJC-Pgen	Displays positive pointer justification count-VC4 path generated.
NPJC-Pgen	Displays negative pointer justification count-VC4 path generated.
PJCS-Pdet	Indicates the number of pointer justification count seconds (PJCS) detected on a particular path.
PJCS-Pgen	Indicates the number of pointer justification count seconds generated for a particular path.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.

C.1.4.8.7 Path Thresh 1 Day Tab

The Path Thresh 1 Day tab allows you to view and change near- and far-end 1-day path threshold information on the EC1 card.

Table C-86 Field Descriptions for the Path Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
PPJC-Pdet	Displays positive pointer justification count-VC4 path detected.
NPJC-Pdet	Displays negative pointer justification count-VC4 path detected.
PPJC-Pgen	Displays positive pointer justification count-VC4 path generated.
NPJC-Pgen	Displays negative pointer justification count-VC4 path generated.
PJCS-Pdet	Indicates the number of pointer justification count seconds (PJCS) detected on a particular path.

Table C-86 Field Descriptions for the Path Thresh 1 Day Tab (continued)

Field	Description
PJCS-Pgen	Indicates the number of pointer justification count seconds generated for a particular path.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
PPJC-Pdet	Displays positive pointer justification count-VC4 path detected.
NPJC-Pdet	Displays negative pointer justification count-VC4 path detected.
PPJC-Pgen	Displays positive pointer justification count-VC4 path generated.
NPJC-Pgen	Displays negative pointer justification count-VC4 path generated.
PJCS-Pdet	Indicates the number of pointer justification count seconds (PJCS) detected on a particular path.
PJCS-Pgen	Indicates the number of pointer justification count seconds generated for a particular path.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.

C.1.4.8.8 STS Config Tab

The STS Config tab allows you to view and change the STS settings of the EC1 card.

Table C-87 Field Descriptions for the STS Config Tab

Field	Description
STS Number	Displays the synchronous transport signal number information.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.

C.1.4.8.9 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and change EC1 alarm profile information.

Table C-88 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.

Table C-88 Field Descriptions for the Alarm Behavior Tab (continued)

Field	Description
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.1.4.8.10 Loopback Tab

The Loopback tab allows you to view and change EC1 loopback information.

Table C-89 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

C.1.4.8.11 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information.

Table C-90 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.1.4.8.12 Customer Info Tab

The Customer Info tab displays customer information.

Table C-91 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the STS number.
Customer ID	The customer ID.
Service ID	The service ID.

C.1.4.9 Optical

The Optical Properties pane allows you to view node near-end and far-end performance on an optical card to detect possible performance problems. The Optical Properties pane contains the following tabs:

- C.1.4.9.1 Line Config Tab, page C-49
- C.1.4.9.2 Line Thresh 15 Min Tab, page C-51
- C.1.4.9.3 Line Thresh 1 Day Tab, page C-52
- C.1.4.9.4 Section Thresh 15 Min Tab, page C-53
- C.1.4.9.5 Section Thresh 1 Day Tab, page C-54
- C.1.4.9.6 Physical Thresh 15 Min Tab, page C-54
- C.1.4.9.7 Physical Thresh 1 Day Tab, page C-54
- C.1.4.9.8 STS Config Tab, page C-55
- C.1.4.9.9 Alarm Behavior Tab, page C-55
- C.1.4.9.10 Loopback Tab, page C-55
- C.1.4.9.11 Auto Laser Shutdown Tab, page C-56
- C.1.4.9.12 Protection Tab, page C-56
- C.1.4.9.13 J1 Path Trace Tab, page C-57
- C.1.4.9.14 Customer Info Tab, page C-57

C.1.4.9.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of an optical card.

Table C-92 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Port Rate	Sets the rate of the new port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.

Table C-92 Field Descriptions for the Line Config Tab (continued)

Field	Description
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default)–3 (OC-3, per port) • 0 (default)–12 (OC-12) • 0 (default)–48 (OC-48)
Provides Sync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
SendDoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Admin SSM	If the node does not receive an SSM signal, it defaults to synchronization traceability unknown (STU). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4
Send <FF> DoNotUse	When checked, sends a do not use (DUS) (0xff) message on the S1 byte.

Table C-92 Field Descriptions for the Line Config Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected.

C.1.4.9.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute threshold settings of an optical card.

Table C-93 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.

Table C-93 Field Descriptions for the Line Thresh 15 Min Tab (continued)

Field	Description
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Failure count line (FC-L) lists a count of the number of near-end line failure events. A failure event begins when an AIS-L failure is declared, or when a lower-layer, traffic-related, near-end failure is declared. This failure event ends when the failure is cleared. A failure event that begins in one period and ends in another period is counted only in the period where it begins.
PSC	In a 1 + 1 protection scheme for a working card, protection switching count (PSC) is a count of the number of times service switches from a working card to a protection card plus the number of times service switches back to the working card. For a protection card, PSC is a count of the number of times service switches to a working card from a protection card plus the number of times service switches back to the protection card. The PSC PM is applicable only if revertive line-level protection switching is used. PSC is supported in revertive and nonrevertive modes. **Note** This parameter is not supported for transponder or muxponder cards.
PSD	Protection switching duration (PSD) applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, it is a count of the seconds that the line was used to carry service. The PSD PM is applicable only if revertive line-level protection switching is used. PSD is supported in revertive and nonrevertive modes. **Note** This parameter is not supported for transponder or muxponder cards.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Failure count line (FC-L) lists a count of the number of near-end line failure events. A failure event begins when an AIS-L failure is declared, or when a lower-layer, traffic-related, near-end failure is declared. This failure event ends when the failure is cleared. A failure event that begins in one period and ends in another period is counted only in the period where it begins.

C.1.4.9.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the near- and far-end 1-day threshold settings of an optical card.

Table C-94 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.

Table C-94 Field Descriptions for the Line Thresh 1 Day Tab (continued)

Field	Description
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Failure count line (FC-L) lists a count of the number of near-end line failure events. A failure event begins when an AIS-L failure is declared, or when a lower-layer, traffic-related, near-end failure is declared. This failure event ends when the failure is cleared. A failure event that begins in one period and ends in another period is counted only in the period where it begins.
PSC	In a 1 + 1 protection scheme for a working card, protection switching count (PSC) is a count of the number of times service switches from a working card to a protection card plus the number of times service switches back to the working card. For a protection card, PSC is a count of the number of times service switches to a working card from a protection card plus the number of times service switches back to the protection card. The PSC PM is applicable only if revertive line-level protection switching is used. PSC is supported in revertive and nonrevertive modes. **Note** This parameter is not supported for transponder or muxponder cards.
PSD	Protection switching duration (PSD) applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, it is a count of the seconds that the line was used to carry service. The PSD PM is applicable only if revertive line-level protection switching is used. PSD is supported in revertive and nonrevertive modes. **Note** This parameter is not supported for transponder or muxponder cards.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Failure count line (FC-L) lists a count of the number of near-end line failure events. A failure event begins when an AIS-L failure is declared, or when a lower-layer, traffic-related, near-end failure is declared. This failure event ends when the failure is cleared. A failure event that begins in one period and ends in another period is counted only in the period where it begins.

C.1.4.9.4 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the near-end 15-minute section threshold settings of an optical card.

Table C-95 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.

Table C-95 Field Descriptions for the Section Thresh 15 Min Tab (continued)

Field	Description
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.

C.1.4.9.5 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the near-end 1-day section threshold settings of an optical card.

Table C-96 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.

C.1.4.9.6 Physical Thresh 15 Min Tab

The Physical Thresh 15 Min tab allows you to view and change 15-minute physical threshold information on an optical card.

Table C-97 Field Descriptions for the Physical Thresh 15 Min Tab

Field	Description
Port No.	Pluggable entity number and port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 200 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 20 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the optical power received (OPR) establishes the received power level as 100 percent. If the received power decreases, then the OPR percentage decreases to reflect the loss in received power. For example, if the received power decreases 3-dBm, the OPR decreases 50 percent.

C.1.4.9.7 Physical Thresh 1 Day Tab

The Physical Thresh 1 Day tab allows you to view and change 1-day physical threshold information on an optical card.

Table C-98 Field Descriptions for the Physical Thresh 1 Day Tab

Field	Description
Port No.	Pluggable entity number and port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 200 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 20 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the received power decreases, then the OPR percentage decreases to reflect the loss in received power. For example, if the received power decreases 3-dBm, the OPR decreases 50 percent.

C.1.4.9.8 STS Config Tab

The STS Config tab allows you to view and change the STS settings of an optical card.

Table C-99 Field Descriptions for the STS Config Tab

Field	Description
STS Number	Displays the synchronous transport signal number information.
IPPM Enabled	Check to enable IPPM and uncheck to disable IPPM.
XC Loopback	Displays the cross-connect loopback status.

C.1.4.9.9 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and change optical card alarm profile information.

Table C-100 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.1.4.9.10 Loopback Tab

The Loopback tab allows you to view and change optical card loopback information.

Table C-101 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

C.1.4.9.11 Auto Laser Shutdown Tab

The Auto Laser Shutdown tab allows you to view and update optical card auto laser shutdown (ALS) parameters.

Table C-102 Field Descriptions for the Auto Laser Shutdown Tab

Field	Description
Port Number	Displays the port number.
ASL Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.1.4.9.12 Protection Tab

The Protection tab allows you to view and update protection group information.

Table C-103 Field Descriptions for the Protection Tab

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups, such as which port is the protected port and which port is the working port. Also allows you to execute switch commands.

Table C-103 Field Descriptions for the Protection Tab (continued)

Field	Description
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock-out switching, or lock-on switching.

C.1.4.9.13 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information.

Table C-104 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.1.4.9.14 Customer Info Tab

The Customer Info tab displays customer information.

Table C-105 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the STS number.
Customer ID	The customer ID.
Service ID	The service ID.

C.1.4.10 Alarm Extenders

The Alarm Extenders Properties pane allows you to view CTX-CL600 alarm information. The Alarm Extenders Properties pane contains the following tabs:

- C.1.4.10.1 External Alarms Tab, page C-58
- C.1.4.10.2 External Controls Tab, page C-58
- C.1.4.10.3 User-Defined Alarms Tab, page C-58

C.1.4.10.1 External Alarms Tab

The External Alarms tab allows you to view and update external alarm information.

Table C-106 Field Descriptions for the External Alarms Tab

Field	Description
Input Number	The alarm input number.
Enabled	Check to activate the fields for the alarm input number.
Alarm Type	Choose an alarm type from the provided list.
Severity	Choose a severity from the list.
Raised When	Choose the contact condition that will trigger the alarm in CTC.
Virtual Wire	To assign the external device to a virtual wire, choose a virtual wire from the list, or choose None if no assignment is required.
Description	A default description is provided in this line for every external alarm that is enabled.
Raised	Indicates if an alarm has been raised.
Contact Status	Indicates the current status of the contact.

C.1.4.10.2 External Controls Tab

The External Controls tab allows you to view and update external controls.

Table C-107 Field Descriptions for the External Controls Tab

Field	Description
Control Number	The control number.
Enabled	Check to activate the fields for the control number.
Control Type	Choose a control type from the provided list.
Trigger Type	Choose a trigger type: a local minor, major, or critical alarm; a remote minor, major, or critical alarm; or a virtual wire activation.
Description	Enter a description.
Current State	The current state of the control.
Auto State	The auto state of the control.
Contact Setting	The current contact setting.

C.1.4.10.3 User-Defined Alarms Tab

The User-Defined Alarms tab allows you to view, add, and delete custom alarm types on CTX-CL600 cards.

Table C-108 Field Descriptions for the User-Defined Alarms Tab

Field	Description
Alarm Types	Lists the user-defined alarm types that have been created on the CTX-CL600 card. You can create up to 50 custom environmental alarms, which are reported in the Condition column in the Alarm Log and Alarm Browser windows.
Add	Click the **Add** button to add a new custom alarm type. Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).
Delete	Click the **Delete** button to delete an existing alarm type.

C.1.4.11 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the CTX-CL600 module.

Table C-109 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.5 Slot Properties—FILLER

The slot properties pane displays information about the ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, or ONS 15600 SDH slot that is selected in the NE Explorer tree. For the FILLER module, the slot properties pane displays the Module View.

C.1.5.1 Module View

The Module View displays a graphic of the FILLER card that is installed in the slot. Right-clicking the graphic opens a shortcut menu that you can use to add a card.

C.1.6 Slot Properties—MIC-28-3-A and MIC-28-3-B

The slot properties pane displays information about the Cisco ONS 15327 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The MIC-28-3-A and MIC-28-3-B cards are the Mechanical Interface Cards (MICs). The MICs provide the physical connection points for the DS-1 and DS-3 interfaces on the XTC cards, the redundant power inputs, the alarm inputs and outputs, and the BITS timing inputs and outputs.

For the MIC module, the slot properties pane displays Module View and Identification properties.

C.1.6.1 Module View

The Module View displays a graphic of the MIC that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.1.6.2 Identification

The Identification Properties pane allows you to view and update MIC identification information.

Table C-110 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.7 Slot Properties—MMU (ONS 15454 SONET and ONS 15454 SDH)

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

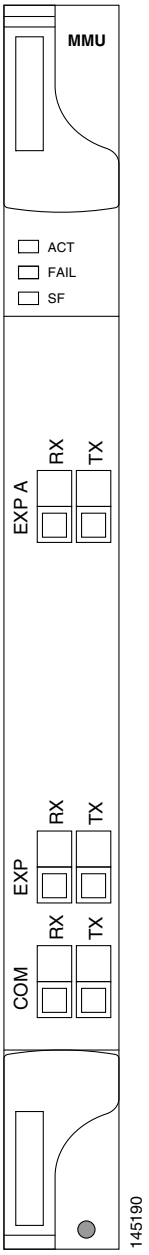
The Multi-Ring/Mesh Upgrade Unit (MMU) supports multiring and mesh upgrades for reconfigurable optical add/drop (ROADM) nodes in both the C-band and the L-band. Mesh/multiring upgrade is the capability to optically bypass a given wavelength from one section of the network or ring to another one without requiring 3R regeneration. In each node, you need to install two MMUs, one on the east side and one on the west side. You can install the MMU card in slots 1 through 6 and 12 through 17.

The MMU has six ports:

- EXP RX port—Receives the optical signal from the ROADM section available on the NE.
- EXP TX port—Sends the optical signal to the ROADM section available on the NE.
- EXP-A RX port—Receives the optical signal from the ROADM section available on other NEs or rings.
- EXP-A TX port—Sends the optical signal to the ROADM section available on other NEs or rings.
- COM TX port—Sends the optical signal to the fiber stage section.
- COM RX port—Receives the optical signal from the fiber stage section.

The following figure shows the card faceplate.

Figure C-2 MMU Faceplate and Ports



For the MMU module, the slot properties pane displays the following properties: Module View, Identification, Optical Line, and Inventory.

C.1.7.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.1.7.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-111 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.7.3 Optical Line

The Optical Line Properties pane allows you to view and update optical channel threshold information. The Properties pane contains the following tabs:

- C.1.7.3.1 Parameters Tab, page C-63
- C.1.7.3.2 Warning Thresh 15 Min Tab, page C-64
- C.1.7.3.3 Warning Thresh 1 Day Tab, page C-64
- C.1.7.3.4 Alarm Thresh Tab, page C-64

C.1.7.3.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-112 Field Descriptions for the Parameters Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Displays the port type.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.

Table C-112 Field Descriptions for the Parameters Tab (continued)

Field	Description
Administration State	Displays the status of the channel. Values are: • IS—In Service; able to carry traffic. • OOS_DSBLD—Out of Service–Disabled. Unable to carry traffic. • IS_AINS—In Service–Auto In Service. Alarm reporting is suppressed, but traffic is carried. • OOS_MT—Out of Service–Maintenance. Alarm reporting is suppressed, but traffic is carried and loopbacks are allowed.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.

C.1.7.3.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert (TCA) generation.

Table C-113 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Displays the port type.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.1.7.3.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-114 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Displays the port type.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.1.7.3.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-115 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	The port number.
Power Failure Low (dBm)	Allows you to set the low power failure settings.

C.1.7.4 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-116 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the object that can be inventoried.
Value	Displays the value of the object that is inventoried.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

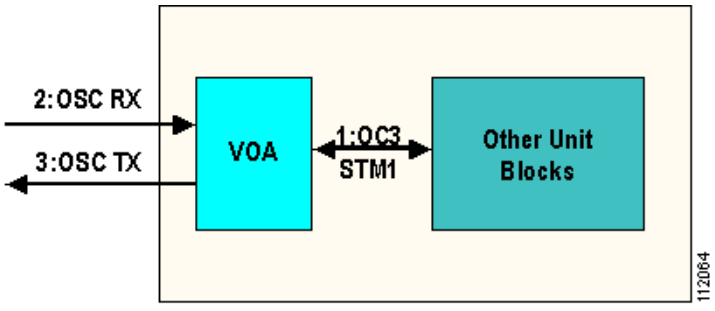
C.1.8 Slot Properties—OSCM (ONS 15454 SONET and ONS 15454 SDH)

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Optical Service Channel Modem (OSCM) module is a single-slot card with a 1510 nm OC-3 optical transceiver interface. The OSCM features a variable optical attenuator (VOA) in the transmit path and a 100BASE-T FE user data channel. The OSCM also distributes the synchronous clock to all NEs on the ring.

The following figure shows the block diagram.

Figure C-3 OSCM Module



For the OSCM module, the slot properties pane displays the following properties: Module View, Identification, Line, Optical Line, Inventory, and Alarm Behavior.

C.1.8.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.1.8.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-117 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.8.3 Line

The Line Properties pane allows you to view and update line card information.

Table C-118 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port No.	The port number.
Port Name	The port name.
SD BER	The signal degrade bit error rate.
SF BER	The signal fail bit error rate.

Table C-118 Field Descriptions for the Line Properties Pane (continued)

Field	Description
Type	The port type (SONET or SDH).
PJSTSMon#	The STS that will be used for pointer justification. If set to zero, no STS is used.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Auto in service soak. The determination of duration left before the traffic/termination transitions to IS state.
Line Thresh 15 Minute - Near End, Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Line Thresh 1 Day - Near End, Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Section Thresh 15 Min, Near End	
Port No.	The port number.
CV-S	Coding violations section.
ES-S	Errored seconds section.
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.
Section Thresh 1 Day, Near End	
Port No.	The port number.
CV-S	Coding violations section.
ES-S	Errored seconds section.

Table C-118 Field Descriptions for the Line Properties Pane (continued)

Field	Description
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.

C.1.8.4 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-119 Field Descriptions for the Optical Line Properties Pane

Tab	Description
Parameters	
Port Number	The port number.
Port Name	The port name.
Status	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Line Direction (*available in CTM R7.2 and earlier*)	The direction of the line (west-to-east or east-to-west).
Type	The port type.
Power	The laser power.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref	The VOA reference power.
VOA Power Calib	The VOA calibration power.
VOA Attenuation Ref	The VOA reference attenuation.
OSC Power	Shows the current optical service channel (OSC) power level per port.
VOA Attenuation Calib	The VOA calibration attenuation.
Warning Thresh 15 Min	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low	The lower power threshold.
Power High	The upper power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Warning Thresh 1 Day	
Port Number	The port number.

Table C-119 Field Descriptions for the Optical Line Properties Pane (continued)

Tab	Description
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low	The lower power threshold.
Power High	The upper power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	The lower power failure threshold.
Power Degrade High	The upper power degrade threshold.
Power Degrade Low	The lower power degrade threshold.
VOA Degrade High	The upper VOA degrade threshold.
VOA Degrade Low	The lower VOA degrade threshold.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold.
OSC Power Failure High	Allows you to set the high OSC power failure threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.

C.1.8.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-120 Field Descriptions for the Inventory Properties Pane

Field	Description
Serial Number	The serial number that is unique to each card.
IL-REF	The reference insertion loss.
Part Number	The part number that is printed on the top of the card.
Firmware Version	The revision number of the software used by the ASIC chip installed on the card.
Vendor ID	The ID of the vendor.
Hardware Version	The hardware version number.

C.1.8.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-121 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.9 Slot Properties—SSXC

The slot properties pane displays information about the Cisco ONS 15600 SONET and ONS 15600 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The SSXC card provides a fully nonblocking 6144 bidirectional STS-1 matrix.

Note In NE releases earlier than release 5.0, the SSXC card is called the CXC card.

For the SSXC, the slot properties pane displays Module View and Identification properties.

C.1.9.1 Module View

The Module View displays a graphic of the SSXC card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.1.9.2 Identification

The Identification Properties pane allows you to view and update SSXC identification information.

Table C-122 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
User Code	Allows you to enter an ASCII string to identify the card. The user code is stored in nonvolatile memory so that it is not lost when the unit is moved or stored as a spare.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.10 Slot Properties—TCC+

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Timing Communication and Control+ (TCC+) card performs system initialization, provisioning, alarm reporting, maintenance, diagnostics, IP address detection/resolution, SONET data communications channel (DCC) termination, and system fault detection for the ONS 15327 and ONS 15454. The TCC+ also ensures that the system maintains Telcordia timing requirements.

For the TCC+ module, the slot properties pane displays Module View and Identification properties.

C.1.10.1 Module View

The Module View displays a graphic of the TCC+ that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

C.1.10.2 Identification

The Identification Properties pane allows you to view and update TCC+ identification information.

Table C-123 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.11 Slot Properties—TCC-I

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Timing Communication and Control-International (TCC-I) Card performs system initialization, provisioning, alarm reporting, maintenance, diagnostics, IP address detection/resolution, SONET data communications channel (DCC) termination, and system fault detection for the ONS 15454 SDH. The TCC-I also ensures that the system maintains Telcordia timing requirements.

For the TCC-I module, the slot properties pane displays Module View and Identification properties.

C.1.11.1 Module View

The Module View displays a graphic of the TCC-I that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.1.11.2 Identification

The Identification Properties pane allows you to view and update TCC-I identification information.

Table C-124 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for; for example, TCC+ or TCC-I.
Actual Equipment Type	Displays the actual card that is installed in the slot; for example, TCC+ or TCC-I.
HW Part No	Displays the part number that is printed on the top of the card.
HW Hardware Revision	Displays the card revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.12 Slot Properties—TCC2

The slot properties pane displays information about the Cisco ONS 15454 SONET and ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Advanced Timing, Communications, and Control (TCC2) performs system initialization, provisioning, alarm reporting, maintenance, diagnostics, IP address detection/resolution, SDH section overhead (SOH) data communication channel/generic communication channel (DCC/GCC) termination, and system fault detection for the ONS 15454 SDH. The TCC2 also ensures that the system maintains Stratum 3E (ITU-T G.813) timing requirements. It monitors the supply voltage of the system. The TCC2 card can work with the XC10G, XC-VXL-10G, or XC-VXL-2.5G cross-connect cards. It requires software release 5.0 or later.

For the TCC2 module, the slot properties pane displays the following properties: Module View, Identification, and Info.

C.1.12.1 Module View

The Module View displays a graphic of the TCC2 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.1.12.2 Identification

The Identification Properties pane allows you to view and update TCC2 identification information.

Table C-125 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.12.3 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the TCC2 card.

Table C-126 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.13 Slot Properties—TCC2P

The slot properties pane displays information about the Cisco ONS 15454 SONET and ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Advanced Timing, Communications, and Control Plus (TCC2P) card is an enhanced version of the TCC2 card. The primary enhancements are Ethernet security features and 64K composite clock BITS timing.

The TCC2P card performs system initialization, provisioning, alarm reporting, maintenance, diagnostics, IP address detection/resolution, SONET SOH DCC/GCC termination, and system fault detection for the ONS 15454. The TCC2P also ensures that the system maintains Stratum 3 (Telcordia GR-253-CORE) timing requirements. It monitors the supply voltage of the system.

Note The TCC2P card requires software release 5.0 or later.

For the TCC2P module, the slot properties pane displays the following properties: Module View, Identification, and Info.

C.1.13.1 Module View

The Module View displays a graphic of the TCC2P that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.1.13.2 Identification

The Identification Properties pane allows you to view and update TCC2P identification information.

Table C-127 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.13.3 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the TCC2P card.

Table C-128 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

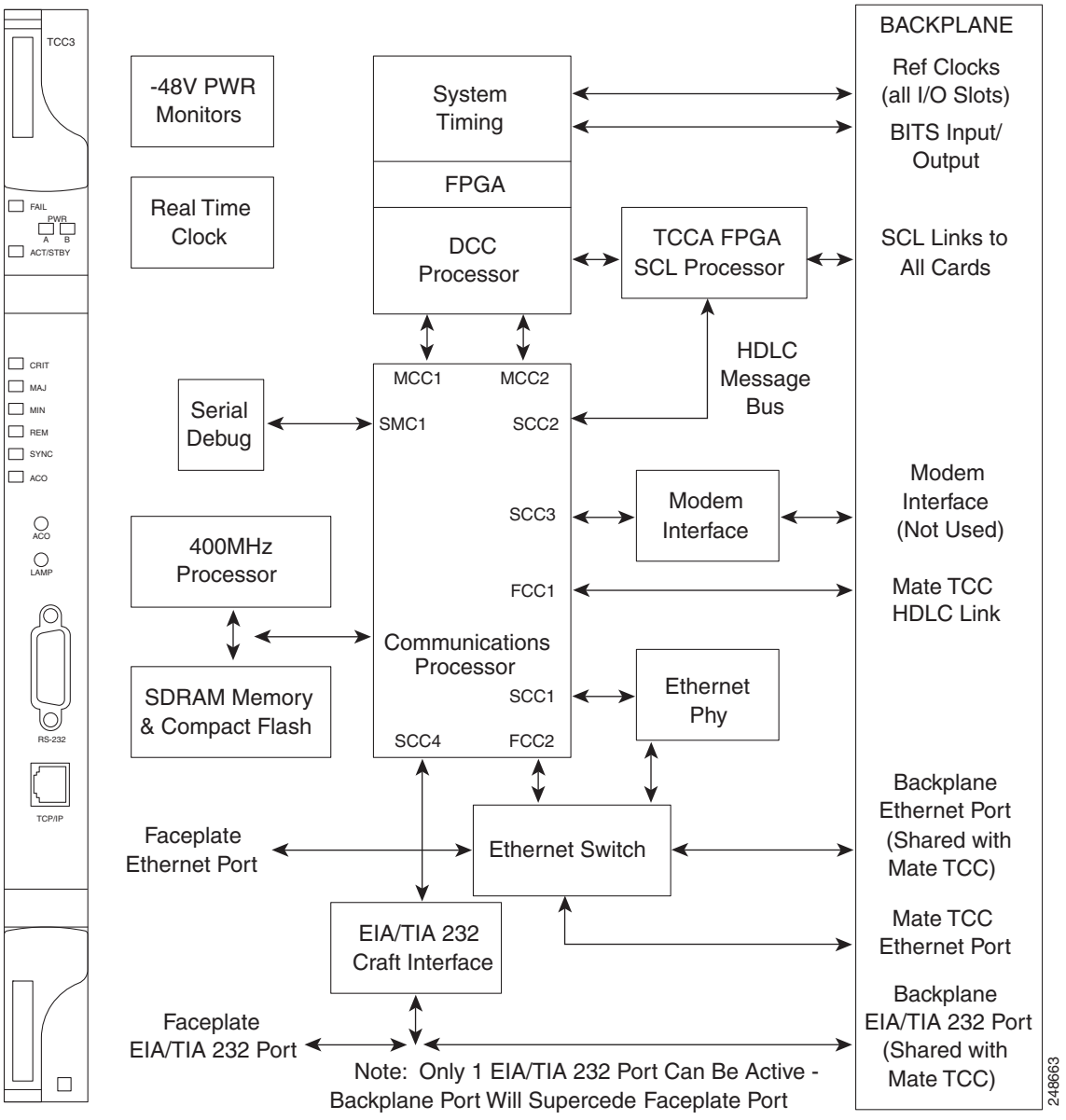
C.1.14 Slot Properties—TCC3

The slot properties pane displays information about the Cisco ONS 15454 SONET and ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Timing Communications Control Three (TCC3) card is an enhanced version of the TCC2P card. The primary enhancements include the increase in memory size and compact flash space. The TCC3 card boots up as a TCC2P card in older releases and as a TCC3 card from Release 9.2 onwards. The TCC3 card supports multi-shelf management. The TCC3 card acts as a shelf controller and node controller for the ONS 15454.

The following figure shows the TCC3 faceplate and block diagram.

Figure C-4 TCC3 Faceplate and Block Diagram



For the TCC3 module, the slot properties pane displays the following properties: Module View, Identification, and Info.

C.1.14.1 Module View

The Module View displays a graphic of the TCC3 card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.1.14.2 Identification

The Identification Properties pane allows you to view and update TCC3 card identification information.

Table C-129 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the Suppress Alarms check box to suppress all alarms for this card and its port(s).
Suppress Alarms	When checked, all alarms are suppressed for the port.

C.1.14.3 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the TCC3 card.

Table C-130 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.15 Slot Properties—TNC and TNCE

(Cisco ONS 15454 M2 and ONS 15454 M6 only)

The Transport Node Controller (TNC) and the Transport Node Controller - Enhanced (TNCE) combines the functions of multiple cards such as TCC2P, OSCM, ISC, and AIC-I. The cards support the ONS 15454 M2 and ONS 15454 M6 shelf assemblies. The TNCE card is optimized for Ethernet transport and has support for Synchronous-Ethernet (SyncE) and IEEE1588-2008 Precision Time Protocol to add support for Two-Way Time Transfer (TWTT).

The TNC and TNCE cards are provisioned as master and slave in the ONS 15454 M6 shelf, and as a stand-alone card in the ONS 15454 M2 shelf. The TNC and TNCE card serves as the processor card for the node. The TNC and TNCE cards cannot be inserted in the same shelf.

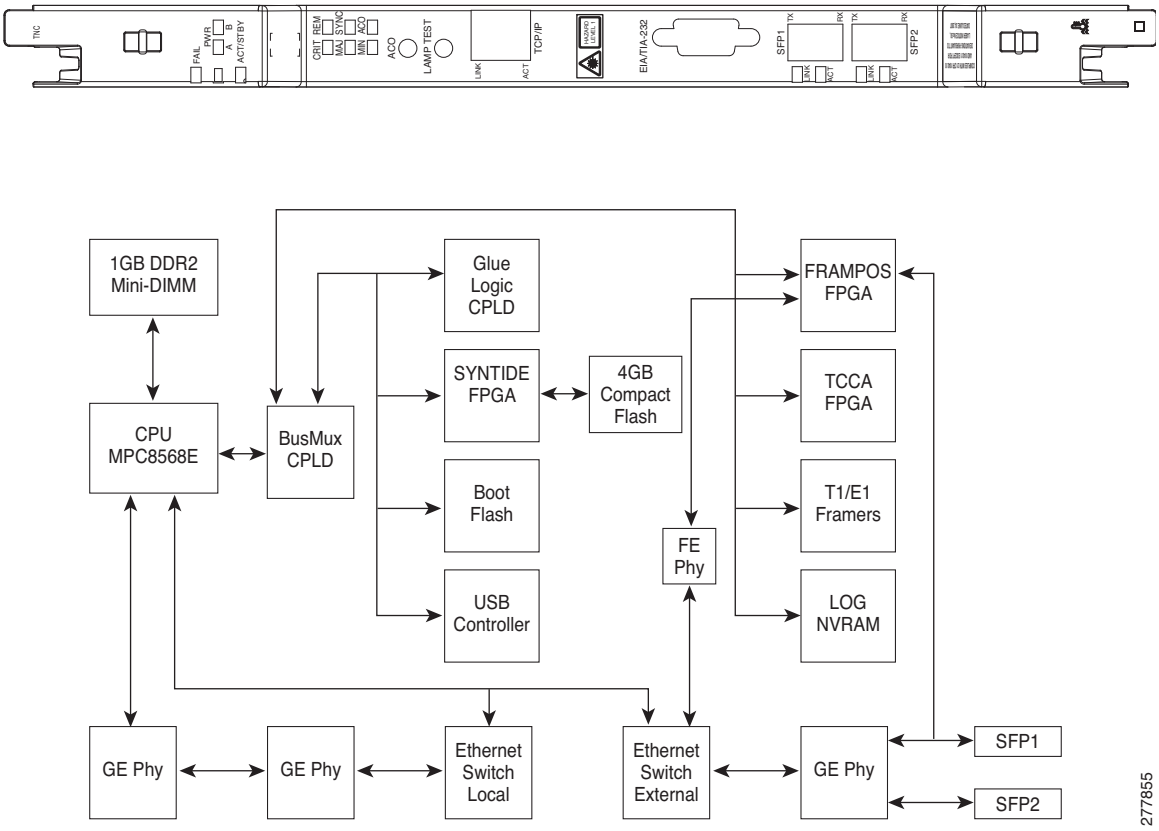
On the ONS 15454 M6 shelf, install redundant TNC and TNCE cards in slots 1 and 8. If the active TNC or TNCE card fails, system traffic switches to the redundant TNC or TNCE card respectively. The card supports line cards from slots 2 to 7.

On the ONS 15454 M2 shelf, install the stand-alone TNC or TNCE card in slot 1. The TNC and TNCE cards support line cards in slots 2 and 3.

The following figure shows the TNC faceplate and block diagram.

Note Both the TNC and TNCE cards are displayed as TNC in the NE Explorer.

Figure C-5 TNC Faceplate and Block Diagram



The slot properties pane displays the following properties: Module View, Identification, PPM, Alarm Behavior, UDC/VOIP, Optical Thresh, Auto Laser Shutdown, Line, and RMON Thresholds.

C.1.15.1 Module View

The Module View displays a graphic of the TNC or TNCE card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).
Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.1.15.2 Identification

The Identification Properties pane allows you to view and update TNC or TNCE card identification information.

Table C-131 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.

Table C-131 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the Suppress Alarms check box to suppress all alarms for this card and its port(s).
Suppress Alarms	When checked, all alarms are suppressed for the port.

C.1.15.3 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-132 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules (PPM)	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Equipment State	Displays the equipment state of the plugin module.
Administration State	Displays the port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
PPM	

Table C-132 Field Descriptions for the PPM Properties Pane (continued)

Field	Description
Port	Displays the port number for the PPM in the Pluggable Port Modules area.
Rate	Displays the port rate for the PPM in the Pluggable Port Modules area.

C.1.15.4 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update TNC or TNCE card alarm profile information.

Table C-133 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Port Number	Displays the card port number.
Alarm Profile	Displays the alarm profile that has been configured for the card. You can choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.1.15.5 UDC/VOIP

You can configure UDC/VoIP on a specific port. The TNC or TNCE card supports the UDC/VoIP configuration only when Optical Supervisory Channel (OSC) is configured on the ports. From the **Service Type** drop-down list, choose UDC or VOIP.

C.1.15.6 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane contains the following tabs:

- C.1.15.6.1 TCA 15 Min Tab, page C-82
- C.1.15.6.2 TCA 1 Day Tab, page C-83
- C.1.15.6.3 Alarm Thresh Tab, page C-83

C.1.15.6.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-134 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port Number	Displays the port number.
LBC-High	Displays the maximum threshold for the laser bias current.
OPR-High	Displays the maximum threshold for the optical power received.

Table C-134 Field Descriptions for the TCA 15 Min Tab (continued)

Field	Description
OPR-Low	Displays the minimum threshold for the optical power received.
OPT-High	Displays the maximum threshold for the optical power transmitted.
OPT-Low	Displays the minimum threshold for the optical power transmitted.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.1.15.6.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-135 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port Number	Displays the port number.
LBC-High	Displays the maximum threshold for the laser bias current.
OPR-High	Displays the maximum threshold for the optical power received.
OPR-Low	Displays the minimum threshold for the optical power received.
OPT-High	Displays the maximum threshold for the optical power transmitted.
OPT-Low	Displays the minimum threshold for the optical power transmitted.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.1.15.6.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-136 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
LBC-High	Displays the maximum threshold for the laser bias current.
OPR-High	Displays the maximum threshold for the optical power received.
OPR-Low	Displays the minimum threshold for the optical power received.
OPT-High	Displays the maximum threshold for the optical power transmitted.
OPT-Low	Displays the minimum threshold for the optical power transmitted.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.1.15.7 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-137 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
OC3 Line	
Port Number	Displays the port number.
OSRI	Displays the OSRI. Values are: • On—Laser switch is locked on • Off—(Cisco default) There is no lock on the lasers
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.
FE Line	
Port Number	Displays the port number.
OSRI	Displays the OSRI. Values are: • On—Laser switch is locked on • Off—(Cisco default) There is no lock on the lasers
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.
ONE GE Line	
Port Number	Displays the port number.
OSRI	Displays the OSRI. Values are: • On—Laser switch is locked on • Off—(Cisco default) There is no lock on the lasers
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.

Table C-137 Field Descriptions for the Auto Laser Shutdown Properties Pane (continued)

Field	Description
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.1.15.8 Line

The Line Properties pane allows you to configure line information. The Properties pane contains the following tabs:

- C.1.15.8.1 Ports Tab, page C-85
- C.1.15.8.2 OC3 Tab, page C-86
- C.1.15.8.3 Line Thresh 15 Min Tab, page C-87
- C.1.15.8.4 Line Thresh 1 Day Tab, page C-88
- C.1.15.8.5 Section Thresh 15 Min Tab, page C-88
- C.1.15.8.6 Section Thresh 1 Day Tab, page C-89

C.1.15.8.1 Ports Tab

The ports tab allows you to provision PPM parameters of a TNC or TNCE card.

Table C-138 Field Descriptions for the Ports Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a port name.
Administration State	The port administration state.

Table C-138 Field Descriptions for the Ports Tab (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)

C.1.15.8.2 OC3 Tab

The OC3 tab allows you to view and change the OC3 line settings on the TNC or TNCE card.

Table C-139 Field Descriptions for the OC3 Tab

Field	Description
Port Number	Displays the card port number.
Port Name	Displays the port name.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default)–3 (OC-3, per port) • 0 (default)–12 (OC-12) • 0 (default)–48 (OC-48)
SendDoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.

C.1.15.8.3 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change 15-minute near- and far-end line thresholds for the TNC or TNCE card.

Table C-140 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
FC-L	Displays the failure count line.
UAS-L	Displays the unavailable seconds line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port Number	Displays the port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
FC-L	Displays the failure count line.

Table C-140 Field Descriptions for the Line Thresh 15 Min Tab (continued)

Field	Description
UAS-L	Displays the unavailable seconds line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.1.15.8.4 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change 1-day near- and far-end line thresholds for the TNC or TNCE card.

Table C-141 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
FC-L	Displays the failure count line.
UAS-L	Displays the unavailable seconds line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port Number	Displays the port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
FC-L	Displays the failure count line.
UAS-L	Displays the unavailable seconds line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.1.15.8.5 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change 15-minute near-end section thresholds for the TNC or TNCE card.

Table C-142 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.

Table C-142 Field Descriptions for the Section Thresh 15 Min Tab (continued)

Field	Description
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.1.15.8.6 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change 1-day near-end regenerator section thresholds for the TNC or TNCE card.

Table C-143 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.1.15.9 RMON Thresholds

The RMON Thresholds Properties pane allows you to view RMON thresholds for the TNC or TNCE card. These thresholds are applicable to Fast Ethernet and Gigabit Ethernet Pluggable rates.

Table C-144 Field Descriptions for the RMON Thresholds Properties Pane

Field	Description
Index Number	Displays the optical port number.
Slot	Displays the slot.
Port	Displays the port.
Variable	Displays the Ethernet threshold variable. The variable depends on the card type.
Alarm Type	Displays the Ethernet threshold alarm type. Values are Rising, Falling, or Rising and Falling.
Sample Type	Displays the Ethernet threshold sample type. Values are Relative and Absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period (sec)	Displays the Ethernet threshold sample period, in seconds.
Rising Thresholds (count)	Displays a count of the number of times an alarm entry crosses the rising threshold and the entry generates an event.
Falling Thresholds (count)	Displays a count of the number of times an alarm entry crosses the falling threshold and the entry generates an event.

C.1.16 Slot Properties—TSC and TSCE

(Cisco ONS 15454 M2 and ONS 15454 M6 only)

The Transport Shelf Controller (TSC) and Transport Shelf Controller - Enhanced (TSCE) cards combine the functions of multiple cards such as TCC2P, ISC, and AIC-I. The cards support the ONS 15454 M2 and ONS 15454 M6 shelf assemblies. The TSCE is optimized for Ethernet transport and has support for Synchronous-Ethernet (SyncE) and IEEE1588-2008 Precision Time Protocol to add support for Two-Way Time Transfer (TWTT).

The TSC and TSCE cards are provisioned as master and slave in the ONS 15454 M6 shelf, and as a stand-alone card in the ONS 15454 M2 shelf. The TSC and TSCE cards serve as the processor card for the node.

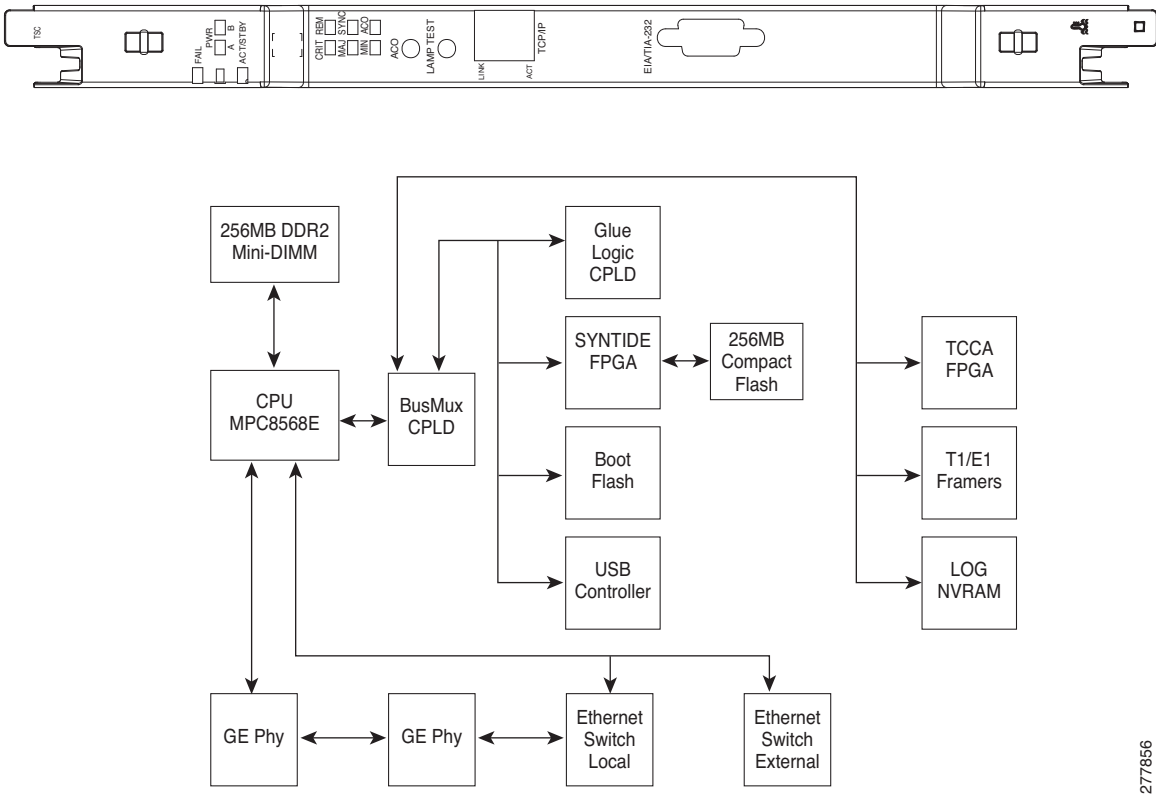
On the ONS 15454 M6 shelf, install redundant TSC or TSCE cards in slots 1 and 8. If the active TSC or TSCE card fails, system traffic switches to the redundant TSC or TSCE card. The TSC or TSCE card supports line cards from slots 2 to 7.

On the ONS 15454 M2 shelf, install the stand-alone TSC or TSCE card in slot 1. The TSC or TSCE card supports line cards in slots 2 and 3.

The following figure shows the TSC faceplate and block diagram.

Note Both the TSC and TSCE cards are displayed as TSC in the NE Explorer.

Figure C-6 TSC Faceplate and Block Diagram



The slot properties pane displays the following properties: Module View and Identification.

C.1.16.1 Module View

The Module View displays a graphic of the TSC or TSCE card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.1.16.2 Identification

The Identification Properties pane allows you to view and update TSC or TSCE card identification information.

Table C-145 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.

Table C-145 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the Suppress Alarms check box to suppress all alarms for this card and its port(s).
Suppress Alarms	When checked, all alarms are suppressed for the port.

C.1.17 Slot Properties—TSC (ONS 15600 SONET and ONS 15600 SDH)

The slot properties pane displays information about the Cisco ONS 15600 SONET or ONS 15600 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The timing and shelf controller (TSC) card performs all system-timing functions for each ONS 15600. The TSC card monitors the recovered clocks from each traffic card and two building integrated timing supply (BITS) interfaces for frequency accuracy.

For the TSC module, the slot properties pane displays Module View and Identification properties.

C.1.17.1 Module View

The Module View displays a graphic of the TSC card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.1.17.2 Identification

The Identification Properties pane allows you to view and update TSC identification information.

Table C-146 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
User Code	Allows you to enter an ASCII string to identify the card. The user code is stored in nonvolatile memory so that it is not lost when the unit is moved or stored as a spare.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.18 Slot Properties—Unprovisioned Slot (ONS 15327 and ONS 15454 SONET)

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 SONET subrack slot that is selected in the NE Explorer tree. Unprovisioned slots are slots that are not polled by the TCC. Unprovisioned slots display a Module View.

C.1.18.1 Module View

The Module View displays a graphic of the ONS 15327 or ONS 15454 SONET slot that is selected in the NE Explorer tree. For unprovisioned slots, a blank slot graphic is displayed.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.19 Slot Properties—Unprovisioned Slot (ONS 15454 SDH)

The slot properties pane displays information about the Cisco ONS 15454 SDH subrack slot that is selected in the NE Explorer tree. Unprovisioned slots are slots that are not polled by the TCC. Unprovisioned slots display a Module View.

C.1.19.1 Module View

The Module View displays a graphic of the ONS 15454 SDH slot that is selected in the NE Explorer tree. For unprovisioned slots, a blank slot graphic is displayed.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.20 Slot Properties—XC

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15327 or ONS 15454 Cross-Connect (XC) card performs port-to-port time-division multiplexing (TDM), STS switching, and can terminate 288 STSs, or 144 STS cross-connections. Each STS cross-connection uses two STS ports on the XC card STS matrix.

For the XC module, the slot properties pane displays the following properties: Module View, Identification, and Protection.

C.1.20.1 Module View

The Module View displays a graphic of the XC that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.1.20.2 Identification

The Identification Properties pane allows you to view and update XC identification information.

Table C-147 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number of the card.
Serial Number	Displays the serial number that is unique to each card.

Table C-147 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.20.3 Protection

The Protection Properties pane allows you to view and update XC protection group information.

Table C-148 Field Descriptions for the Protection Properties Pane

Field	Description
State of Slot *x*	Displays the state of the selected slot and of the companion XC slot.
Switch	Click to switch the selected slot from its current state to the other states.
Lock	Click to lock the selected slot into its current state.
Unlock	Click to unlock the current slot from its current state.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.21 Slot Properties—XC-VXL-10G

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The XC-VXL-10G card cross-connects E-1, E-3, DS-3, STM-1, STM-4, STM-16, and STM-64 signal rates. The XC-VXL-10G provides a maximum of 384 x 384 VC-4 nonblocking cross-connections, 384 x 384 VC-3 nonblocking cross-connections, or 2016 x 2016 VC-12 nonblocking cross-connections. It is designed for 10-Gb/s solutions.

For the XC-VXL-10G module, the slot properties pane displays the following properties: Module View, Identification, and Protection.

C.1.21.1 Module View

The Module View displays a graphic of the XC-VXL-10G that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.1.21.2 Identification

The Identification Properties pane allows you to view and update XC-VXL-10G identification information.

Table C-149 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.21.3 Protection

The Protection Properties pane allows you to view and update XC-VXL-10G protection group information.

Table C-150 Field Descriptions for the Protection Properties Pane

Field	Description
State of Slot *x*	Displays the state of the selected slot and of the companion XC-VXL-10G slot.
Switch	Click to switch the selected slot from its current state to the other states.
Lock	Click to lock the selected slot into its current state.
Unlock	Click to unlock the current slot from its current state.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.22 Slot Properties—XC10G

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

ONS 15454 SONET and ONS 15454 SDH cross-connect cards establish connections and perform time division switching (TDS) at the STS-1 level between ONS 15454 traffic cards. The ONS 15454 SONET and ONS 15454 SDH 10 Gigabit Cross-Connect (XC10G) card cross-connects STS-12, STS-48, and

STS-192 signal rates. The XC10G provides a maximum of 1152 STS-1 cross-connections. Any STS-1 on any port can be connected to any other port, which means that the STS cross-connections are nonblocking.

For the XC10G module, the slot properties pane displays the following properties: Module View, Identification, Protection, and Info.

C.1.22.1 Module View

The Module View displays a graphic of the XC10G that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.1.22.2 Identification

The Identification Properties pane allows you to view and update XC10G identification information.

Table C-151 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.22.3 Protection

The Protection Properties pane allows you to view and update XC10G protection group information.

Table C-152 Field Descriptions for the Protection Properties Pane

Field	Description
State of Slot *x*	Displays the state of the selected slot and of the companion XC10G slot.
Switch	Click to switch the selected slot from its current state to the other states.
Lock	Click to lock the selected slot into its current state.
Unlock	Click to unlock the current slot from its current state.

C.1.22.4 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the XC10G card.

Table C-153 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.23 Slot Properties—XCVT

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15327 or ONS 15454 Cross-Connect Virtual Tributary (XCVT) performs port-to-port time-division multiplexing (TDM), STS and VT1.5 switching, and can terminate 288 STSs, or 144 STS cross-connections. (Each STS cross-connection uses two STS ports on the cross-connect card STS matrix.)

For the XCVT module, the slot properties pane displays the following properties: Module View, Identification, and Protection.

C.1.23.1 Module View

The Module View displays a graphic of the XCVT that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.1.23.2 Identification

The Identification Properties pane allows you to view and update XCVT identification information.

Table C-154 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for
Actual Equipment Type	Displays the actual card that is installed in the slot.
Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.23.3 Protection

The Protection Properties pane allows you to view and update XCVT protection group information.

Table C-155 Field Descriptions for the Protection Properties Pane

Field	Description
State of Slot *x*	Displays the state of the selected slot and of the companion XCVT slot.
Switch	Click to switch the selected slot from its current state to the other states.
Lock	Click to lock the selected slot into its current state.
Unlock	Click to unlock the current slot from its current state.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.24 Slot Properties—XCVXC

The slot properties pane displays information about the Cisco ONS 15454 SONET and ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

In the SONET system, the XCVXC card cross-connects STS-1 and VT1.5/VT2 layers. It provides full, nonblocking 1152 x 1152 port STS-1 cross-connections or 2688 x 2688 port VT1.5 cross-connections.

In the SDH system, the XCVXC card cross-connects VC-3, VC-4, and VC-12/VC-11 layers. It provides 384 x 384 VC-3/TUG-3 cross-connections, full, nonblocking 384 x 384 VC-4 (and 4-Nc) cross-connections, or 2016 x 2016 VC-12 cross-connections.

Cross-connect and provisioning information is established through the user interface on the TCC2 card.

For the XCVXC card, the slot properties pane displays the following properties: Module View, Identification, Protection, and Info.

C.1.24.1 Module View

The Module View displays a graphic of the XCVXC card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.1.24.2 Identification

The Identification Properties pane allows you to view and update XCVXC card identification information.

Table C-156 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

Table C-156 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.24.3 Protection

The Protection Properties pane allows you to view and update XCVXC protection group information.

Table C-157 Field Descriptions for the Protection Properties Pane

Field	Description
State of Slot *x*	Displays the state of the selected slot and of the companion XCVXC slot.
Switch	Click to switch the selected slot from its current state to the other states.
Lock	Click to lock the selected slot into its current state.
Unlock	Click to unlock the current slot from its current state.

C.1.24.4 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the XCVXC card.

Table C-158 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.1.25 Slot Properties—XTC (ONS 15305)

The slot properties pane displays information about the CTC-based ONS 15305 that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Integrated Cross-Connect, Timing, and Control (XTC) cards perform system initialization, provisioning, alarm reporting, maintenance, diagnostics, IP address detection/resolution, SONET data communications channel (DCC) termination, system fault detection, and cross-connect maintenance and management for the ONS 15305 CTC. The XTC cards also provide the circuitry for the DS-1 and DS-3 interfaces and ensure that the system maintains Telcordia timing requirements. An XTC card is required to operate the ONS 15305 CTC and can be used in a redundant or nonredundant configuration.

For the ONS 15305 CTC XTC controller, the slot properties pane displays a single Module View.

C.1.25.1 Module View

The Module View displays a graphic of the XTC controller that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.1.26 Slot Properties—XTC (ONS 15327)

The slot properties pane displays information about the Cisco ONS 15327 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Integrated Cross-Connect, Timing, and Control (XTC) cards perform system initialization, provisioning, alarm reporting, maintenance, diagnostics, IP address detection/resolution, SONET data communications channel (DCC) termination, system fault detection, and cross-connect maintenance and management for the ONS 15327. The XTC cards also provide the circuitry for the DS-1 and DS-3 interfaces and ensure that the system maintains Telcordia timing requirements. An XTC card is required to operate the ONS 15327 and can be used in a redundant or nonredundant configuration.

For the XTC module, the slot properties pane displays the following properties: Module View, Identification, DS-1, DS-3, STS-1 Path, VT1.5 Path, Alarm Extenders, Protection, and J1 Path Trace.

C.1.26.1 Module View

The Module View displays a graphic of the XTC that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.1.26.2 Identification

The Identification Properties pane allows you to view and update XTC identification information.

Table C-159 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.

Table C-159 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.1.26.3 DS-1

The DS-1 Properties pane allows you to view and update XTC DS-1 information.

Table C-160 Field Descriptions for the DS-1 Properties Pane

Subfield	Description
Line Config	
Port Number	Displays the port number: • 1 to 14 (XTC-14) • 1 to 28 (XTC-28-3)
Port Name	Allows you to enter the name of the port. You can enter up to 32 alphanumeric or special characters. The port name is blank by default.
Line Type	Defines the line framing type as ESF (Extended Super Frame), D4, or unframed.
Line Coding	Allows you to define the DS-1 transmission coding type. Values are: • AMI—Alternate Mark Inversion (default) • B8ZS—Bipolar 8 Zero Substitution
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. Values are: • 0–131 (default) • 132–262 • 263–393 • 394–524 • 525–655

Table C-160 Field Descriptions for the DS-1 Properties Pane (continued)

Subfield	Description
State	Displays the status of the line. Values are: • IS—In Service • IS_AINS—In Service–Auto In Service Soak • OOS—Out of Service • OOS_MT—Out of Service–Maintenance
AINS Soak	Automatic in-service soak. The amount of valid input signal in *hh.mm*, after which the port is set in service by the software. The range is from 0 to 48 hours, in 15-minute increments.
AINS Soak Count Down	Displays the remaining time of valid input signal in *hh.mm*, after which the card becomes in service (IS) automatically. The range is from 0 to 48 hours, in 15-minute increments.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Send AIS-V for DS-1 AIS	When checked, sends an Alarm Indication Signal VT (AIS-V) instead of a DS-1 AIS (from the line side toward the backplane/system side) when a line-side trigger occurs.
Raise AIS for LOF	Sends an AIS when a loss of frame (LOF) occurs.
Line Threshold 15 Minutes	
Port Number	The port number (1 to 14 for XTC-14; 1 to 28 for XTC-28-3).
CV-L	Coding violations line (near-end only).
ES-L	Errored seconds line.
SES-L	Severely errored seconds line (near-end only).
LOSS-L	Loss of signal seconds line (near-end only).
Line Threshold 1 Day	
Port Number	The port number (1 to 14 for XTC-14; 1 to 28 for XTC-28-3).
CV-L	Coding violations line (near-end only).
ES-L	Errored seconds line.
SES-L	Severely errored seconds line (near-end only).
LOSS-L	Loss of signal seconds line (near-end only).
Electric Path Threshold 15 Minutes	
Near End	
Port Number	The port number (1 to 14 for XTC-14; 1 to 28 for XTC-28-3).
CV-P	Coding violations path information.
ES-P	Errored seconds path information.
SES-P	Severely errored seconds path information.
SAS-P	Severely errored frame/alarm indication signal–path information.
AISS-P	Alarm indication signal seconds path information.
UAS-P	Unavailable seconds path information.
Far End	
Port Number	The port number (1 to 14 for XTC-14; 1 to 28 for XTC-28-3).

Table C-160 Field Descriptions for the DS-1 Properties Pane (continued)

Subfield	Description
CV-P	Coding violations path information.
ES-P	Errored seconds path information.
SES-P	Severely errored seconds path information.
UAS-P	Unavailable seconds path information.
ESA-P	Errored seconds type A path information.
ESB-P	Errored seconds type B path information.
CSS-P	Controlled slip seconds path information.
SEFS-P	Severely errored framing seconds path information.
Electric Path Threshold 1 Day	
Near End	
Port Number	The port number (1 to 14 for XTC-14; 1 to 28 for XTC-28-3).
CV-P	Coding violations path information.
ES-P	Errored seconds path information.
SES-P	Severely errored seconds path information.
SAS-P	Severely errored frame/alarm indication signal path information.
AISS-P	Alarm indication signal seconds path information.
UAS-P	Unavailable seconds path information.
Far End	
Port Number	The port number (1 to 14 for XTC-14; 1 to 28 for XTC-28-3).
CV-P	Coding violations path information.
ES-P	Errored seconds path information.
SES-P	Severely errored seconds path information.
UAS-P	Unavailable seconds path information.
ESA-P	Errored seconds type A path information.
ESB-P	Errored seconds type B path information.
CSS-P	Controlled slip seconds path information.
SEFS-P	Severely errored framing seconds path information.
Alarm Behavior	
Displays alarm profile information.	
Loopback	
Line Number	The line number.
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT). **Note** The line state must be OOS_MT before you can configure the loopback type.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none).
Customer Info	

Table C-160 Field Descriptions for the DS-1 Properties Pane (continued)

Subfield	Description
STS Number	Displays the STS number.
Customer ID	The customer ID.
Service ID	The service ID.

C.1.26.4 DS-3

The DS-3 Properties pane allows you to view and update XTC DS-3 information.

Table C-161 Field Descriptions for the DS-3 Properties Pane

Field	Description
Line Config	
Port Number	Displays the port number (1 to 3).
Port Name	Allows you to enter the name of the port. You can enter up to 32 alphanumeric or special characters. The port name is blank by default.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. Values are: • 0 - 225 (default) • 226 - 450
State	Displays the status of the line. Values are: • IS—In Service • IS_AINS—In Service–Auto In Service Soak • OOS—Out of Service • OOS_MT—Out of Service–Maintenance
AINS Soak	Automatic in-service soak. The amount of valid input signal in *hh.mm*, after which the port is set in service by the software. The range is from 0 to 48 hours, in 15-minute increments.
AINS Soak Count Down	Displays the remaining time of valid input signal in *hh.mm*, after which the card becomes IS automatically. The range is from 0 to 48 hours, in 15-minute increments.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Line Threshold 15 Minutes	
Port Number	The port number (1 to 3).
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal seconds line.
Line Threshold 1 Day	
Port Number	The port number (1 to 3).
CV-L	Coding violations line.
ES-L	Errored seconds line.

Table C-161 Field Descriptions for the DS-3 Properties Pane (continued)

Field	Description
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal seconds line.
Alarm Behavior	
Displays alarm profile information.	
Loopback	
Line Number	The line number.
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT). **Note** The line state must be OOS_MT before you can configure the loopback type.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none).
Customer Info	
STS Number	Displays the STS number.
Customer ID	The customer ID.
Service ID	The service ID.

C.1.26.5 STS-1 Path

The STS-1 Properties pane allows you to view and update XTC STS-1 path information.

Table C-162 Field Descriptions for the STS-1 Path Properties Pane

Field	Description
Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.

Table C-162 Field Descriptions for the STS-1 Path Properties Pane (continued)

Field	Description
Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.1.26.6 VT1.5 Path

The VT1.5 Path Properties pane allows you to view and update XTC VT1.5 path information.

Table C-163 Field Descriptions for the VT1.5 Path Properties Pane

Field	Description
Threshold 15 Minutes STS Term	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
Threshold 1 Day STS Term	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.

Table C-163 Field Descriptions for the VT1.5 Path Properties Pane (continued)

Field	Description
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
Threshold 15 Minutes VT Term	
VT Number	The virtual terminal number.
CV-V	Coding violations–VT path.
ES-V	Errored seconds–VT path.
SES-V	Severely errored seconds–VT path.
UAS-V	Unavailable seconds–VT path.
Threshold 1 Day VT Term	
VT Number	The virtual terminal number.
CV-V	Coding violations–VT path.
ES-V	Errored seconds–VT path.
SES-V	Severely errored seconds–VT path.
UAS-V	Unavailable seconds–VT path.
Customer Info	
VT Number	The virtual terminal number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.1.26.7 Alarm Extenders

The Alarm Extenders Properties pane allows you view XTC alarm information. The Alarm Extenders Properties pane contains the following tabs:

- C.1.26.7.1 External Alarms Tab, page C-109
- C.1.26.7.2 External Controls Tab, page C-110

C.1.26.7.1 External Alarms Tab

The External Alarms tab allows you to view and update external alarm information.

Table C-164 Field Descriptions for the External Alarms Tab

Field	Description
Input Number	The alarm input number.
Enabled	Check to activate the fields for the alarm input number.
Alarm Type	Choose an alarm type from the provided list.
Severity	Choose a severity from the list.
Raised When	Choose the contact condition that will trigger the alarm in CTC.

Table C-164 Field Descriptions for the External Alarms Tab (continued)

Field	Description
Virtual Wire	To assign the external device to a virtual wire, choose a virtual wire from the list, or choose None if no assignment is required.
Description	A default description is provided in this line for every external alarm that is enabled.
Raised	Indicates if an alarm has been raised.
Contact Status	Indicates the current status of the contact.

C.1.26.7.2 External Controls Tab

The External Controls tab allows you to view and update external controls.

Table C-165 Field Descriptions for the External Controls Tab

Field	Description
Control Number	The control number.
Enabled	Check to activate the fields for the control number.
Control Type	Choose a control type from the provided list.
Trigger Type	Choose a trigger type: a local minor, major, or critical alarm; a remote minor, major, or critical alarm; or a virtual wire activation.
Description	Enter a description.
Current State	The current state of the control.
Auto State	The auto state of the control.
Contact Setting	The current contact setting.

C.1.26.8 Protection

The Protection Properties pane allows you to view and update XTC protection group information.

Table C-166 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.1.26.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update J1 path trace information.

Table C-167 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.

Table C-167 Field Descriptions for the J1 Path Trace Properties Pane (continued)

Field	Description
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Member Number	Displays the virtual concatenation (VCAT) member number.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2 DWDM Cards

This section describes the following DWDM cards supported within Prime Optical:

- C.2.1 Slot Properties—2.5G_DM, page C-112
- C.2.2 Slot Properties—2.5G_DMP, page C-126
- C.2.3 Slot Properties—2.5G Multirate Transponder, page C-139
- C.2.4 Slot Properties—32DMX, page C-159
- C.2.5 Slot Properties—32DMX-L, page C-166
- C.2.6 Slot Properties—32DMX_O, page C-173
- C.2.7 Slot Properties—40-DMX-C, page C-177
- C.2.8 Slot Properties—32MUX_O, page C-184
- C.2.9 Slot Properties—40-MUX-C, page C-189
- C.2.10 Slot Properties—32WSS, page C-196
- C.2.11 Slot Properties—32WSS-L, page C-203
- C.2.12 Slot Properties—40-WSS-C, page C-210
- C.2.13 Slot Properties—40-WXC-C, page C-218
- C.2.14 Slot Properties—80-WXC-C, page C-226
- C.2.15 Slot Properties—40G-MXP-C, page C-238
- C.2.16 Slot Properties—4MD_xx.x, page C-255
- C.2.17 Slot Properties—AD_1B_xx.x, page C-259
- C.2.18 Slot Properties—AD_1C_xx.x, page C-264
- C.2.19 Slot Properties—AD_2C_xx.x, page C-269
- C.2.20 Slot Properties—AD_4B_xx.x, page C-273

- C.2.21 Slot Properties—AD_4C_xx.x, page C-278
- C.2.22 Slot Properties—ADM-10G, page C-283
- C.2.23 Slot Properties—GE_XP and 10GE_XP, page C-304
- C.2.24 Slot Properties—MXP_2.5G_10E, page C-346
- C.2.25 Slot Properties—MXP_2.5G_10G, page C-365
- C.2.26 Slot Properties—MXP_MR_10DME, page C-378
- C.2.27 Slot Properties—OPT-AMP-17-C and OPT-AMP-C, page C-399
- C.2.28 Slot Properties—OPT-AMP-L, page C-408
- C.2.29 Slot Properties—OPT-RAMP-C and OPT-RAMP-CE, page C-414
- C.2.30 Slot Properties—OPT-BST, page C-423
- C.2.31 Slot Properties—OPT-BST-E, page C-429
- C.2.32 Slot Properties—OPT-BST-L, page C-435
- C.2.33 Slot Properties—OPT-EDFA-17 and OPT-EDFA-24, page C-442
- C.2.34 Slot Properties—OPT-PRE, page C-448
- C.2.35 Slot Properties—OSC-CSM, page C-453
- C.2.36 Slot Properties—OTU2_XP, page C-458
- C.2.37 Slot Properties—PSM, page C-484
- C.2.38 Slot Properties—RAMAN-CTP and RAMAN-COP, page C-491
- C.2.39 Slot Properties—SMR-C, page C-498
- C.2.40 Slot Properties—T-DCU (TDC-CC and TDC-FC), page C-511
- C.2.41 Slot Properties—TXP_MR_10E, page C-515
- C.2.42 Slot Properties—TXP_MR_10E_C, page C-542
- C.2.43 Slot Properties—TXP_MR_10G, page C-563
- C.2.44 Slot Properties—PTF_10GE_4, page C-576
- C.2.45 Slot Properties—AR_MXP, AR_XP and AR_XPE, page C-588
- C.2.46 Slot Properties—10x10G_LC, 100G_LC_C, and CFP_LC, page C-621

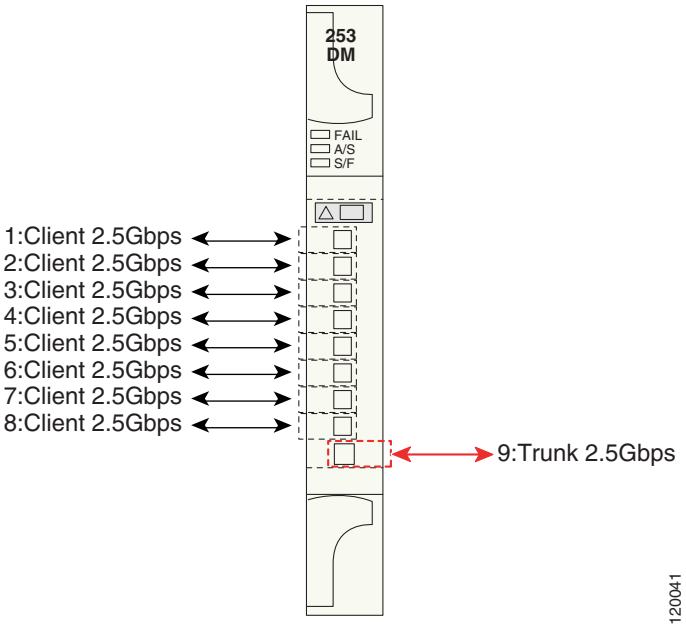
C.2.1 Slot Properties—2.5G_DM

The slot properties pane displays information about the Cisco ONS 15454 SONET and ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The 2.5G-DM card is capable of translating client input GE, ESCON, FICON, 1G and 2G Fiber Channel, and IBM GDPS optical signal into an optical signal with an optical frequency on the 100-GHz spacing frequency grid according to ITU-T G.692. The datamux cards are GR-253 and G.957 compliant. This card supports 8 client interfaces utilizing SFP technology, and 32 ITU wavelengths are supported. Each card supports tunability over 4 wavelengths. The card is supported on ONS 15454 SONET and ONS 15454 SDH platforms.

The following figure shows the card faceplate.

Figure C-7 2.5G-DM Module



For the 2.5G_DM module, the slot properties pane displays the following properties: Module View, Identification, Card, PPM, Line, Loopback, Auto Laser Shutdown, Optical Thresh, Alarm Behavior, Protection, and Info.

Note The properties shown depend on the NE configuration.

C.2.1.1 Module View

The Module View displays a graphic of the 2.5G_DM that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.1.2 Identification

The Identification Properties pane allows you to view and update 2.5G_DM identification information.

Table C-168 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.

Table C-168 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Suppress Alarms	When checked, all alarms are suppressed for the port.

C.2.1.3 Card

The Card Properties pane allows you to view and update card information.

Table C-169 Field Descriptions for the Card Properties Pane

Field	Description
Card Mode	Allows you to select a card mode. Select from: • FC_GE—Allows you to select a multicard Ether Switch group, a single-card Ether Switch group, or the Port Mapped mode for E-series cards. • Mixed—Supports 1G FC or GE traffic on port 1, and ESCON traffic on ports 5 through 8. • ESCON—Supports 8 ports of ESCON traffic.

C.2.1.4 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-170 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules (PPM)	
Pluggable Number	Displays the identifier of the plugin module.
Equipment Type	Displays the equipment type that the slot is provisioned for.

Table C-170 Field Descriptions for the PPM Properties Pane (continued)

Field	Description
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Actual Equipment Type	Displays the actual card that is installed in the slot. Values are single mode or multimode.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
User Code	Allows you to enter an ASCII string to identify the card. The user code is stored in nonvolatile memory so that it is not lost when the unit is moved or stored as a spare.
Product ID	Displays a plugin module ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Displays the port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the plugin module.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this plugin module and its port(s).
PPM	
Pluggable Number	Displays the identifier of the plugin module.
Equipment Type	Displays the plugin type that the port is provisioned for.

C.2.1.4.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.1.5 Line

The Line Properties pane allows you to configure line information. If the card is installed on an ONS 15454 SONET NE, the Properties pane contains the following tabs:

- C.2.1.5.1 Section Trace Tab, page C-116
- C.2.1.5.2 SONET Tab, page C-116
- C.2.1.5.3 Section Thresh 15 Min Tab, page C-117

- C.2.1.5.4 Section Thresh 1 Day Tab, page C-117
- C.2.1.5.5 Line Thresh 15 Min Tab, page C-118
- C.2.1.5.6 Line Thresh 1 Day Tab, page C-118
- C.2.1.5.7 Wavelength Trunk Settings Tab, page C-119
- C.2.1.5.8 Client Tab, page C-119
- C.2.1.5.9 RMON Thresholds Tab, page C-121
- C.2.1.5.10 Distance Extension Tab, page C-122
- C.2.1.5.11 Enhanced FC/FICON ISL Tab, page C-122

Note If the card is installed on an ONS 15454 SDH NE, see the SDH Line section. The following information is the same if the payload is SDH on an ONS 15454 SONET NE.

C.2.1.5.1 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the 2.5G-DM card.

Table C-171 Field Descriptions for the Section Trace Tab

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.2.1.5.2 SONET Tab

The SONET tab allows you to view and change the SONET line settings for the 2.5G-DM module.

Table C-172 Field Descriptions for the SONET Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance

Table C-172 Field Descriptions for the SONET Tab (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Type	Defines the port.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
SendDoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Admin SSM	Overrides the synchronization status message (SSM) synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU.

C.2.1.5.3 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change 15-minute near-end section thresholds for the 2.5G_DM module.

Table C-173 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.1.5.4 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change 1-day near-end regenerator section thresholds for the 2.5G_DM module.

Table C-174 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.

Table C-174 Field Descriptions for the Section Thresh 1 Day Tab (continued)

Field	Description
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.1.5.5 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change 15-minute near- and far-end line thresholds for the 2.5G_DM module.

Table C-175 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port No.	The port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	The port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.1.5.6 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change 1-day near- and far-end line thresholds for the 2.5G_DM module.

Table C-176 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port No.	The port number.

Table C-176 Field Descriptions for the Line Thresh 1 Day Tab (continued)

Field	Description
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	The port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.1.5.7 Wavelength Trunk Settings Tab

The Wavelength Trunk Settings tab allows you to change the wavelength and band settings for the 2.5G_DM card.

Table C-177 Field Descriptions for the Wavelength Trunk Settings Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table (11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13) for details of wavelengths supported.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). For this single-band card, the band value is fixed to *C*, and this value cannot be altered.

C.2.1.5.8 Client Tab

The Client tab allows you to provision PPM parameters for the 2.5G_DM card.

Table C-178 Field Descriptions for the Client Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you enter a port name.

Table C-178 Field Descriptions for the Client Tab (continued)

Field	Description
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

Table C-178 Field Descriptions for the Client Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.1.5.9 RMON Thresholds Tab

The RMON Thresholds Properties pane allows you to view RMON thresholds for the 2.5G_DM module.

Table C-179 Field Descriptions for the RMON Thresholds Tab

Field	Description
Show all RMON Thresholds	When checked, shows all RMON thresholds.
Index Number	Displays the optical port number.
Slot	Displays the slot.

Table C-179 Field Descriptions for the RMON Thresholds Tab (continued)

Field	Description
Port	Displays the port.
Variable	Displays the Ethernet threshold variable. The variable depends on the card type.
Alarm Type	Displays the Ethernet threshold alarm type. Values are Rising, Falling, or Rising and Falling.
Sample Type	Displays the Ethernet threshold sample type. Values are Relative and Absolute. **Relative** restricts the threshold to using the number of occurrences in the user-set sample period. **Absolute** sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period (sec)	Displays the Ethernet threshold sample period, in seconds.
Rising Thresh	Displays a count of the number of times an alarm entry crosses the rising threshold and the entry generates an event.
Falling Thresh	Displays a count of the number of times an alarm entry crosses the falling threshold and the entry generates an event.

C.2.1.5.10 Distance Extension Tab

The Distance Extension tab allows you to enable the buffer-to-buffer extension between the client and the 2.5G_DM card in order to increase the DWDM distance without affecting the throughput.

Table C-180 Field Descriptions for the Distance Extension Tab

Field	Description
Port Number	Displays the port number. • Client interface: 1 to 8 • Trunk: 9
Enable Distance Extension	Allows end-to-end distances of up to 1600 km for 1 GFC and up to 800 km for 2 GFC.
Auto Detect Credits	Allows automatic detection of buffer credits for flow control.
Credits Available	Displays the number of credits available.
Autoadjust GFP Buffer Threshold	Allows the threshold of the generic framing procedure (GFP) buffer between two 2.5G_DM cards. This is automatically adjusted.
GFP Buffers Available	Displays the number of GFP buffers available between two 2.5G_DM cards.

C.2.1.5.11 Enhanced FC/FICON ISL Tab

The Enhanced FC/FICON ISL tab allows you to enable the field programmable gate array (FPGA) to drop duplicate frames.

Table C-181 Field Descriptions for the Enhanced FC/FICON ISL Tab

Field	Description
Port Number	Displays the port number.
Maximum Frame Size	Allows you to select the maximum frame size supported by the FICON/FC. Valid range is from 2148 to 2172.

C.2.1.6 Loopback

The Loopback Properties pane allows you to view and update 2.5G_DM loopback information.

Table C-182 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.2.1.7 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-183 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.1.8 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane contains the following tabs:

- C.2.1.8.1 TCA 15 Min Tab, page C-124
- C.2.1.8.2 TCA 1 Day Tab, page C-124
- C.2.1.8.3 Alarm Thresh Tab, page C-124

C.2.1.8.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-184 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.1.8.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-185 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.1.8.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-186 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.1.9 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update 2.5G_DM alarm profile information.

Table C-187 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.1.10 Protection

The Protection Properties pane allows you to view and update 2.5G_DM protection group information.

Table C-188 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.

C.2.1.11 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the 2.5G_DM card.

Table C-189 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

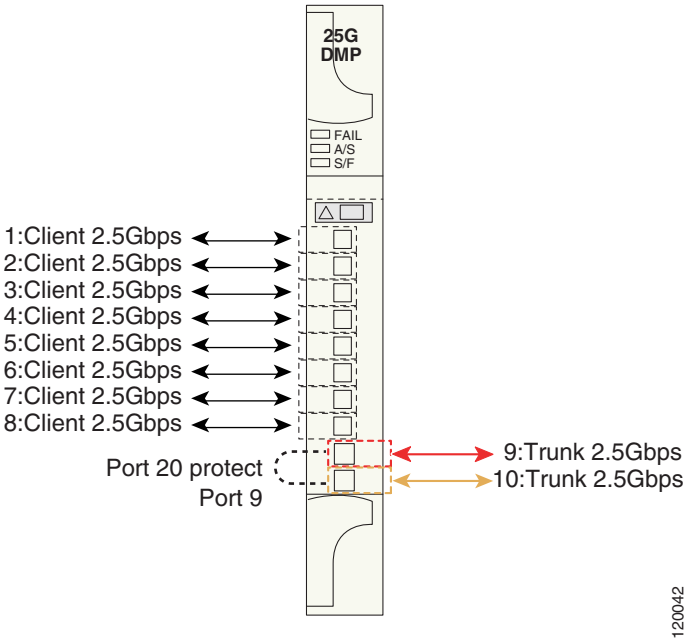
C.2.2 Slot Properties—2.5G_DMP

The slot properties pane displays information about the Cisco ONS 15454 SONET and ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The 2.5G-DMP card is capable of translating client input GE, ESCON, FICON, 1G and 2G Fiber Channel, and IBM GDPS optical signal into an optical signal with an optical frequency on the 100 GHz spacing frequency grid according to ITU-T G.692. The datamux cards are GR-253 and G.957 compliant. This card supports eight client interfaces utilizing SFP technology and protection on the trunk side. 32 ITU wavelengths are supported. Each card supports tunability over four wavelengths. This card is supported on ONS 15454 SONET and ONS 15454 SDH platforms.

The following figure shows the card faceplate.

Figure C-8 2.5G-DMP Module



For the 2.5G_DMP module, the slot properties pane displays the following properties: Module View, Identification, Card, PPM, Line, Loopback, Auto Laser Shutdown, Optical Thresh, Alarm Behavior, Protection, and Info.

Note Properties shown depend on whether the NE is a SONET or an SDH node.

C.2.2.1 Module View

The Module View displays a graphic of the 2.5G_DMP that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.2.2 Identification

The Identification Properties pane allows you to view and update 2.5G_DMP identification information.

Table C-190 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Suppress Alarms	When checked, all alarms are suppressed for the port.

C.2.2.3 Card

The Card Properties pane allows you to view and update card information.

Table C-191 Field Descriptions for the Card Properties Pane

Field	Description
Card Mode	Allows you to select a card mode. Select from: • FC_GE—Allows you to select a multicard Ether Switch group, a single-card Ether Switch group, or the Port Mapped mode for E-series cards. • Mixed—Supports 1G FC or GE traffic on port 1, and ESCON traffic on ports 5 through 8. • ESCON—Supports 8 ports of ESCON traffic.

C.2.2.4 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-192 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules (PPM)	
Pluggable Number	Displays the identifier of the plugin module.
Equipment Type	Displays the equipment type that the slot is provisioned for.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Actual Equipment Type	Displays the actual card that is installed in the slot. Values are single mode or multimode.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
User Code	Allows you to enter an ASCII string to identify the card. The user code is stored in nonvolatile memory so that it is not lost when the unit is moved or stored as a spare.
Product ID	Displays a plugin module ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Displays the port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the plugin module.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this plugin module and its port(s).
PPM	
Pluggable Number	Displays the identifier of the plugin module.
Equipment Type	Displays the plugin type that the port is provisioned for.

C.2.2.4.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.2.5 Line

The Line Properties pane allows you to configure line information. If the card is installed on an ONS 15454 SONET NE, the Properties pane contains the following tabs:

- C.2.2.5.1 Section Trace Tab, page C-129
- C.2.2.5.2 SONET Tab, page C-129
- C.2.2.5.3 Section Thresh 15 Min Tab, page C-130
- C.2.2.5.4 Section Thresh 1 Day Tab, page C-130
- C.2.2.5.5 Line Thresh 15 Min Tab, page C-131
- C.2.2.5.6 Line Thresh 1 Day Tab, page C-131
- C.2.2.5.7 Wavelength Trunk Settings Tab, page C-132
- C.2.2.5.8 Client Tab, page C-132
- C.2.2.5.9 RMON Thresholds Tab, page C-134
- C.2.2.5.10 Distance Extension Tab, page C-135
- C.2.2.5.11 Enhanced FC/FICON ISL Tab, page C-135

Note If the card is installed on an ONS 15454 SDH NE, see the SDH Line section. The following information is the same if the payload is SDH on an ONS 15454 SONET NE.

C.2.2.5.1 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the 2.5G_DMP card.

Table C-193 Field Descriptions for the Section Trace Tab

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.2.2.5.2 SONET Tab

The SONET tab allows you to view and change the SONET line settings for the 2.5G-DMP module.

Table C-194 Field Descriptions for the SONET Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).

C.2.2.5.3 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the 15-minute near-end section thresholds of the 2.5G_DMP card.

Table C-195 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays Errored seconds section.
SES-S	Displays Severely errored seconds section.
SEFS-S	Displays Severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.2.5.4 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the 1-day near-end section thresholds of the 2.5G_DMP card.

Table C-196 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.2.5.5 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute near- and far-end line thresholds of the 2.5G_DMP card.

Table C-197 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port No.	The port number.
ES-L	Errored seconds line
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	The port number.
ES-L	Errored seconds line
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.2.5.6 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day near- and far-end line thresholds of the 2.5G_DMP card.

Table C-198 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.2.5.7 Wavelength Trunk Settings Tab

The Wavelength Trunk Settings tab allows you to change the wavelength and band settings for the 2.5G_DMP card.

Table C-199 Field Descriptions for the Wavelength Trunk Settings Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). For this single-band card, the band value is fixed to *C*, and this value cannot be altered.

C.2.2.5.8 Client Tab

The Client tab allows you to provision PPM parameters for the 2.5G_DMP card.

Table C-200 Field Descriptions for the Client Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter a port name.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

Table C-200 Field Descriptions for the Client Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.2.5.9 RMON Thresholds Tab

The RMON Thresholds tab allows you to view, create, and delete RMON threshold settings for the 2.5G_DMP card.

Table C-201 Field Descriptions for the RMON Thresholds Tab

Field	Description
Index Number	Displays the optical port number.
Slot	Displays the slot.
Port	Displays the port.

Table C-201 Field Descriptions for the RMON Thresholds Tab (continued)

Field	Description
Variable	Displays the Ethernet threshold variable. The variable depends on the card type.
Alarm Type	Displays the Ethernet threshold alarm type. Values are Rising, Falling, or Rising and Falling.
Sample Type	Displays the Ethernet threshold sample type. Values are Relative and Absolute. **Relative** restricts the threshold to using the number of occurrences in the user-set sample period. **Absolute** sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period (sec)	Displays the Ethernet threshold sample period, in seconds.
Rising Thresholds	Displays a count of the number of times an alarm entry crosses the rising threshold and the entry generates an event.
Falling Thresholds	Displays a count of the number of times an alarm entry crosses the falling threshold and the entry generates an event.
Create	Click the **Create** button to create an RMON threshold.
Delete	Select an RMON threshold from the list displayed and click the **Delete** button.

C.2.2.5.10 Distance Extension Tab

The Distance Extension tab allows you to enable the buffer-to-buffer extension between the client and the 2.5G_DMP card in order to increase the DWDM distance without affecting the throughput.

Table C-202 Field Descriptions for the Distance Extension Tab

Field	Description
Port Number	Displays the port number. • Client Interface: 1 to 8 • Trunk: 9 to 10
Enable Distance Extension	Allows end-to-end distances of up to 1600 km for 1 GFC and up to 800 km for 2 GFC.
Auto Detect Credits	Allows automatic detection of buffer credits for flow control.
Credits Available	Displays the number of credits available.
Autoadjust GFP Buffer Threshold	Allows the threshold of the GFP buffer between two 2.5G_DMP cards. This is automatically adjusted.
GFP Buffers Available	Displays the number of GFP buffers available between two 2.5G_DMP cards.

C.2.2.5.11 Enhanced FC/FICON ISL Tab

The Enhanced FC/RCON ISL tab allows you to enable the FCGA to drop duplicate frames.

Table C-203 Field Descriptions for the Enhanced FC/FICON ISL Tab

Field	Description
Port Number	Displays the port number.
Maximum Frame Size	Allows you to select the maximum frame size supported by the FICON/FC. Valid range is from 2148 to 2172.

C.2.2.6 Loopback

The Loopback Properties pane allows you to view and update 2.5G_DMP loopback information.

Table C-204 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.2.2.7 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-205 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.2.8 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane contains the following tabs:

- C.2.2.8.1 TCA 15 Min Tab, page C-137
- C.2.2.8.2 TCA 1 Day Tab, page C-137
- C.2.2.8.3 Alarm Thresh Tab, page C-137

C.2.2.8.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-206 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.2.8.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-207 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.2.8.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-208 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.2.9 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update 2.5G_DMP alarm profile information.

Table C-209 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.2.10 Protection

The Protection Properties pane allows you to view and update 2.5G_DMP protection group information.

Table C-210 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.

C.2.2.11 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the 2.5G_DMP card.

Table C-211 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.3 Slot Properties—2.5G Multirate Transponder

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The 2.5-Gb/s multirate transponder cards operate on the ITU grid and provide the ONS 15454 SONET and ONS 15454 SDH with enhanced economics in metro DWDM solutions. The multirate transponder cards provide a 2R/3R transponder functionality over a bit rate of 100 Mb/s to 2.5 Gb/s. The cards also provide a single-mode fiber DWDM interface. Multirate transponder cards use pluggable small form factor client interfaces. The cards translate the client input optical signal into an optical signal with an optical frequency on the spacing frequency grid according to ITU-T G.692. The cards are GR-253 and G.957 compliant.

There are two versions of the multirate 2.5G transponder card:

- Multirate 2.5G transponder, nonfiber-protected (TXP_MR_2.5G_xx.x)
- Multirate 2.5G transponder, fiber-protected (TXPP_MR_2.5G_xx.x)

Prime Optical supports DVB-ASI and ISC1 payloads on TXP_MR_2.5G and TXPP _MR_2.5G cards. Using these payloads, you can:

- Manage L1 circuits and links with endpoints.
- Manage historical PM data and alarms related to the client payloads for TXP-MR-2.5G and TXPP-MR-2.5G cards.
- Retrieve and set RMON thresholds.

Perform the following steps to provision the payloads:

Step 1 Click the **OTN** Properties pane.

Step 2 Disable FEC and G709 OTN. If G709 is not disabled, PPM cannot be enabled.

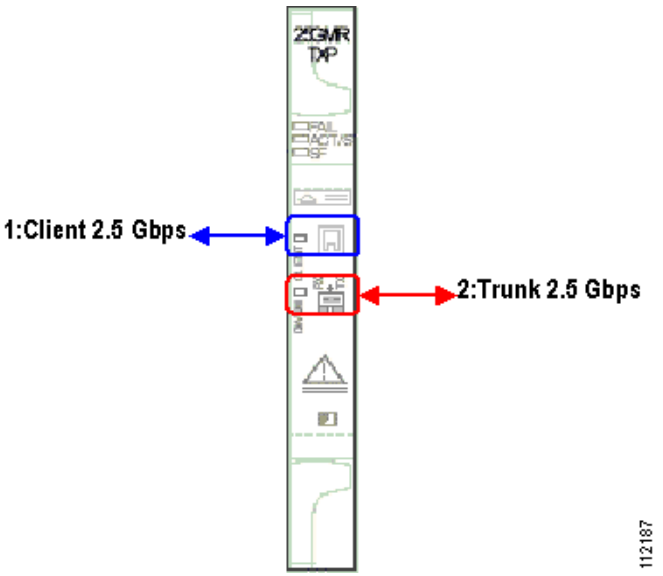
Step 3 Click the **PPM** Properties pane and create a PPM for port 1.

Step 4 Provision the rate DVB-ASI or ISC1 by selecting the appropriate rate in the **Port Rate** drop-down list.

Note When using protection groups, you can provision only the working port.

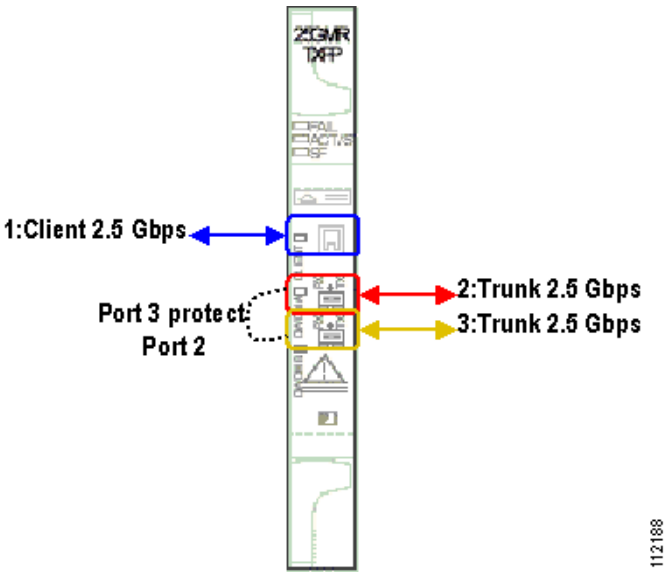
The following figure shows the multirate 2.5G transponder, nonfiber-protected (TXP_MR_2.5G_xx.x) card faceplate.

Figure C-9 TXP_MR_2.5G_xx.x Module



The following figure shows the multirate 2.5G transponder, fiber-protected (TXPP_MR_2.5G_xx.x) card faceplate.

Figure C-10 TXPP_MR_2.5G_xx.x Module



For the 2.5G Multirate Transponder, the slot properties pane displays the following properties: Module View, Identification, Card, PPM, Line, OTN, Loopback, Auto Laser Shutdown, Optical Thresh, Alarm Behavior, Protection, and Info. The properties shown depend on the NE configuration.

C.2.3.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.3.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-212 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Admin State	Displays the admin state of the card.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.3.3 Card

The Card Properties pane allows you to view and update card information.

Table C-213 Field Descriptions for the Card Properties Pane

Field	Description
Framing Type	*Display only.* The framing type is unframed.
Termination Mode	Allows you to set the mode of termination. The termination mode can be transparent, multiplexer section (MS), or regeneration section (RS). The Termination Mode is displayed as transparent and is read-only if you configured DVB-ASI or ISC1.

Table C-213 Field Descriptions for the Card Properties Pane (continued)

Field	Description
Regeneration Peer Slot	Allows you to select like cards so that you can configure a regeneration peer group.
Regeneration Group Name	(Optional) Allows you to set the name of the regeneration group.

C.2.3.4 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-214 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual plugin module that is installed in the slot.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the status of the plugin module: In Service (IS); Out of Service–Maintenance (OOS_MT); Unlocked; or Locked, Maintenance. **Note** You can edit the Admin State value only for actual equipment, not preprovisioned equipment.
Service State	Displays the service state of the plugin module. Values are: • Unknown—The state cannot be determined. • Not Installed—The plugin module is not installed. • Out of Service—The plugin module is installed but is not commissioned and is not carrying traffic. • In Service—The plugin module is commissioned and carrying traffic.

Table C-215 Description of Ports Configured in the PPM

Field	Description
Port	Displays the port configured in the PPM.
Rate	Displays the rate provisioned for the port.

C.2.3.4.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.3.5 Line

The Line Properties pane allows you to configure line information.

If the card is installed on an ONS 15454 SONET NE, the Properties pane contains the following tabs:

- C.2.3.5.1 Line Config Tab, page C-143

- C.2.3.5.2 Section Trace Tab, page C-144
- C.2.3.5.3 SONET Line Tab, page C-145
- C.2.3.5.4 Section Thresh 15 Min Tab, page C-146
- C.2.3.5.5 Section Thresh 1 Day Tab, page C-147
- C.2.3.5.6 Line Thresh 15 Min Tab, page C-147
- C.2.3.5.7 Line Thresh 1 Day Tab, page C-148
- C.2.3.5.8 Wavelength Trunk Settings Tab, page C-148

If the card is installed on an ONS 15454 SDH NE, the Properties pane contains the following tabs:

- C.2.3.5.9 Line Config Tab, page C-149
- C.2.3.5.10 Section Trace Tab, page C-150
- C.2.3.5.11 SDH Line Tab, page C-151
- C.2.3.5.12 RS Thresh 15 Min Tab, page C-152
- C.2.3.5.13 RS Thresh 1 Day Tab, page C-153
- C.2.3.5.14 MS Thresh 15 Min Tab, page C-153
- C.2.3.5.15 MS Thresh 1 Day Tab, page C-153
- C.2.3.5.16 Wavelength Trunk Settings Tab, page C-154

C.2.3.5.1 Line Config Tab

The Line Config tab allows you to provision PPM parameters of a multirate 2.5G transponder card.

Table C-216 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a port name.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

Table C-216 Field Descriptions for the Line Config Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.3.5.2 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the card.

Table C-217 Field Descriptions for the Section Trace Tab

Field	Description
Port No.	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.

Table C-217 Field Descriptions for the Section Trace Tab (continued)

Field	Description
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.2.3.5.3 SONET Line Tab

The SONET Line tab allows you to view and change the SONET line settings of the card.

Table C-218 Field Descriptions for the SONET Line Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.

Table C-218 Field Descriptions for the SONET Line Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.3.5.4 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the 15-minute section threshold information for the card.

Table C-219 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Port No.	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.

Table C-219 Field Descriptions for the Section Thresh 15 Min Tab (continued)

Field	Description
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.3.5.5 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the 1-day section threshold information for the card.

Table C-220 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Port No.	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.3.5.6 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute line threshold information for the card.

Table C-221 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.

Table C-221 Field Descriptions for the Line Thresh 15 Min Tab (continued)

Field	Description
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.3.5.7 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day line threshold information for the card.

Table C-222 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.3.5.8 Wavelength Trunk Settings Tab

The Wavelength Trunk Settings tab allows you to change the wavelength and band settings for the card.

Table C-223 Field Descriptions for the Wavelength Trunk Settings Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.

Table C-223 Field Descriptions for the Wavelength Trunk Settings Tab (continued)

Field	Description
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). When the card is plugged in, the selection is disabled and the correct value of the band is displayed. When the card is preprovisioned, you can select either L- or C-band.

C.2.3.5.9 Line Config Tab

The Line Config tab allows you to provision PPM parameters of a multirate 2.5G transponder card.

Table C-224 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a port name.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

Table C-224 Field Descriptions for the Line Config Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.3.5.10 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the card.

Table C-225 Field Descriptions for the Section Trace Tab

Field	Description
Port No.	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.

Table C-225 Field Descriptions for the Section Trace Tab (continued)

Field	Description
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.2.3.5.11 SDH Line Tab

The SDH Line tab allows you to view and change the SDH line settings of the card.

Table C-226 Field Descriptions for the SDH Line Tab

Field	Description
Port No.	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.

Table C-226 Field Descriptions for the SDH Line Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.3.5.12 RS Thresh 15 Min Tab

The RS Thresh 15 Min tab allows you to view and change the 15-minute regeneration section threshold for the card.

Table C-227 Field Descriptions for the RS Thresh 15 Min Tab

Field	Description
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.

Table C-227 Field Descriptions for the RS Thresh 15 Min Tab (continued)

Field	Description
SES-RS	Severely errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.3.5.13 RS Thresh 1 Day Tab

The RS Thresh 1 Day tab allows you to view and change the 1-day regeneration section threshold for the card.

Table C-228 Field Descriptions for the RS Thresh 1 Day Tab

Field	Description
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.3.5.14 MS Thresh 15 Min Tab

The MS Thresh 15 Min tab allows you to view and change the 15-minute near- and far-end multiplex section threshold for the card.

Table C-229 Field Descriptions for the MS Thresh 15 Min Tab

Field	Description
Port No.	The port number.
EB-MS	Errored blocks multiplexer section.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.3.5.15 MS Thresh 1 Day Tab

The MS Thresh 1 Day tab allows you to view and change the 1-day near- and far-end multiplex section threshold for the card.

Table C-230 Field Descriptions for the MS Thresh 1 Day Tab

Field	Description
Port Number	The port number.
EB-MS	Errored blocks multiplexer section.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.3.5.16 Wavelength Trunk Settings Tab

The Wavelength Trunk Settings tab allows you to change the wavelength and band settings for the card.

Table C-231 Field Descriptions for the Wavelength Trunk Settings Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). When the card is plugged in, the selection is disabled and the correct value of the band is displayed. When the card is preprovisioned, you can select either L- or C-band.

C.2.3.6 OTN

The OTN Properties pane allows you to change the line optical transport network (OTN) settings for multirate transponder cards. If you provisioned the payloads DVB-ASI or ISC1, all other subtabs except OTN Line are blank.

Note OTN is supported only for trunk ports.

Table C-232 Field Descriptions for the OTN Properties Pane

Field	Description
G.709 Thresh 15 Min	
SM (OTUK) Near End, Far End	
Port No.	The port number.
BBE-SM	Background block errors.
ES-SM	Errored seconds.

Table C-232 Field Descriptions for the OTN Properties Pane (continued)

Field	Description
SES-SM	Severely errored seconds.
UAS-SM	Unavailable seconds.
FC-SM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End, Far End	
Port No.	The port number.
BBE-PM	Background block errors.
ES-PM	Errored seconds.
SES-PM	Severely errored seconds.
UAS-PM	Unavailable seconds.
FC-PM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
G.709 Thresh 1 Day	
SM (OTUK) Near End, Far End	
Port No.	The port number.
BBE-SM	Background block errors.
ES-SM	Errored seconds.
SES-SM	Severely errored seconds.
UAS-SM	Unavailable seconds.
FC-SM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End, Far End	
Port No.	The port number.
BBE-PM	Background block errors.
ES-PM	Errored seconds.
SES-PM	Severely errored seconds.
UAS-PM	Unavailable seconds.
FC-PM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
FEC Thresh 15 Minutes	
Port Number	Displays the port number.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.
FEC Thresh 1 Day	
Port Number	Displays the port number.
Bit Errors Corrected	Displays the bit errors corrected in one-day intervals.

Table C-232 Field Descriptions for the OTN Properties Pane (continued)

Field	Description
Uncorrectable Words	Displays the uncorrectable words in one-day intervals.
Trail Trace Identifier	
Port No.	The port number.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch alarms.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.
OTN Line	
Port No.	The port number.
G.709 OTN	Disables or enables the G.709 OTN feature. If you provisioned the payloads DVB-ASI or ISC1, this field displays the current status of the G.709 OTN feature: enabled or disabled.
FEC	Disables or enables forward error correction. If you provisioned the payloads DVB-ASI or ISC1, this field displays the status of forward error correction: enabled or disabled. **Note** OTN must be enabled before you can enable FEC.
SF BER	The signal fail bit error rate.
SD BER	The signal degrade bit error rate.

C.2.3.7 Loopback

The Loopback Properties pane allows you to view and update card loopback information.

Table C-233 Field Descriptions for the Loopback Properties Pane

Field	Description
Port No.	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance

Table C-233 Field Descriptions for the Loopback Properties Pane (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.2.3.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown (ALS) parameters.

Table C-234 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.3.9 Optical Threshold

The Optical Threshold Properties pane allows you to view and update optical threshold information.

Table C-235 Field Descriptions for the Optical Threshold Properties Pane

Field	Description
Warning 15 Min	
Port Number	Displays the port number.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Laser Bias High	Displays the upper laser bias threshold.

Table C-235 Field Descriptions for the Optical Threshold Properties Pane (continued)

Field	Description
Reset to Defaults button	Resets the value of the port parameters to the default value.
Warning 1 Day	
Port Number	Displays the port number.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Laser Bias High	Displays the upper laser bias threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Alarm Threshold	
Port Number	Displays the port number.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Laser Bias High	Displays the upper laser bias threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.3.10 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-236 Field Descriptions for the Alarm Behavior

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.3.11 Protection

The Protection Properties pane allows you to view and update card protection group information.

Note When using protection groups, you can provision only the working port.

Table C-237 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups. Y-cable (TXP_MR_2.5G) and splitter (TXPP_MR_2.5G) protection groups are supported.
Protection Group Details	Displays details about the selected protection groups, such as which port is the protected port and which port is the working port. Also allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock-out switching, or lock-on switching.

C.2.3.12 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-238 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.4 Slot Properties—32DMX

The slot properties pane displays information about the 32-channel demultiplexer that is selected in the NE Explorer. Use this properties pane to change the card properties.

The 32-Channel Demultiplexer card (32DMX) is a single-slot optical demultiplexer. The card receives an aggregate optical signal on its COM RX port and demultiplexes it into to 32 100-GHz-spaced channels.

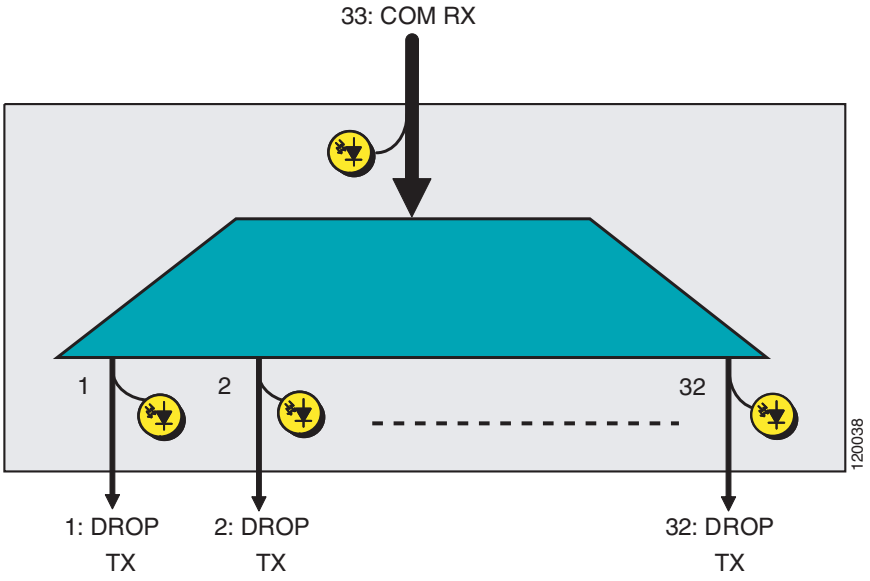
The 32DMX includes these high-level features:

- COM RX port—The input port for the aggregate optical signal being demultiplexed. This port is supported by both a VOA for optical power regulation and a photodiode for optical power monitoring.
- DROP ports (1-32)—On its output, the 32DMX provides 32 drop ports that are typically used for dropping channels within the ROADM node. Each drop port has a photodiode for optical power monitoring. Unlike the two-slot 32DMX-O demultiplexer, the drop ports on the 32DMX do not have a VOA per channel for optical power regulation.

Note The 32DMX card works in conjunction with the 32WSS card to create a software-controlled NE with ROADM functionality.

The following figure shows the block diagram.

Figure C-11 32DMX Module



For the 32DMX module, the slot properties pane displays the following properties: Module View, Identification, Optical Channel, Optical Line, Inventory, and Alarm Behavior.

C.2.4.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.4.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-239 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.4.3 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information. The Properties pane contains the following tabs:

- C.2.4.3.1 Parameters Tab, page C-161
- C.2.4.3.2 Warning Thresh 15 Min Tab, page C-162
- C.2.4.3.3 Warning Thresh 1 Day Tab, page C-163
- C.2.4.3.4 Alarm Thresh Tab, page C-163

C.2.4.3.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-240 Field Descriptions for the Parameters Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).

Table C-240 Field Descriptions for the Parameters Tab (continued)

Field	Description
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Power ADD	Displays the input power of the channel that is in ADD.
Path Value	Select if the path is in use (Active) or not (Standby) for each channel in ADD.

C.2.4.3.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-241 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).

Table C-241 Field Descriptions for the Warning Thresh 15 Min Tab (continued)

Field	Description
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.4.3.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-242 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.4.3.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-243 Field Descriptions for the Alarm Thresh Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
Power Add Fail Low	Displays the threshold of low power failure on the add channel port. The crossing of this threshold generates an LOS-P alarm.

C.2.4.4 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information. The Properties pane contains the following tabs:

- C.2.4.4.1 Parameters Tab, page C-163
- C.2.4.4.2 Warning Thresh 15 Min Tab, page C-164
- C.2.4.4.3 Warning Thresh 1 Day Tab, page C-165
- C.2.4.4.4 Alarm Thresh Tab, page C-165

C.2.4.4.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-244 Field Descriptions for the Parameters Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Power ADD	Displays the input power of the channel that is in ADD.
Path Value	Select if the path is in use (Active) or not (Standby) for each channel in ADD.

C.2.4.4.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-245 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.4.4.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-246 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.4.4.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-247 Field Descriptions for the Alarm Thresh Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
Power Add Fail Low	Displays the threshold of low power failure on the add channel port. The crossing of this threshold generates an LOS-P alarm.

C.2.4.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-248 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the object that can be inventoried.
Value	Displays the value of the object that is inventoried.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

C.2.4.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-249 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.5 Slot Properties—32DMX-L

The slot properties pane displays information about the 32-channel demultiplexer L-band that is selected in the NE Explorer. Use this properties pane to change the card properties.

The 32-Channel Demultiplexer L-Band card (32DMX-L) is a single-slot optical demultiplexer. The card receives an aggregate optical signal on its COM RX port and demultiplexes it into 32 100-GHz-spaced channels. The 32DMX-L card is particularly well suited for use in networks that employ DS fiber or SMF-28 single-mode fiber. The 32DMX-L card can be installed in slots 1 to 6 and in slots 12 to 17.

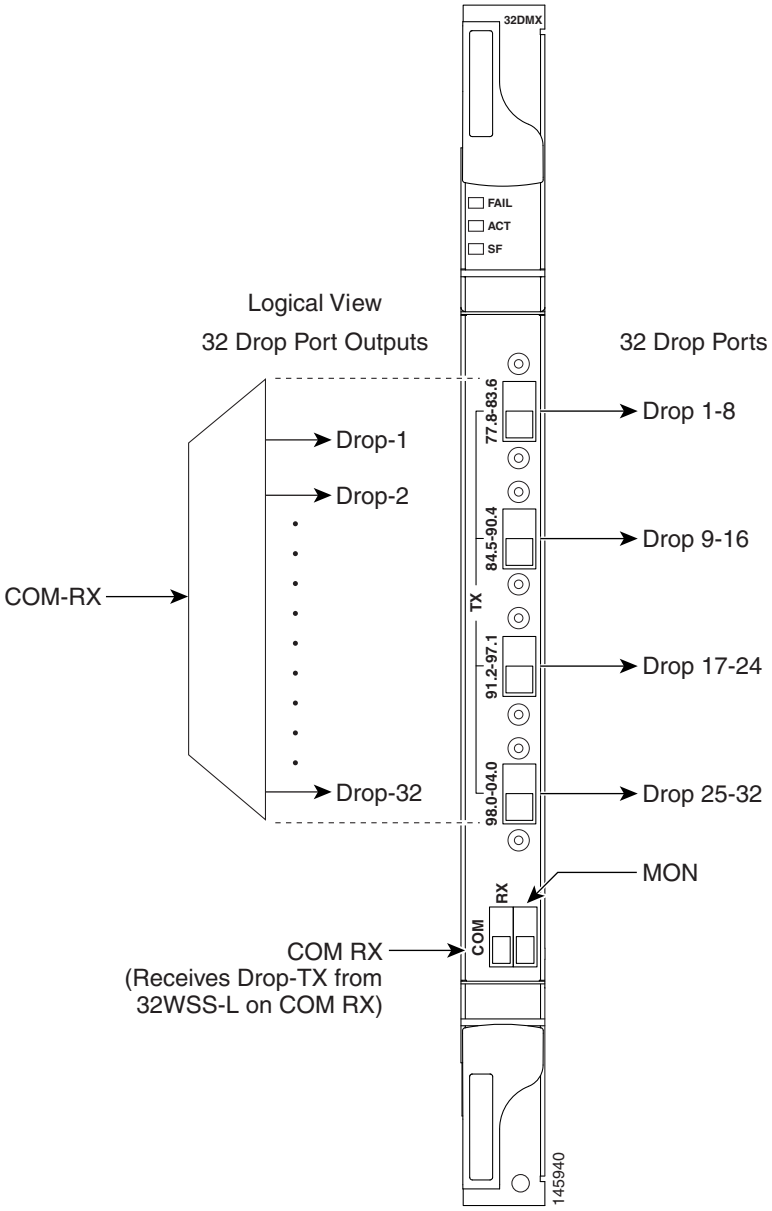
The 32DMX-L card includes these high-level features:

- COM RX port—The input port for the aggregate optical signal being demultiplexed. This port is supported by both a VOA for optical power regulation and a photodiode for optical power monitoring.
- DROP ports (1 to 32)—On its output, the 32DMX-L card provides 32 drop ports that are typically used for dropping channels within the ROADM node. Each drop port has a photodiode for optical power monitoring. Unlike the two-slot 32DMX-O demultiplexer, the drop ports on the 32DMX-L do not have a VOA per channel for optical power regulation.

A terminal site can be configured using only a 32WSS-L card and a 32DMX-L card plugged into the east or west side of the shelf.

The following figure shows the 32DMX-L card front panel and the basic traffic flow through the ports.

Figure C-12 32DMX-L Faceplate and Ports



For the 32DMX-L module, the slot properties pane displays the following properties: Module View, Identification, Optical Channel, Optical Line, Inventory, and Alarm Behavior.

C.2.5.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.5.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-250 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.5.3 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information. The Properties pane contains the following tabs:

- C.2.5.3.1 Parameters Tab, page C-168
- C.2.5.3.2 Warning Thresh 15 Min Tab, page C-169
- C.2.5.3.3 Warning Thresh 1 Day Tab, page C-169
- C.2.5.3.4 Alarm Thresh Tab, page C-170

C.2.5.3.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-251 Field Descriptions for the Parameters Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

C.2.5.3.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-252 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.5.3.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-253 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).

Table C-253 Field Descriptions for the Warning Thresh 1 Day Tab (continued)

Field	Description
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.5.3.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-254 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.

C.2.5.4 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information. The Properties pane contains the following tabs:

- C.2.5.4.1 Parameters Tab, page C-170
- C.2.5.4.2 Warning Thresh 15 Min Tab, page C-171
- C.2.5.4.3 Warning Thresh 1 Day Tab, page C-171
- C.2.5.4.4 Alarm Thresh Tab, page C-172

C.2.5.4.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-255 Field Descriptions for the Parameters Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

Table C-255 Field Descriptions for the Parameters Tab (continued)

Field	Description
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Power	Shows the current power level per port.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.

C.2.5.4.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-256 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.5.4.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-257 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.5.4.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-258 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
Power Add Fail Low	Displays the threshold of low power failure on the add channel port. The crossing of this threshold generates an LOS-P alarm.

C.2.5.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-259 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the object that can be inventoried.
Value	Displays the value of the object that is inventoried.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

C.2.5.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-260 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.6 Slot Properties—32DMX_O

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The 32-Channel Demultiplexer (32DMX_O) card demultiplexes 32 100-GHz-spaced channels identified in the channel plan.

The 32DMX_O features include:

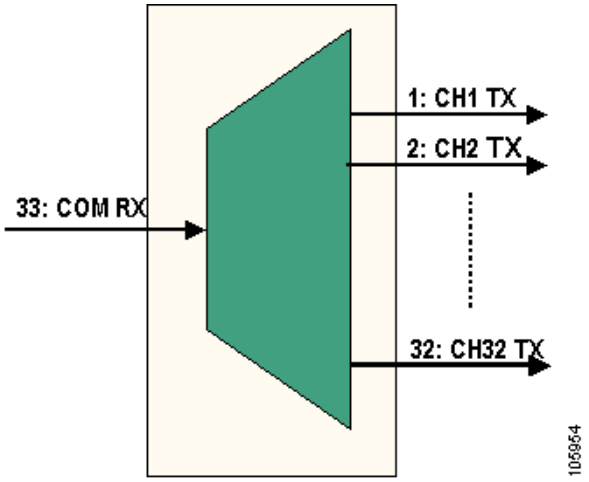
- AWG that enables channel demultiplexing functions.
- Single-channel ports equipped with VOAs for automatic optical power regulation after demultiplexing. In the case of electrical power failure, the VOA is set to its maximum attenuation for safety purposes. A manual VOA setting is also available.

Note In contrast, the single-slot 32DMX card does not have VOAs on each drop port for optical power regulation. The 32DMX optical demultiplexer module is used in conjunction with the 32-Channel Wavelength Selective Switch (32WSS) card in ONS 15454 Multiservice Transport Platform (MSTP) nodes.

- Each single-channel port is monitored using a photodiode to enable automatic power regulation.

The following figure shows the block diagram.

Figure C-13 32DMX_O Module



For the 32DMX_O module, the slot properties pane displays the following properties: Module View, Identification, Optical Channel, Optical Line, Inventory, and Alarm Behavior.

C.2.6.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.6.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-261 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.6.3 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information.

Table C-262 Field Descriptions for the Optical Channel Properties Pane

Field	Description
Parameters	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT). **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.

C.2.6.4 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-263 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Status	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Type	The type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure settings.

C.2.6.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-264 Field Descriptions for the Inventory Properties Pane

Field	Description
Vendor ID	The ID of the vendor.
HW Version	The hardware version number.
IL-REF	The reference insertion loss.

Table C-264 Field Descriptions for the Inventory Properties Pane (continued)

Field	Description
Serial Number	The serial number that is unique to each card.
Firmware Version	The revision number of the software used by the ASIC chip installed on the card.
Part Number	The part number that is printed on the top of the card.

C.2.6.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-265 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.7 Slot Properties—40-DMX-C

The single-slot 40-Channel Demultiplexer C-Band (40-DMX-C) card demultiplexes forty 100 GHz-spaced channels identified in the channel plan, and sends them to dedicated output ports. The overall optical power can be adjusted using a single VOA that is common to all channels. The 40-DMX-C card is unidirectional, is optically passive, and can be installed in slots 1 to 6 and 12 to 17.

The 40-DMX card supports the Even and Odd bands. 40-DMX cards provisioned in the Even band support only card provisioning; circuits, links, and patchcords are not supported. The card name depends on the wavelength that is provisioned on the card. The card name is 40-DMX-CE if the supported wavelength belongs to the Even band and 40-DMX-CO if the supported wavelength belongs to the Odd band. When an actual card is plugged into a slot where the same card is preprovisioned, an alarm mismatch is raised if there is a conflict between the wavelength set on the preprovisioned card and the wavelength set on the actual card.

C.2.7.1 40-DMX-C Faceplate Ports

The 40-DMX-C card has two types of ports:

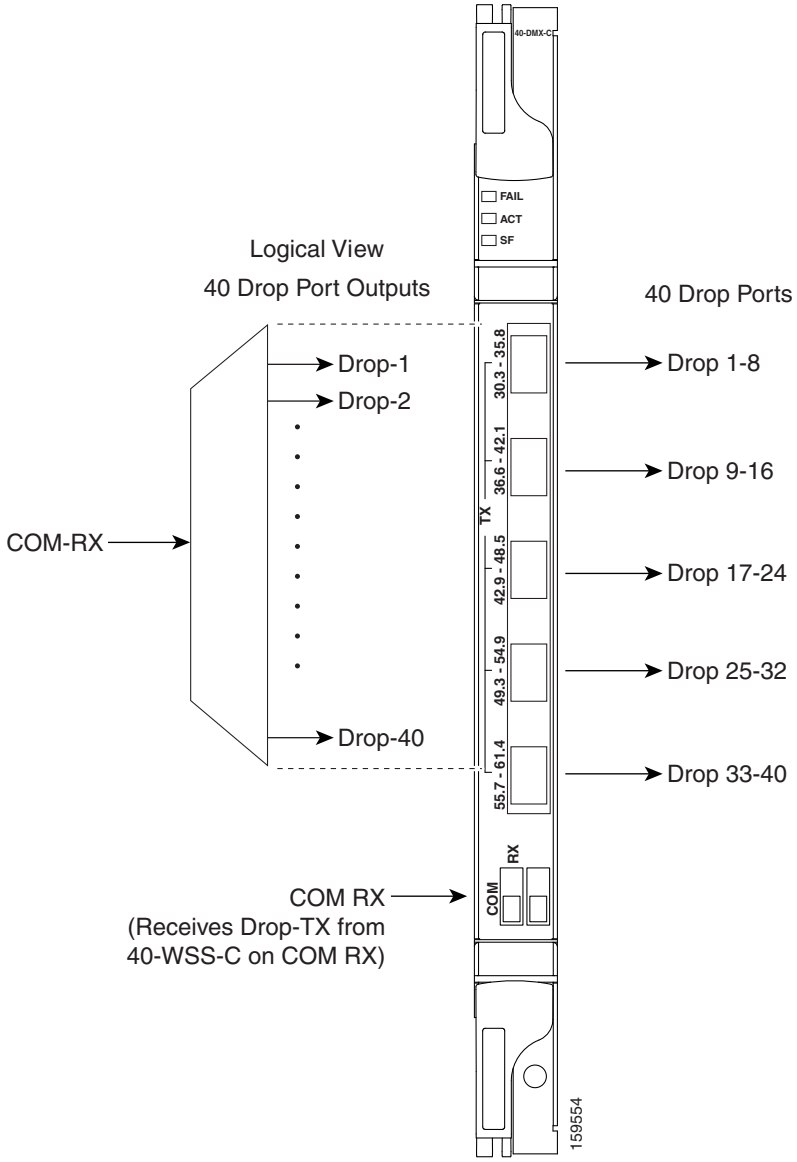
- COM RX port—Refers to the line input port for the aggregate optical signal being demultiplexed. This port is supported by a VOA for optical power regulation and a photodiode for per-channel optical power monitoring.

  Note By default, the VOA is set to its maximum attenuation for safety purposes (for example, to regulate power during electrical power failure). A manual VOA setting is also available.

- DROP TX ports (1 to 40)—On its output, the 40-DMX-C card provides 40 drop ports that are typically used for dropping channels within the ROADM node. These ports are connected using five physical connectors on the front panel that accept MPO client input cables. (MPO cables break out into eight separate cables.) The 40-DMX-C card also has one LC-PC-II optical connector for the main input.

The following figure shows the 40-DMX-C card faceplate.

Figure C-14 40-DMX-C Faceplate



For the 40-DMX-C module, the slot properties pane displays the following properties: Module View, Identification, Optical Channel, Optical Line, Inventory, and Alarm Behavior.

C.2.7.2 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.7.3 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-266 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.7.4 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information. The Properties pane contains the following tabs:

- C.2.7.4.1 Parameters Tab, page C-180
- C.2.7.4.2 Warning Thresh 15 Min Tab, page C-181
- C.2.7.4.3 Warning Thresh 1 Day Tab, page C-181
- C.2.7.4.4 Alarm Thresh Tab, page C-182

C.2.7.4.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-267 Field Descriptions for the Parameters Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.

C.2.7.4.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-268 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.7.4.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-269 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.

Table C-269 Field Descriptions for the Warning Thresh 1 Day Tab (continued)

Field	Description
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.7.4.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-270 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure settings.

C.2.7.5 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information. The Properties pane contains the following tabs:

- C.2.7.5.1 Parameters Tab, page C-182
- C.2.7.5.2 Warning Thresh 15 Min Tab, page C-183
- C.2.7.5.3 Warning Thresh 1 Day Tab, page C-183
- C.2.7.5.4 Alarm Thresh Tab, page C-183

C.2.7.5.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-271 Field Descriptions for the Parameters Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

Table C-271 Field Descriptions for the Parameters Tab (continued)

Field	Description
Power	Shows the current power level per port.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.

C.2.7.5.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-272 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.7.5.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-273 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.7.5.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-274 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure settings.

C.2.7.6 Inventory

The Inventory Properties pane allows you to view card inventory information.

Table C-275 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the object that can be inventoried.
Value	Displays the value of the object that is inventoried.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

C.2.7.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-276 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Choose an alarm profile for all ports.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.8 Slot Properties—32MUX_O

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

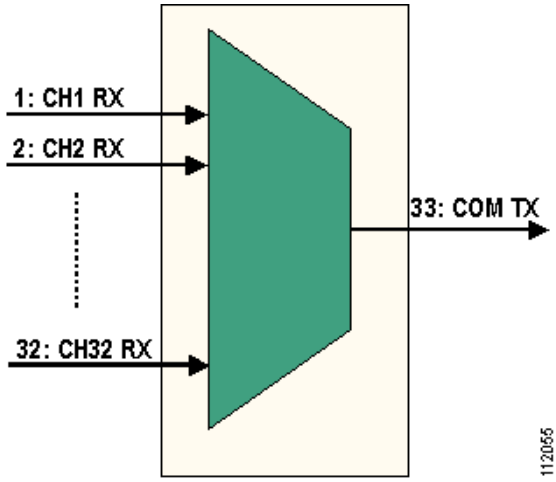
The 32-Channel Multiplexer (32MUX_O) card is typically used in hub nodes and provides the multiplexing of 32 channels, spaced at 100 GHz, into one fiber before their amplification and transmission along the line.

The 32MUX_O features include:

- Arrayed waveguide grating (AWG) device that enables full multiplexing functions for the channels.
- Each single-channel port is equipped with VOAs for automatic optical power regulation prior to multiplexing. In the case of electrical power failure, the VOA is set to its maximum attenuation for safety purposes. A manual VOA setting is also available.
- Each single-channel port is monitored using a photodiode to enable automatic power regulation.
- Additional optical monitoring port with 1/99 splitting ratio available.

The following figure shows the block diagram.

Figure C-15 32MUX_O Module



For the 32MUX_O module, the slot properties pane displays the following properties: Module View, Identification, Optical Channel, Optical Line, Inventory, and Alarm Behavior.

C.2.8.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.8.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-277 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.

Table C-277 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.8.3 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information.

Table C-278 Field Descriptions for the Optical Channel Properties Pane

Field	Description
Parameters	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).

Table C-278 Field Descriptions for the Optical Channel Properties Pane (continued)

Field	Description
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.

C.2.8.4 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-279 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Status	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.

Table C-279 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.

C.2.8.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-280 Field Descriptions for the Inventory Properties Pane

Field	Description
Vendor ID	The ID of the vendor.
HW Version	The hardware version number.
IL-REF	The reference insertion loss.
Serial Number	The serial number that is unique to each card.
Firmware Version	The revision number of the software used by the ASIC chip installed on the card.
Part Number	The part number that is printed on the top of the card.

C.2.8.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-281 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.9 Slot Properties—40-MUX-C

The single-slot 40-Channel Multiplexer C-Band (40-MUX-C) card multiplexes forty ITU-T 100 GHz-spaced channels identified in the channel plan. The 40-MUX-C card can be installed in slots 1 to 6 and 12 to 17. The 40-MUX-C card is typically used in hub nodes.

Y-cable protection between the same card type is supported only on ports with the same port number and signal rate. Y-cable protection is provided at the client port level.

C.2.9.1 40-MUX-C Faceplate Ports

The 40-MUX-C has two types of ports:

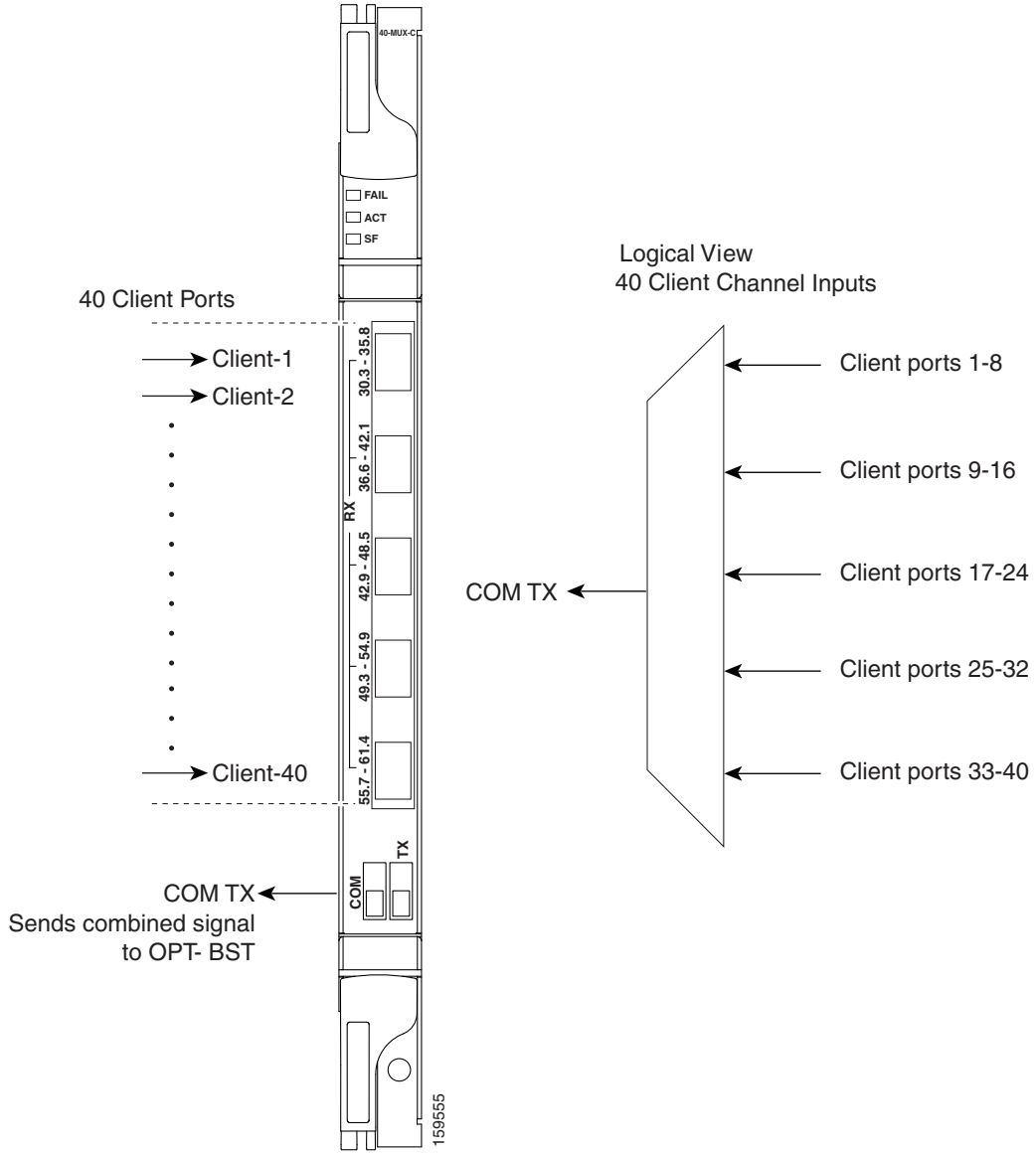
- COM TX port—Refers to the line output port for the aggregate optical signal being multiplexed. This port is supported by both a VOA for optical power regulation and a photodiode for per-channel optical power monitoring.

  Note By default, the VOA is set to its maximum attenuation for safety purposes (for example, to regulate power during electrical power failure). A manual VOA setting is also available.

- DROP RX ports (1 to 40)—Provides 40 input optical channels. These ports are connected using five physical receive connectors on the card's front panel that accept MPO cables for the client input interfaces. MPO cables break out into eight separate cables. The 40-DMX-C card also has one LC-PC-II optical connector for the main output.

The following figure shows the 40-MUX-C card faceplate.

Figure C-16 40-MUX-C Card Faceplate



For the 40-MUX-C module, the slot properties pane displays the following properties: Module View, Identification, Optical Channel, Optical Line, Inventory, and Alarm Behavior.

C.2.9.2 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.9.3 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-282 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.9.4 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information. The Properties pane contains the following tabs:

- C.2.9.4.1 Parameters Tab, page C-191
- C.2.9.4.2 Warning Thresh 15 Min Tab, page C-192
- C.2.9.4.3 Warning Thresh 1 Day Tab, page C-192
- C.2.9.4.4 Alarm Thresh Tab, page C-193

C.2.9.4.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-283 Field Descriptions for the Parameters Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Add, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance • Locked, disabled • Locked, maintenance • Unlocked, automatic in service
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port.

C.2.9.4.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-284 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Add, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.9.4.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-285 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Add, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.9.4.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-286 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Add, and Drop.
Power Failure Low	Allows you to set the low power failure settings.

C.2.9.5 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information. The Properties pane contains the following tabs:

- C.2.9.5.1 Parameters Tab, page C-193
- C.2.9.5.2 Warning Thresh 15 Min Tab, page C-194
- C.2.9.5.3 Warning Thresh 1 Day Tab, page C-194
- C.2.9.5.4 Alarm Thresh Tab, page C-195

C.2.9.5.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-287 Field Descriptions for the Parameters Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Add, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.

Table C-287 Field Descriptions for the Parameters Tab (continued)

Field	Description
State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance • Locked, disabled • Locked, maintenance • Unlocked, automatic in service
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.

C.2.9.5.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-288 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Add, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.9.5.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-289 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Add, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.9.5.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-290 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Add, and Drop.
Power Failure Low	Allows you to set the low power failure settings.

C.2.9.6 Inventory

The Inventory Properties pane allows you to view card inventory information.

Table C-291 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the object that can be inventoried.
Value	Displays the value of the object that is inventoried.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

C.2.9.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-292 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed for the card or its port(s).
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.10 Slot Properties—32WSS

The slot properties pane displays information about the 32-channel Wavelength Selective Switch (32WSS) module that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The 32-channel Wavelength Selective Switch (32WSS) card performs channel add/drop processing within the ONS 15454 DWDM node. The 32WSS works in conjunction with the 32DMX to implement ROADM functionality. Equipped with ROADM functionality, the ONS 15454 DWDM can be configured to add or drop individual optical channels using CTC, Cisco MetroPlanner, and Prime Optical.

An ROADM NE utilizes two 32WSS cards (two slots each) and two 32DMX cards (one slot each), for a total of six slots in the chassis, as follows:

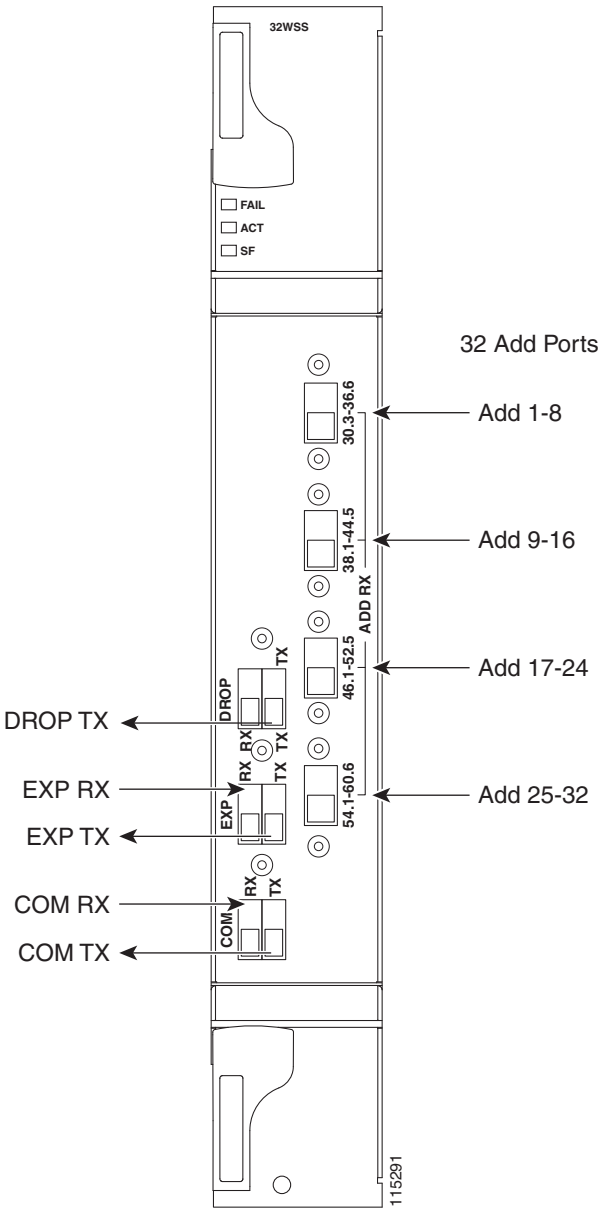
- ADD RX ports (1 to 32)—Used for adding channels. Each add channel is associated with an individual switch element that selects whether an individual channel is added. Each add port has optical power regulation provided by a VOA. The 32WSS has four physical receive connectors that accept MPO cables on the card's front panel for the client input interfaces. MPO cables break out into eight separate cables.
- EXP RX port—Receives an optical signal from another 32WSS module in the same NE.
- EXP TX port—Sends an optical signal to the other 32WSS module within the NE.
- COM TX port—Sends an aggregate optical signal to a booster amplifier card (for example, OPT-BST) for transmission outside of the NE.
- COM RX port—Receives the optical signal from a preamplifier and sends it to the optical splitter.
- DROP TX port—Sends the split-off optical signal that contains drop channels to the 32DMX card, where the channels are further processed and dropped.

Note A terminal site can be configured using only a 32WSS card and a 32DMX card plugged into the east or west side of the shelf.

Note The 32WSS works in conjunction with the 32DMX to implement ROADM functionality.

The following figure shows the 32WSS module front panel and identifies the traffic flow through the ports.

Figure C-17 32WSS Faceplate and Ports



For the 32WSS module, the slot properties pane displays the following properties: Module View, Identification, Optical Channel, Optical Line, Maintenance, Inventory, and Alarm Behavior.

C.2.10.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.10.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-293 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.10.3 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information. The Properties pane contains the following tabs:

- C.2.10.3.1 Parameters Tab, page C-198
- C.2.10.3.2 Warning Thresh 15 Min Tab, page C-199
- C.2.10.3.3 Warning Thresh 1 Day Tab, page C-200
- C.2.10.3.4 Alarm Thresh Tab, page C-200

C.2.10.3.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-294 Field Descriptions for the Parameters Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Power ADD	Displays the input power of the channel that is in ADD.
Path Value	Select if the path is in use (Active) or not (Standby) for each channel in ADD.

C.2.10.3.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-295 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.10.3.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-296 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.10.3.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-297 Field Descriptions for the Alarm Thresh Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
Power Add Fail Low	Displays the thresholds of low power failure on the add channel port. The crossing of this threshold generates an LOS-P alarm.

C.2.10.4 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information. The Properties pane contains the following tabs:

- C.2.10.4.1 Parameters Tab, page C-201
- C.2.10.4.2 Warning Thresh 15 Min Tab, page C-201
- C.2.10.4.3 Warning Thresh 1 Day Tab, page C-201
- C.2.10.4.4 Alarm Thresh Tab, page C-202

C.2.10.4.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-298 Field Descriptions for the Parameters Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Power	Shows the current power level per port.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

C.2.10.4.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-299 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.10.4.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-300 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.

Table C-300 Field Descriptions for the Warning Thresh 1 Day Tab (continued)

Field	Description
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.10.4.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-301 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
Power Add Fail Low	Displays the thresholds of low power failure on the add channel port. The crossing of this threshold generates an LOS-P alarm.

C.2.10.5 Maintenance

The Maintenance Properties pane allows you to assign the optical channel operating mode for each wavelength.

Table C-302 Field Descriptions for the Maintenance Properties Pane

Field	Description
Optical Connector 1 through 5	
Channel Number	Displays the channel number.
OCHNC Wavelength	Displays the wavelength assigned to the channel.
Operating Mode	Select the operating mode to assign to the wavelength: • Not assigned • Add/drop • Pass-through

C.2.10.6 Inventory

The Inventory Properties pane allows you to view card inventory information.

Table C-303 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the object that can be inventoried.
Value	Displays the value of the object that is inventoried.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

C.2.10.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-304 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.11 Slot Properties—32WSS-L

The 32-Channel Wavelength Selective Switch L-Band (32WSS-L) card performs channel add/drop processing within the ONS 15454 DWDM node. The 32WSS-L works in conjunction with the 32DMX-L to implement ROADM functionality within the L-band (1570 to 1620 nm). The 32WSS-L card is particularly well suited for use in networks that employ DS fiber or SMF-28 single-mode fiber. Equipped with ROADM functionality, the ONS 15454 DWDM can be configured to add or drop individual optical channels using CTC, Cisco MetroPlanner, and Prime Optical.

An ROADM NE utilizes two 32WSS-L cards (two slots each) and two 32DMX-L cards (one slot each), for a total of six slots in the chassis. The 32WSS-L card can be installed in slots 1 and 2, 3 and 4, 5 and 6, 12 and 13, 14 and 15, or 16 and 17.

The 32WSS-L has six types of ports:

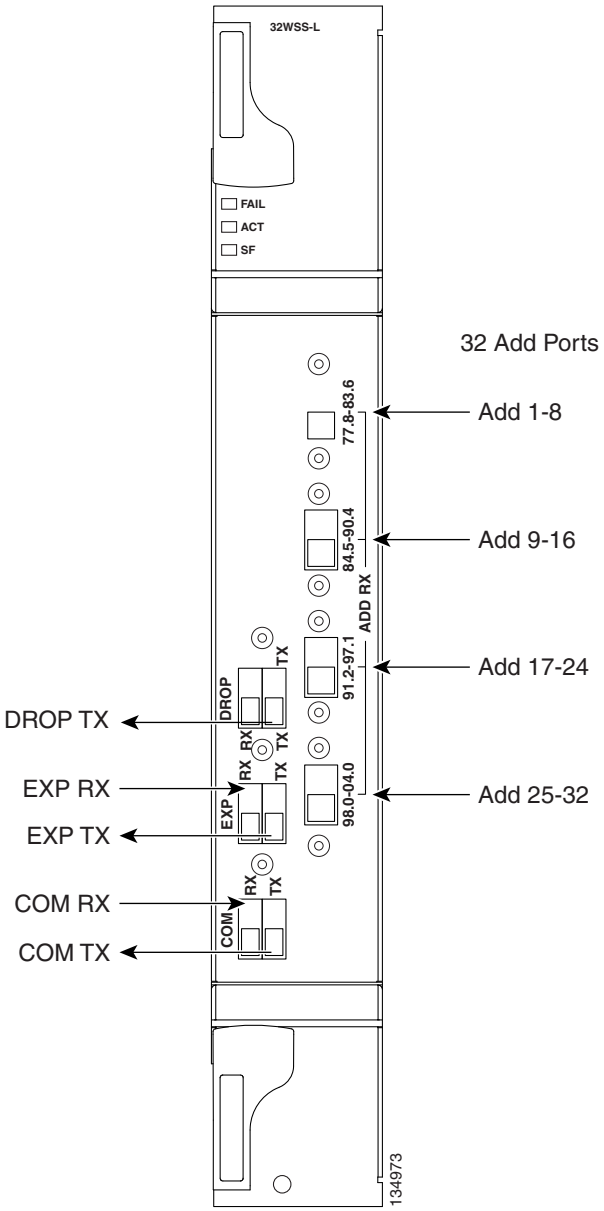
- ADD RX ports (1 to 32)—Used for adding channels. Each add channel is associated with an individual switch element that selects whether an individual channel is added. Each add port has optical power regulation provided by a VOA.
- EXP RX port—Receives an optical signal from another 32WSS-L module in the same NE.
- EXP TX port—Sends an optical signal to the other 32WSS-L module within the NE.

- COM TX port—Sends an aggregate optical signal to a booster amplifier card (for example, OPT-BST) for transmission outside of the NE.
- COM RX port—Receives the optical signal from a preamplifier and sends it to the optical splitter.
- DROP TX port—Sends the split-off optical signal that contains drop channels to the 32DMX-L card, where the channels are further processed and dropped.

A terminal site can be configured using only a 32WSS-L card and a 32DMX-L card plugged into the east or west side of the shelf.

The following figure shows the 32WSS-L module front panel and identifies the traffic flow through the ports.

Figure C-18 WSS-L Faceplate and Ports



For the 32WSS-L module, the slot properties pane displays the following properties: Module View, Identification, Optical Channel, Optical Line, Maintenance, Inventory, and Alarm Behavior.

C.2.11.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.11.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-305 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.11.3 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information. The Properties pane contains the following tabs:

- C.2.11.3.1 Parameters Tab, page C-206

- C.2.11.3.2 Warning Thresh 15 Min Tab, page C-207
- C.2.11.3.3 Warning Thresh 1 Day Tab, page C-207
- C.2.11.3.4 Alarm Thresh Tab, page C-207

C.2.11.3.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-306 Field Descriptions for the Parameters Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Power ADD	Displays the input power of the channel that is in ADD.
Path Value Display	Select if the path is in use (Active) or not (Standby) for each channel in ADD.

C.2.11.3.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-307 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.11.3.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-308 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.11.3.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-309 Field Descriptions for the Alarm Thresh Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
Power Add Fail Low	Displays the thresholds of low power failure on the add channel port. The crossing of this threshold generates an LOS-P alarm.

C.2.11.4 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information. The Properties pane contains the following tabs:

- C.2.11.4.1 Parameters Tab, page C-208
- C.2.11.4.2 Warning Thresh 15 Min Tab, page C-208

- C.2.11.4.3 Warning Thresh 1 Day Tab, page C-208
- C.2.11.4.4 Alarm Thresh Tab, page C-209

C.2.11.4.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-310 Field Descriptions for the Parameters Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Power	Shows the current power level per port.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

C.2.11.4.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-311 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.11.4.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-312 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.11.4.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-313 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.

C.2.11.5 Maintenance

The Maintenance Properties pane allows you to assign the optical channel operating mode for each wavelength.

Table C-314 Field Descriptions for the Maintenance Properties Pane

Field	Description
Optical Connector 1 through 5	
Channel Number	Displays the channel number.
OCHNC Wavelength	Displays the wavelength assigned to the channel.
Operating Mode	Select the operating mode to assign to the wavelength: • Not assigned • Ad/drop • Pass-through

C.2.11.6 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-315 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the object that can be inventoried.
Value	Displays the value of the object that is inventoried.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

C.2.11.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-316 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.12 Slot Properties—40-WSS-C

The double-slot 40-Channel Wavelength Selective Switch C-Band (40-WSS-C) card switches forty ITU-T 100 GHz-spaced channels and sends them to dedicated output ports. The 40-WSS-C card is bidirectional and optically passive. The card can be installed in slots 1 to 6 and 12 to 17.

The 40-WSS-C features include:

- Receipt of an aggregate DWDM signal into 40 output optical channels from the line receive port (EXP RX) in one direction and from the COM-RX port in the other direction.
- Per-channel optical power monitoring using photodiodes.
- Signal splitting in a 70%-to-30% ratio, sent to the 40-DMX-C card for dropping signals, then to the other 40-WSS-C card.
- Aggregate DWDM signal monitoring and control through a VOA. In the case of electrical power failure, the VOA is set to its maximum attenuation for safety purposes. A manual VOA setting is also available.
- Support for the Even and Odd band. 40-WSS cards provisioned in the Even band support only card provisioning; circuits, links, and patchcords are not supported. The card name depends on the wavelength that is provisioned on the card. The card name is 40-WSS-CE if the supported wavelength belongs to the Even band and 40-WSS-CO if the supported wavelength belongs to the

Odd band. When an actual card is plugged into a slot where the same card is preprovisioned, an alarm mismatch is raised if there is a conflict between the wavelength set on the preprovisioned card and the wavelength set on the actual card.

Within the 40-WSS-C card, the first arrayed waveguide grating (AWG) opens the spectrum and each wavelength is directed to one of the ports of a 1x2 optical switch. There, via MetroPlanner, the same wavelength can be passed through or stopped. If the pass-through wavelength is stopped, a new channel can be added at the ADD port. The card's second AWG multiplexes all of the wavelengths, and the aggregate signal is output through the COM-TX port.

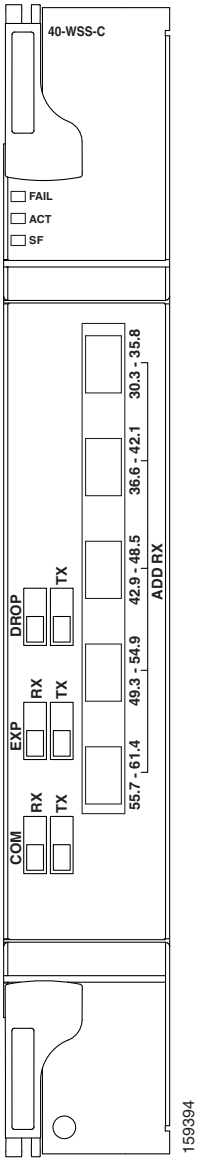
C.2.12.1 40-WSS-C Faceplate Ports

The 40-WSS-C has eight types of ports:

- ADD RX ports (1 to 40)—Used for adding channels. Each add channel is associated with an individual switch element that selects whether an individual channel is added. Each add port has optical power regulation provided by a VOA. The five connectors on the card faceplate accept MPO cables for the client input interfaces. MPO cables break out into eight separate cables. The 40-WSS-C card also has one LC-PC-II optical connector for the main input.
- COM RX—Receives the optical signal from a preamplifier (such as the OPT-PRE) and sends it to the optical splitter.
- COM TX—Sends an aggregate optical signal to a booster amplifier card (for example, the OPT-BST card) for transmission outside of the NE.
- EXP RX port—Receives an optical signal from another 40-WSS-C card in the same NE.
- EXP TX—Sends an optical signal to the other 40-WSS-C card within the NE.
- DROP TX port—Sends the split-off optical signal that contains drop channels to the 40-DMX-C card, where the channels are further processed and dropped.

The following figure shows the 40-WSS-C card faceplate.

Figure C-19 40-WSS-C Faceplate



For the 40-WSS-C module, the slot properties pane displays the following properties: Module View, Identification, Optical Channel, Optical Line, Maintenance, Inventory, and Alarm Behavior.

C.2.12.2 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.12.3 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-317 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.12.4 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information. The Properties pane contains the following tabs:

- C.2.12.4.1 Parameters Tab, page C-213
- C.2.12.4.2 Warning Thresh 15 Min Tab, page C-214
- C.2.12.4.3 Warning Thresh 1 Day Tab, page C-215
- C.2.12.4.4 Alarm Thresh Tab, page C-215

C.2.12.4.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-318 Field Descriptions for the Parameters Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Displays the status of the line. Values are: • OOS_DSBLD—Out of Service–Disabled. Unable to carry traffic. • IS_AINS—In Service–Auto In Service. Alarm reporting is suppressed, but traffic is carried. • OOS_MT—Out of Service–Maintenance. Alarm reporting is suppressed, but traffic is carried and loopbacks are allowed.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.
Path Value	Select if the path is in use (Active) or not (Standby) for each channel in ADD.

C.2.12.4.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-319 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.

Table C-319 Field Descriptions for the Warning Thresh 15 Min Tab (continued)

Field	Description
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.12.4.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-320 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.12.4.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-321 Field Descriptions for the Alarm Thresh Tab

Field	Description
Optical Connector 1 through Optical Connector 5	
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.

C.2.12.5 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information. The Properties pane contains the following tabs:

- C.2.12.5.1 Parameters Tab, page C-215
- C.2.12.5.2 Warning Thresh 15 Min Tab, page C-216
- C.2.12.5.3 Warning Thresh 1 Day Tab, page C-216
- C.2.12.5.4 Alarm Thresh Tab, page C-217

C.2.12.5.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-322 Field Descriptions for the Parameters Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Input Express, Output Com, Input Line, Output Line, Input OSC, Output OSC, or Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Displays the status of the line. Values are: • OOS_DSBLD—Out of Service–Disabled. Unable to carry traffic. • IS_AINS—In Service–Auto In Service. Alarm reporting is suppressed, but traffic is carried. • OOS_MT—Out of Service–Maintenance. Alarm reporting is suppressed, but traffic is carried and loopbacks are allowed.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

C.2.12.5.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-323 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.12.5.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-324 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.12.5.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-325 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure settings.

C.2.12.6 Maintenance

The Maintenance Properties pane allows you to assign the optical channel operating mode for each wavelength.

Table C-326 Field Descriptions for the Maintenance

Field	Description
Optical Connector 1 through 5	
Channel Number	Displays the channel number.
OCHNC Wavelength	Displays the wavelength assigned to the channel.
Operating Mode	Select the operating mode to assign to the wavelength: • Not assigned • Add/drop • Pass-through

C.2.12.7 Inventory

The Inventory Properties pane allows you to view card inventory information.

Table C-327 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the object that can be inventoried.
Value	Displays the value of the object that is inventoried.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

C.2.12.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-328 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Port Number	Displays the port number.
Alarm Profile	Choose an alarm profile for all ports.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.13 Slot Properties—40-WXC-C

The double-slot 40-Channel Wavelength Cross-Connect C-Band (40-WXC-C) card selectively sends any wavelength combination coming from nine input ports to a common output port. The device can manage up to 41 channels spaced at 100 GHz on each port according to the channel grid. Each channel can be selected from any input. The card is optically passive and provides bidirectional capability. It can be installed in slots 1 to 5 and 12 to 16.

The 40-WXC-C card provides the following features:

- Demultiplexing, selection, and multiplexing of DWDM aggregate signals from input ports to a common output port.
- Aggregate DWDM signal monitoring and control through a VOA.
- VOAs are deployed in every channel path in order to regulate the channel's optical power. In case of an electrical power failure, VOAs are set to their maximum attenuation value, or to a fixed and configurable one. The VOA can also be set manually.
- Per-channel optical power monitoring using photodiodes.

The 40-WXC-C card acts as a selector element with the following characteristics:

- Selects a wavelength from one input port and passes the wavelength through to the common output port. Simultaneously, the card can block the same wavelength coming from the other eight input ports.
- Stops wavelengths from all nine input ports.
- Monitors optical power and controls path attenuation using per-channel VOA independently of the wavelength input-to-output port connection.

C.2.13.1 40-WXC-C Faceplate Ports

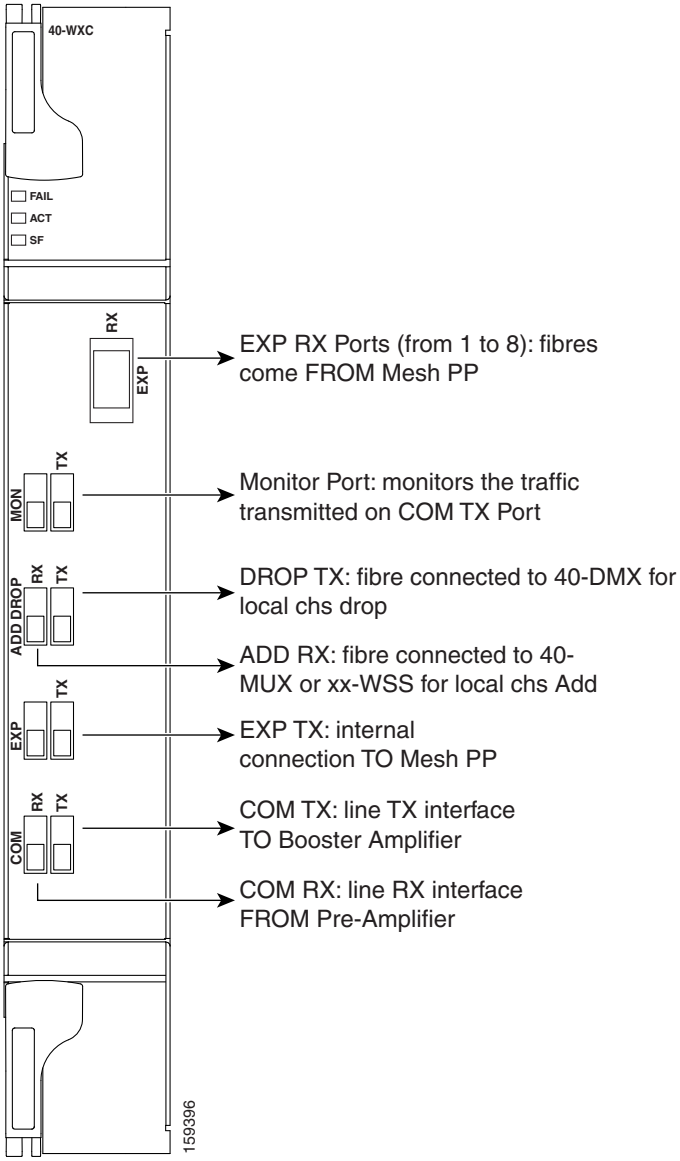
The 40-WXC-C card has six types of ports:

- COM RX—Receives the optical signal from a preamplifier (such as the OPT-PRE card) and sends it to the optical splitter.

- COM TX—Sends an aggregate optical signal to a booster amplifier card (for example, the OPT-BST card) for transmission outside of the NE.
- EXP TX—Sends an optical signal to the other 40-WXC-C card within the NE.
- MON TX—Refers to the optical service channel (OSC) monitor port.
- ADD/DROP RX—Provides 40 input optical channels. These ports are connected using five physical receive connectors on the card's front panel that accept MPO cables for the client input interfaces. MPO cables break out into eight separate cables.
- ADD/DROP TX—Sends the split-off optical signal that contains drop channels to the 40-WXC-C card, where the channels are further processed and dropped.

The following figure shows the 40-WXC-C card faceplate.

Figure C-20 40-WXC-C Faceplate



For the 40-WXC-C module, the slot properties pane displays the following properties: Module View, Identification, Optical Channel, WXC Line, Optical Line, Maintenance, Inventory, and Alarm Behavior.

C.2.13.2 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.13.3 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-329 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.

Table C-329 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Side	Displays side settings. Automatic node setup (ANS) assumes that every DWDM port has a line direction parameter that is either side A to side B or side B to side A. ANS automatically configures the mandatory optical connections according to following main rules: • Cards equipped in slots 1 to 5 have a drop section facing side A. • Cards equipped in slots 12 to 16 have a drop section facing side B for DWDM nodes in nonmesh networks. • Nodes in DWDM mesh networks have sides A, B, C, D, E, F, G, or H.

C.2.13.4 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information. The Properties pane contains the following tabs:

- C.2.13.4.1 Parameters Tab, page C-221
- C.2.13.4.2 OCH Thresh 15 Min Tab, page C-222
- C.2.13.4.3 OCH Thresh 1 Day Tab, page C-222
- C.2.13.4.4 Alarm Thresh Tab, page C-222

C.2.13.4.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-330 Field Descriptions for the Parameters Tab

Field	Description
Circuit Name	Displays the name of the circuit.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
State	Displays the status of the line. Values are: • OOS_DSBLD—Out of Service–Disabled. Unable to carry traffic. • IS_AINS—In Service–Auto In Service. Alarm reporting is suppressed, but traffic is carried. • OOS_MT—Out of Service–Maintenance. Alarm reporting is suppressed, but traffic is carried and loopbacks are allowed.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
From	Shows the incoming Input Express (EXP_RX) port.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.

Table C-330 Field Descriptions for the Parameters Tab (continued)

Field	Description
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.

C.2.13.4.2 OCH Thresh 15 Min Tab

The OCH Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-331 Field Descriptions for the OCH Thresh 15 Min Tab

Field	Description
Circuit Name	Displays the name of the circuit.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.13.4.3 OCH Thresh 1 Day Tab

The OCH Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-332 Field Descriptions for the OCH Thresh 1 Day Tab

Field	Description
Circuit Name	Displays the name of the circuit.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.13.4.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-333 Field Descriptions for the Alarm Thresh Tab

Field	Description
Circuit Name	Displays the name of the circuit.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Power Failure Low (dBm)	Allows you to set the low power failure settings.
Power Degrade High (dBm)	Allows you to set the high power settings.
Power Degrade Low (dBm)	Allows you to set the low power settings.

C.2.13.5 WXC Line

The WXC Line Properties pane allows you to view and update 40-WXC-C line threshold information.

Table C-334 Field Descriptions for the WXC Line

Field	Description
Parameters	
Port Number	Displays the card port number.
Type	Identifies the type of port, such as Input Line, Output Line, Input COM, Output COM, Input Express, Output Express, Input OSC, Output OSC, Add, Drop, or Pass-through.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Displays the port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • unlocked—Puts the port in service. The port service state changes to unlocked-enabled. • unlocked,automaticInService—Puts the port in automatic in-service. The port service state changes to unlocked-disabled,automaticInService. • locked-disabled—Removes the port from service and disables it. The port service state changes to locked-enabled,disabled. • locked,maintenance—Removes the port from service for maintenance. The port service state changes to locked-enabled,maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.2.13.6 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information. The Properties pane contains the following tabs:

- C.2.13.6.1 Parameters Tab, page C-223
- C.2.13.6.2 Warning Thresh 15 Min Tab, page C-224
- C.2.13.6.3 Warning Thresh 1 Day Tab, page C-224
- C.2.13.6.4 Alarm Thresh Tab, page C-225

C.2.13.6.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-335 Field Descriptions for the Parameters Tab

Field	Description
Port Number	Displays the card port number.
Type	Identifies the type of port, such as Input Express, Output Express, Input COM, Output COM, Input Line, Output Line, Input OSC, Output OSC, or Drop.

Table C-335 Field Descriptions for the Parameters Tab (continued)

Field	Description
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Displays the port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • unlocked—Puts the port in service. The port service state changes to unlocked-enabled. • unlocked,automaticInService—Puts the port in automatic in-service. The port service state changes to unlocked-disabled,automaticInService. • locked-disabled—Removes the port from service and disables it. The port service state changes to locked-enabled,disabled. • locked,maintenance—Removes the port from service for maintenance. The port service state changes to locked-enabled,maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.
AINS Soak	Displays the automatic in-service soak time. The duration of time that must pass with an uninterrupted signal before the traffic/termination transitions to the unlocked-enabled service state.

C.2.13.6.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-336 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.13.6.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-337 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.13.6.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-338 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure settings.

C.2.13.7 Maintenance

The Maintenance Properties pane allows you to display the insert and return values for each wavelength.

Table C-339 Field Descriptions for the Maintenance

Field	Description
Insert Value	
Target Power	Displays the default target power. The value is retrieved from the ANS parameter for the side where the 40-WXC-C card is inserted. You can edit this field with a new value as needed.
Input Port	Displays the input port number.
VOA Attenuation	Displays the default VOA attenuation value. The value is retrieved from the ANS parameter for the side where the 40-WXC-C card is inserted. You can edit this field with a new value as needed.
Wavelength	Displays the wavelength assigned to the channel. Maintenance mode is known as lambda zero. You can use this mode when you do not want to use one of the 40 system channels. For example, maintenance can be used in a degree upgrade when the system is up and running. Also, during installation, you can use maintenance or one of the 40 system channels, depending on your site requirements.
Return Value COM-TX on Selected Wavelength	
Actual Power	Displays the value returned by the card. This field indicates that the power on the cross-connection (also called OCHTerm) was created with the selected lambda and the incoming port that is calculated on the COM-TX port.
Refresh	Updates the actual power that is displayed in the Actual Power field.
Delete	Stops the unit from working in maintenance mode for the given port and lambda. You must click Delete when maintenance is complete. Exiting this screen without clicking Delete does not stop the maintenance mode.

C.2.13.8 Inventory

The Inventory Properties pane allows you to view card inventory information.

Table C-340 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the object that can be inventoried.
Value	Displays the value of the object that is inventoried.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

C.2.13.9 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-341 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Port Number	Displays the port number.
Alarm Profile	Choose an alarm profile for all ports.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.14 Slot Properties—80-WXC-C

The double-slot 80-Channel Wavelength Cross-Connect C-Band (80-WXC-C) card selectively sends any wavelength combination coming from nine input ports to a common output port. The device can manage up to 80 channels spaced at 50 GHz on each port according to the channel grid. Each channel can be selected from any input. The card is optically passive and provides bidirectional capability.

These cards can only be installed in the following slots:

- 1 to 5 and 12 to 16 on the Cisco ONS 15454 M2 chassis
- 2 to 6 on the Cisco ONS 15454 M6 chassis

Note The 80-WXC-C is meant to be used in conjunction with the following:

- Passive (athermal) ONS 15216 odd/even multiplexer/demultiplexer 40-channel patch panels
- ONS 15216 multiplexer/demultiplexer patch panel 50-GHz interleaver/deinterleaver modules

Prime Optical does not manage these devices.

The 80-WXC-C card provides the following features:

- Card mode can be set to multiplexer, de-multiplexer, or bidirectional.
- When used in the multiplexer or bidirectional mode, the 80-WXC-C card allows selection of a single wavelength or any combination of wavelengths from any of the nine input ports to the common output port.
- VOAs are deployed in every channel path in order to regulate the channel's optical power. In case of an electrical power failure, VOAs are set to their maximum attenuation value, or to a fixed and configurable one. The VOA can also be set manually.

The 80-WXC-C card acts as a selector element with the following characteristics:

- Selects a wavelength from nine input ports and passes the wavelength through to the common output port. Simultaneously, the card can block the same wavelength coming from the other input ports.
- Stops wavelengths from all nine input ports.
- Monitors optical power and controls path attenuation using per-channel VOA independently of the wavelength input-to-output port connection.

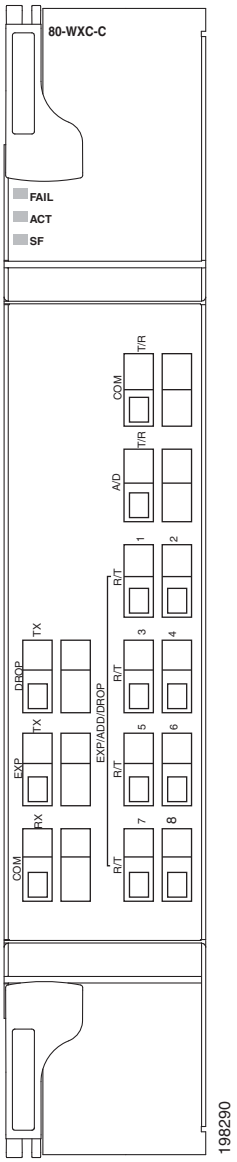
C.2.14.1 80-WXC-C Faceplate Ports

The 80-WXC-C card has 14 types of ports:

- EXPRESS/ADD/DROP T/R (1 to 8)—Functions as a EXP port in the bidirectional mode, as a ADD port in the multiplexer mode, and as a DROP port in the demultiplexer mode.
- MON—Monitors power on the COM T/R port.
- COM RX—Receives the optical signal from a preamplifier (such as the OPT-PRE card) and sends it to the optical splitter.
- DROP TX—Sends the split-off optical signal that contains drop channels to the 80-WXC-C card, where the channels are further processed and dropped.
- EXP TX—Sends the split-off optical signal that contains pass-through channels to the other side of the NE.
- COM T/R—Functions as a COM TX port in the multiplexer mode and as a COM RX port in the demultiplexer mode. The COM port is a bidirectional port.
- ADD/DROP T/R—Functions as an ADD RX port in the bidirectional and multiplexer mode and as a DROP port in the demultiplexer mode.

The following figure shows the 80-WXC-C card faceplate.

Figure C-21 80-WXC-C Faceplate



For the 80-WXC-C module, the slot properties pane displays the following properties: Module View, Identification, Inventory, Alarm Behavior, Card, Maintenance, Optical Channel, Optical Line, Wavelength Power, and WXC Line.

C.2.14.2 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.14.3 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-342 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Side	Displays side settings. Automatic node setup (ANS) assumes that every DWDM port has a line direction parameter that is either side A to side B or side B to side A. ANS automatically configures the mandatory optical connections according to following main rules: • Cards equipped in slots 1 to 5 have a drop section facing side A. • Cards equipped in slots 12 to 16 have a drop section facing side B for DWDM nodes in nonmesh networks. • Nodes in DWDM mesh networks have sides A, B, C, D, E, F, G, or H.

C.2.14.4 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-343 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.

Table C-343 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.14.5 Card

The Card Properties pane allows you to view and update card information.

Table C-344 Field Descriptions for the Card Properties Pane

Field	Descriptions
Card Mode	Allows you to select a card mode. Select from: • Bidirectional • Multiplexer • De-multiplexer

C.2.14.6 Inventory

The Inventory Properties pane allows you to view card inventory information.

Table C-345 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.14.7 Maintenance

The Maintenance Properties pane allows you to display the insert and return values for each wavelength.

Table C-346 Field Descriptions for the Maintenance Properties Pane

Field	Description
Insert Value	
Target Power (dBm)	Displays the default target power. The value is retrieved from the ANS parameter for the side where the 80-WXC-C card is inserted. You can edit this field with a new value as needed.
Input Port	Displays the input port number.
Wavelength	Displays the wavelength assigned to the channel. Maintenance mode is known as lambda zero. You can use this mode when you do not want to use one of the 80 system channels. For example, maintenance can be used in a degree upgrade when the system is up and running. Also, during installation, you can use maintenance or one of the 80 system channels, depending on your site requirements.
Return Value COM on Selected Wavelength	
Actual Power (dBm)	Displays the value returned by the card. This field indicates that the power on the cross-connection (also called OCHTerm) was created with the selected lambda and the incoming port that is calculated on the COM port.
Refresh	Updates the actual power that is displayed in the Actual Power field.
Delete	Stops the unit from working in maintenance mode for the given port and lambda. You must click Delete when maintenance is complete. Exiting this screen without clicking Delete does not stop the unit from working in maintenance mode.

C.2.14.8 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information. The Properties pane contains the following tabs:

- C.2.14.8.1 Parameters Tab, page C-231
- C.2.14.8.2 OCH Thresh 15 Min Tab, page C-232
- C.2.14.8.3 OCH Thresh 1 Day Tab, page C-233
- C.2.14.8.4 Alarm Thresh Tab, page C-233

C.2.14.8.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors. To view optical channels, select the wavelength from the wavelength drop-down list and click **Retrieve**.

Note Wavelengths with two asterisks (**) denote available optical channels.

Table C-347 Field Descriptions for the Parameters Tab

Field	Description
Circuit Name	Displays the name of the circuit.
State	Displays the status of the line. Values are: • OOS_DSBLD—Out of Service–Disabled. Unable to carry traffic. • IS_AINS—In Service–Auto In Service. Alarm reporting is suppressed, but traffic is carried. • OOS_MT—Out of Service–Maintenance. Alarm reporting is suppressed, but traffic is carried and loopbacks are allowed.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
From	Shows the incoming Input Express (EXP_RX) port.
Power From	Displays the power of the port from which the circuit starts.
To	Displays the port to which the circuit is connected.
Power To	Displays the power of the port to which the circuit is connected.
Force Channel	Allows you to start the channel by moving the VOA from Open to Closed loop. You can force VOA only when the Force Channel Status is in the Unlocked state.
Force Channel Status	Displays the channel status. The different statuses are: • Unlocked—Can force channel startup. • Locked—Cannot force channel startup; the device is under the control of some other function, such as Optical safety. • Forced—Channel startup has already been forced.
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).

C.2.14.8.2 OCH Thresh 15 Min Tab

The OCH Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation. To view optical channels, select both wavelength and port type from the drop-down lists and click **Retrieve**.

Note Wavelengths with two asterisks (**) denote available optical channels.

Table C-348 Field Descriptions for the OCH Thresh 15 Min Tab

Field	Description
Circuit Name	Displays the name of the circuit.
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.14.8.3 OCH Thresh 1 Day Tab

The OCH Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation. To view optical channels, select both wavelength and port type from the drop-down lists and click **Retrieve**.

Note Wavelengths with two asterisks (**) denote available optical channels.

Table C-349 Field Descriptions for the OCH Thresh 1 Day Tab

Field	Description
Circuit Name	Displays the name of the circuit.
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.14.8.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation. To view optical channels, select both wavelength and port type from the drop-down lists and click **Retrieve**.

Note Wavelengths with two asterisks (**) denote available optical channels.

Table C-350 Field Descriptions for the Alarm Thresh Tab

Field	Description
Circuit Name	Displays the name of the circuit.
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.

Table C-350 Field Descriptions for the Alarm Thresh Tab (continued)

Field	Description
Power Failure Low (dBm)	Allows you to set the low power failure settings.
Power Degrade High (dBm)	Allows you to set the high power settings.
Power Degrade Low (dBm)	Allows you to set the low power settings.

C.2.14.9 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information. The Properties pane contains the following tabs:

- C.2.14.9.1 Parameters Tab, page C-234
- C.2.14.9.2 Warning 15 Min Tab, page C-235
- C.2.14.9.3 Warning Thresh 1 Day Tab, page C-235
- C.2.14.9.4 Alarm Thresh Tab, page C-235

C.2.14.9.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-351 Field Descriptions for the Parameters Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Displays the port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance • Locked, disabled • Locked, maintenance • Unlocked, automatic in service
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.
Active Channels	Indicates how many channels the card/port is carrying. The value generally reflects the number of provisioned channels passing through the port.
VOA Mode	Shows the current functional mode of the VOA. The value is not provisionable and is read from the card.
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.

Table C-351 Field Descriptions for the Parameters Tab (continued)

Field	Description
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation reference value of the VOA. The value is established by the manufacturer.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, per channel, if necessary. The sum of the Power Reference and Power Calibration, for each single channel, defines the Power Set Point.

C.2.14.9.2 Warning 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-352 Field Descriptions for the Warning 15 Min Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.

C.2.14.9.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-353 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.

C.2.14.9.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-354 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port.
Power Failure Low	Allows you to set the low power failure threshold.

C.2.14.10 Wavelength Power

The Wavelength Power Properties pane displays wavelength power data. To view optical channels, select the port type from the port drop-down list and click **Retrieve**.

Table C-355 Field Descriptions for the Wavelength Power Properties Pane

Field	Description
Wavelength	Displays the wavelength number.
Measured Power	Displays the power.
Status	Displays the status.
Used	Whether or not the wavelength is being used. Values are Yes and No.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.14.11 WXC Line

The WXC Line Properties pane allows you to view and update 80-WXC-C line threshold information. The Properties pane contains the following tabs:

- C.2.14.11.1 Parameters Tab, page C-236
- C.2.14.11.2 Warning Thresh 15 Min Tab, page C-237
- C.2.14.11.3 Warning Thresh 1 Day Tab, page C-237
- C.2.14.11.4 Alarm Thresh Tab, page C-237

C.2.14.11.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-356 Field Descriptions for the WXC Line Tab

Field	Description
Port Number	Displays the card port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Add, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.

Table C-356 Field Descriptions for the WXC Line Tab (continued)

Field	Description
State	Displays the port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance • Locked, disabled • Locked, maintenance • Unlocked, automatic in service
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.

C.2.14.11.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-357 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port.
Power Low (dBm)	Allows you to set the low power threshold.
Power High (dBm)	Allows you to set the high power threshold.

C.2.14.11.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-358 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port.
Power Low (dBm)	Allows you to set the low power threshold.
Power High (dBm)	Allows you to set the high power threshold.

C.2.14.11.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-359 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port.
Power Failure Low (dBm)	Allows you to set the low power failure threshold.

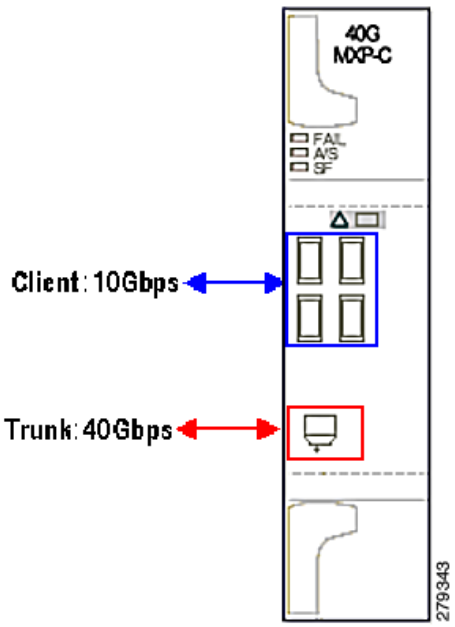
Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.15 Slot Properties—40G-MXP-C

The slot properties pane displays information about the Cisco ONS 15454 MSTP slot that is selected in the NE Explorer tree. Use this properties pane to change the card details.

The following figure shows the 40-MXP-C card faceplate.

Figure C-22 40G-MXP-C Faceplate



The following are the main features of the card:

- The card is two slots wide.
- Overclock mode is available on the trunk port.

- The card has four client ports and one trunk port. The client operates with OC-192/STM 64, 10GE, 10G FC, OTU2, or Fiber Channel 8 Gb (FC8G) payloads. All client ports are pluggable, and there is no default value associated with the client port. The four client ports can have different payloads. G.709 is always enabled on all clients ports and cannot be disabled.
- The trunk port is DWDM-capable. G.709 is enabled on the trunk port by default. Besides the Standard mode, the trunk port can also be set for Overclock mode. If you enable the Overclock option, the trunk can operate with FC10G or OTU2 payloads.
- Links have Y-cable protection.
- PPM supports the following rates:
  - On client ports: TEN_GE, FC_10G, OC_192, FC8G, and OTU2
  - On the trunk port: FORTY_GE and OC_768.
- Regeneration peer group is supported.

C.2.15.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.15.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-360 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

Table C-360 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.15.3 Card

The card Properties pane allows you to view and update card information.

Table C-361 Field Descriptions for the Card Properties Pane

Field	Description
Card Mode	Allows you to set the card mode.
Regeneration Peer Slot	Allows you to select similar cards so that you can configure a peer group.
Regeneration Group Name	Allows you to set the name of the peer group.

C.2.15.4 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-362 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual plugin module that is installed in the slot.
Equipment State	Displays the equipment state.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the PPM number and port number.
Rate	Displays the port rate. To enable FC 10G payload, enable Overclock mode in the **Line** Properties pane > **Ports** tab.

C.2.15.4.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. You can create no more than four PPMs at a time. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.15.5 Line

The Line Properties pane allows you to configure line information.

If the card is installed on an ONS 15454 SONET NE, the Properties pane contains the following tabs:

- C.2.15.5.1 Section Trace Tab, page C-241
- C.2.15.5.2 SONET Line Tab, page C-241
- C.2.15.5.3 Section Thresh 15 Min Tab, page C-242
- C.2.15.5.4 Section Thresh 1 Day Tab, page C-242
- C.2.15.5.5 Line Thresh 15 Min Tab, page C-243
- C.2.15.5.6 Line Thresh 1 Day Tab, page C-243
- C.2.15.5.7 RMON Tab, page C-244
- C.2.15.5.8 Ethernet Tab, page C-244
- C.2.15.5.9 Ports Tab, page C-245

C.2.15.5.1 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the card.

Table C-363 Field Descriptions for the Section Trace Tab

Field	Description
Port No.	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
Default button	Resets the value of the port parameters to the default value.

C.2.15.5.2 SONET Line Tab

The SONET Line tab allows you to view and change the SONET line settings of the card.

Table C-364 Field Descriptions for the SONET Line Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Termination Mode	Allows you to set the mode of termination.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.

Table C-364 Field Descriptions for the SONET Line Tab (continued)

Field	Description
Type	Defines the port as SONET or SDH.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
AdminSSM	Allows you to override the STU value with one of the following: • PRS—Primary Reference Source (Stratum 1) • STU • ST2—Stratum 2 • ST3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4 • DUS—Do not use for timing synchronization • RES—Reserved; quality level set by user
ProvidesSync	When checked, the card is provisioned as an NE timing reference.

C.2.15.5.3 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the 15-minute section threshold information for the card.

Table C-365 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Port No.	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.15.5.4 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the 1-day section threshold information for the card.

Table C-366 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Port No.	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.

Table C-366 Field Descriptions for the Section Thresh 1 Day Tab (continued)

Field	Description
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.15.5.5 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute line threshold information for the card.

Table C-367 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.15.5.6 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day line threshold information for the card.

Table C-368 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.

Table C-368 Field Descriptions for the Line Thresh 1 Day Tab (continued)

Field	Description
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.15.5.7 RMON Tab

The RMON Thresholds Properties pane allows you to view RMON thresholds for the card.

Table C-369 Field Descriptions for the RMON Tab

Field	Description
Create button	Allows you to create an RMON threshold. For more information, see 6.5.4 Creating RMON Thresholds, page 6-11.
Index Number	Displays the optical port number.
Slot	Displays the slot.
Port	Displays the port.
Variable	Displays the Ethernet threshold variable. The variable depends on the card type.
Alarm Type	Displays the Ethernet threshold alarm type. Values are Rising, Falling, or Rising and Falling.
Sample Type	Displays the Ethernet threshold sample type. Values are Relative and Absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period (sec)	Displays the Ethernet threshold sample period, in seconds.
Rising Thresholds (Count)	Displays a count of the number of times an alarm entry crosses the rising threshold and the entry generates an event.
Falling Thresholds (Count)	Displays a count of the number of times an alarm entry crosses the falling threshold and the entry generates an event.

C.2.15.5.8 Ethernet Tab

The Ethernet tab allows you to view Ethernet line information.

Table C-370 Field Descriptions for the Ethernet Tab

Field	Description
Port Number	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS state.
Max. Size	To permit the acceptance of jumbo-size Ethernet frames, select Jumbo (default).

C.2.15.5.9 Ports Tab

Table C-371 Field Descriptions for the Ports Tab

Field	Description
Port Number	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak (H:M)	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS state.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Squelch Configuration	Allows you to configure the remote client to squelch or send an AIS signal.
Overclock	Allows you to enable or disable Overclock mode. Enable the mode to set the data rate to FC 10G for PPM.
Rx Wavelength	Displays the configuration parameter for modulation/demodulation.

Table C-371 Field Descriptions for the Ports Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.15.6 Path

The Path Properties pane contains the following tabs:

- C.2.15.6.1 SONET Tab, page C-247
- C.2.15.6.2 J1 Path Trace Tab, page C-247

C.2.15.6.1 SONET Tab

The SONET tab allows you to view and change the SONET path settings for the OTU2_XP module.

Table C-372 Field Descriptions for the SONET Tab

Field	Descriptions
Port No.	Displays the port number.
SF BER Level	Sets the signal fail bit error rate.
SD BER Level	Sets the signal degrade bit rate.

Note The SDH tab is displayed if the card is installed on an ONS 15454 SDH NE.

C.2.15.6.2 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and update J1 path trace information.

Table C-373 Field Descriptions for the J1 Path Trace Tab

Field	Descriptions
Modify button	Allows you to open the Modify Trace dialog box, where you can change the section trace information for applicable cards. See 7.2.21 Modifying Traces, page 7-177 for more information.
Port No.	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
Default button	Resets the value of the port parameters to the default value.

Note These properties are affected only when 10GE LAN to WAN card mode is configured.

C.2.15.7 OTN

The OTN Properties pane contains the following tabs:

- C.2.15.7.1 OTN Line Tab, page C-248
- C.2.15.7.2 G.709 Thresh 15 Min Tab, page C-248
- C.2.15.7.3 G.709 Thresh 1 Day Tab, page C-249
- C.2.15.7.4 FEC Thresh 15 Min Tab, page C-250
- C.2.15.7.5 FEC Thresh 1 Day Tab, page C-250

- C.2.15.7.6 Trail Trace Identifier Tab, page C-251

C.2.15.7.1 OTN Line Tab

The OTN Line tab allows you to view and change the OTN line settings of the card.

Table C-374 Field Descriptions for the OTN Line Tab

Field	Description
Port No.	Displays the port number. If you set the payload as OTU2 in the PPM Properties pane, a new port is added to the OTN Line tab.
G.709 OTN	Disables or enables the G.709 OTN feature.
FEC	Disables or enables forward error correction. **Note** OTN must be enabled before you can enable FEC.
SF BER	The signal fail bit error rate.
SD BER	The signal degrade bit error rate.

C.2.15.7.2 G.709 Thresh 15 Min Tab

The G.709 Thresh 15 Min tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information and allows you to change these card threshold values.

Table C-375 Field Descriptions for the G.709 Thresh 15 Min Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.

Table C-375 Field Descriptions for the G.709 Thresh 15 Min Tab (continued)

Field	Description
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.15.7.3 G.709 Thresh 1 Day Tab

The G.709 Thresh 1 Day tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information and allows you to change these card threshold values.

Table C-376 Field Descriptions for the G.709 Thresh 1 Day Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.

Table C-376 Field Descriptions for the G.709 Thresh 1 Day Tab (continued)

Field	Description
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.15.7.4 FEC Thresh 15 Min Tab

The FEC Thresh 15 Min tab allows you to view and change the 15-minute FEC threshold values of the card.

Table C-377 Field Descriptions for the FEC Thresh 15 Min Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.15.7.5 FEC Thresh 1 Day Tab

The FEC Thresh 1 Day tab allows you to view and change the 1-day FEC threshold values of the card.

Table C-378 Field Descriptions for the FEC Thresh 1 Day Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.15.7.6 Trail Trace Identifier Tab

The Trail Trace Identifier tab allows you to provision the trail trace identifier for the card.

Table C-379 Field Descriptions for the Trail Trace Identifier Tab

Field	Description
Modify button	Allows you to open the Modify Trace dialog box, where you can change the section trace information for applicable cards. For more information, see 7.2.21 Modifying Traces, page 7-177.
Port Number	Displays port number information.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.

C.2.15.8 Loopback

The Loopback Properties pane allows you to view and update loopback information.

Table C-380 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The port state must be OOS_MT before you can configure the loopback type.

C.2.15.9 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-381 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur.	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int.	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Status	Indicates whether the laser is currently shut down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.15.10 Optical Thresh

The Optical Thresh Properties pane contains the following tabs:

- C.2.15.10.1 TCA 15 Min Tab, page C-252
- C.2.15.10.2 TCA 1 Day Tab, page C-252
- C.2.15.10.3 Alarm Thresh Tab, page C-253

C.2.15.10.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to view and change the 15-minute TCA settings of the card.

Table C-382 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.15.10.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to view and change the 1-day TCA settings of the card.

Table C-383 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.15.10.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-384 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.15.11 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-385 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
DWDM	
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Table C-385 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Payload	
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
GFP	
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.

C.2.15.12 Protection

The Protection Properties pane allows you to view and update protection group information.

Table C-386 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.

C.2.15.13 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-387 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

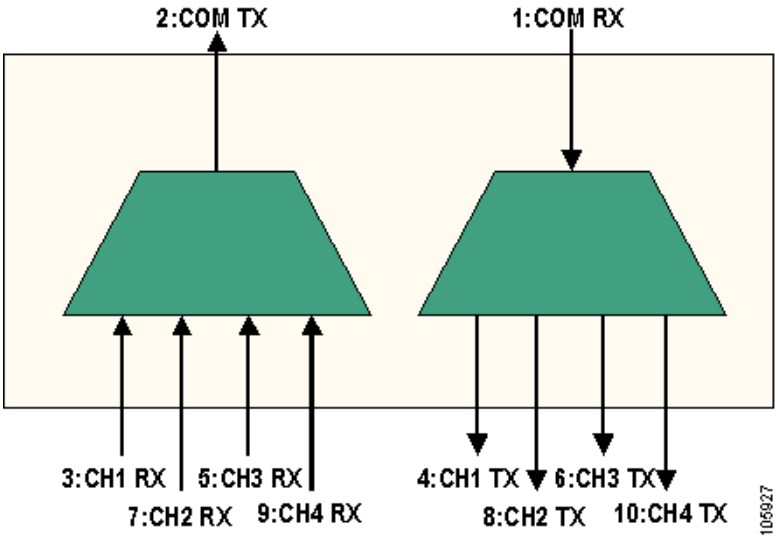
C.2.16 Slot Properties—4MD_xx.x

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The four-channel multiplexer/demultiplexer (4MD_xx.x) module is a single-slot card that features interferential filters with VOAs and photodiode for each input port. Each VOA is software controlled. The 4MD_xx.x card has ten LC-PC-II optical connectors.

The following figure shows the block diagram.

Figure C-23 4MD_xx.x Module



For the 4MD_xx.x module, the slot properties pane displays the following properties: Module View, Identification, Optical Channel, Optical Band, Inventory, and Alarm Behavior.

C.2.16.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.16.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-388 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.

Table C-388 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.16.3 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information.

Table C-389 Field Descriptions for the Optical Channel Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.

Table C-389 Field Descriptions for the Optical Channel Properties Pane (continued)

Field	Description
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.

C.2.16.4 Optical Band

The Optical Band Properties pane allows you to view and update optical band threshold information.

Table C-390 Field Descriptions for the Optical Band Properties Pane

Field	Description
Parameters	
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.

Table C-390 Field Descriptions for the Optical Band Properties Pane (continued)

Field	Description
State	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
VOA Degrade High	The high VOA degrade threshold.
VOA Degrade Low	The low VOA degrade threshold.

C.2.16.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-391 Field Descriptions for the Inventory Properties Pane

Field	Description
Vendor ID	The ID of the vendor.
HW Version	The hardware version number.
IL-REF	The reference insertion loss.
Serial Number	The serial number that is unique to each card.

Table C-391 Field Descriptions for the Inventory Properties Pane (continued)

Field	Description
Firmware Version	The revision number of the software used by the ASIC chip installed on the card.
Part Number	The part number that is printed on the top of the card.

C.2.16.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-392 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

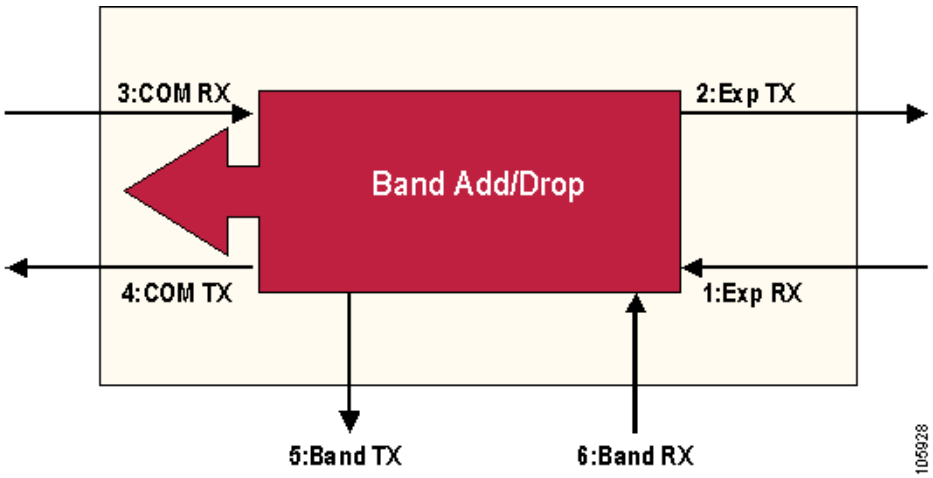
C.2.17 Slot Properties—AD_1B_xx.x

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The AD_1B_xx.x module is a single-slot, one-band OADM filter card that has interferential filters with VOAs and photodiode for each output port. Each VOA is software controlled. The AD_1B_xx.x card features six LC-PC-II optical connectors.

The following figure shows the block diagram.

Figure C-24 AD_1B_xx.x Module



For the AD_1B_xx.x module, the slot properties pane displays the following properties: Module View, Identification, Optical Line, Optical Band, Inventory, and Alarm Behavior.

C.2.17.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.17.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-393 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.

Table C-393 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.17.3 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-394 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	Displays the port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Status	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Attenuation Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) and APC are the only functions that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.

Table C-394 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
VOA Degrade High	Sets the high VOA settings.
VOA Degrade Low	Sets the low VOA settings.

C.2.17.4 Optical Band

The Optical Band Properties pane allows you to view and update optical band threshold information.

Table C-395 Field Descriptions for the Optical Band Properties Pane

Field	Description
Parameters	
Port Number	Displays the port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
Actual Band	Shows the current optical band setting.

Table C-395 Field Descriptions for the Optical Band Properties Pane (continued)

Field	Description
Expected Band	Allows you to set the expected band.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
VOA Degrade High	Allows you to set the high VOA settings.
VOA Degrade Low	Allows you to set the low VOA settings.

C.2.17.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-396 Field Descriptions for the Inventory Properties Pane

Field	Description
Vendor ID	The ID of the vendor.
IL-REF	The reference insertion loss.
Serial Number	The serial number that is unique to each card.
Part Number	The part number that is printed on the top of the card.
HW Version	The hardware version number.
Firmware Version	The revision number of the software used by the ASIC chip installed on the card.

C.2.17.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-397 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.

Table C-397 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

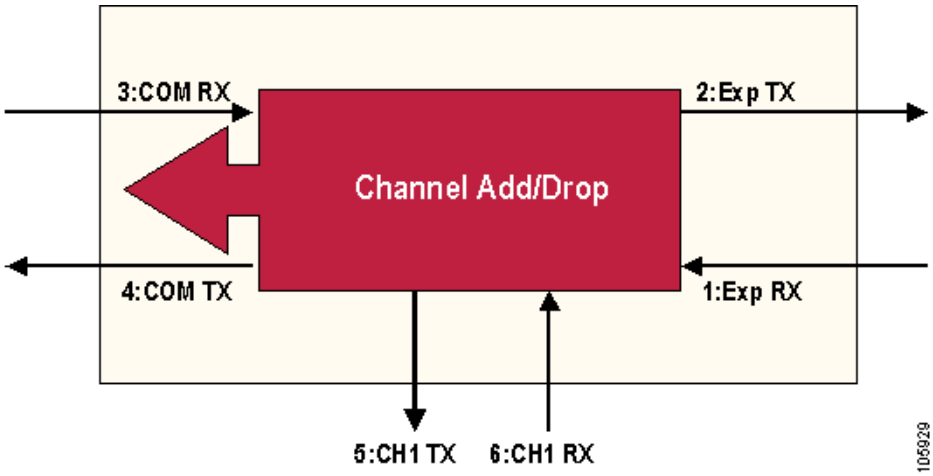
C.2.18 Slot Properties—AD_1C_xx.x

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The AD_1C_xx.x module is a single-slot one-channel OADM filter card that has interferential filters with VOAs and photodiode for each input port. Each VOA is software controlled per channel input power. The AD_1C_xx.x card features six LC-PC-II optical connectors.

The following figure shows the block diagram.

Figure C-25 AD_1C_xx.x Module



For the AD_1C_xx.x module, the slot properties pane displays the following properties: Module View, Identification, Optical Line, Optical Channel, Inventory, and Alarm Behavior.

C.2.18.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.18.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-398 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.18.3 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-399 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	Displays the port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Status	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Attenuation Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
VOA Degrade High	Sets the high VOA settings.
VOA Degrade Low	Sets the low VOA settings.

C.2.18.4 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information.

Table C-400 Field Descriptions for the Optical Channel Properties Pane

Field	Description
Parameters	
Port Number	Displays the port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.

Table C-400 Field Descriptions for the Optical Channel Properties Pane (continued)

Field	Description
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
VOA Degrade High	Allows you to set the high VOA settings.
VOA Degrade Low	Allows you to set the low VOA settings.

C.2.18.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-401 Field Descriptions for the Inventory Properties Pane

Field	Description
Vendor ID	The ID of the vendor.
IL-REF	The reference insertion loss.
Serial Number	The serial number that is unique to each card.
Part Number	The part number that is printed on the top of the card.
HW Version	The hardware version number.
Firmware Version	The revision number of the software used by the ASIC chip installed on the card.

C.2.18.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-402 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

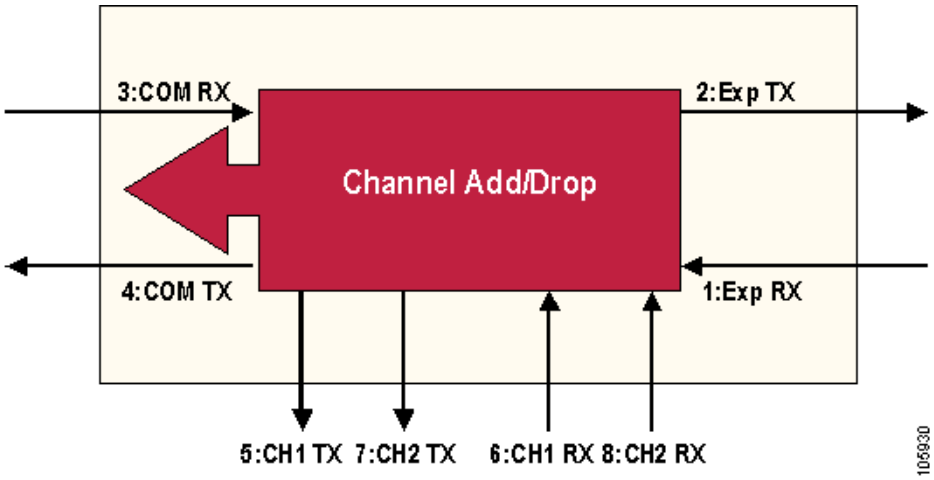
C.2.19 Slot Properties—AD_2C_xx.x

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The AD_2C_xx.x module is a single-slot two-channel OADM filter card that has interferential filters with VOAs and photodiode for each input port. Each VOA is software controlled per channel input power. The AD_2C_xx.x card features eight LC-PC-II optical connectors.

The following figure shows the block diagram.

Figure C-26 AD_2C_xx.x Module



For the AD_2C_xx.x module, the slot properties pane displays the following properties: Module View, Identification, Optical Line, Optical Channel, Inventory, and Alarm Behavior.

C.2.19.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.19.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-403 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.

Table C-403 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.19.3 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-404 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	Displays the port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Status	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).

Table C-404 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
VOA Attenuation Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
VOA Degrade High	Sets the high VOA settings.
VOA Degrade Low	Sets the low VOA settings.

C.2.19.4 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information.

Table C-405 Field Descriptions for the Optical Channel Properties Pane

Field	Description
Parameters	
Port Number	Displays the port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.

Table C-405 Field Descriptions for the Optical Channel Properties Pane (continued)

Field	Description
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
VOA Degrade High	Allows you to set the high VOA settings.
VOA Degrade Low	Allows you to set the low VOA settings.

C.2.19.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-406 Field Descriptions for the Inventory Properties Pane

Field	Description
Vendor ID	The ID of the vendor.
IL-REF	The reference insertion loss.
IL04	The insertion loss between the specified ports.

Table C-406 Field Descriptions for the Inventory Properties Pane (continued)

Field	Description
IL06	The insertion loss between the specified ports.
IL05	The insertion loss between the specified ports.
IL02	The insertion loss between the specified ports.
Serial Number	The serial number that is unique to each card.
Part Number	The part number that is printed on the top of the card.
HW Version	The hardware version number.
Firmware Version	The revision number of the software used by the ASIC chip installed on the card.

C.2.19.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-407 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

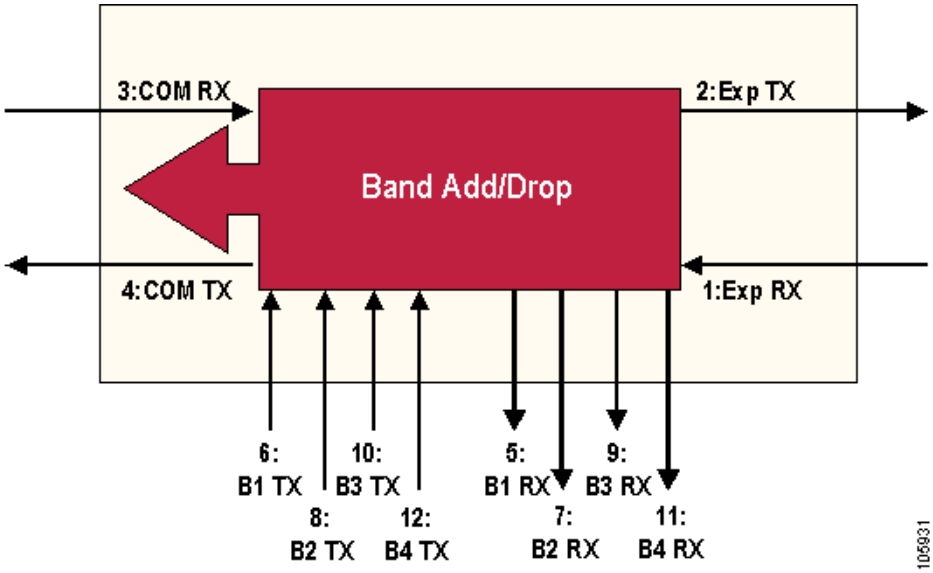
C.2.20 Slot Properties—AD_4B_xx.x

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The AD_4B_xx.x module is a single-slot, four-band OADM filter card that has interferential filters with VOAs and photodiode for each output port. Each VOA is software controlled. The AD_4B_xx.x card features twelve LC-PC-II optical connectors.

The following figure shows the block diagram.

Figure C-27 AD_4B_xx.x Module



For the AD_4B_xx.x module, the slot properties pane displays the following properties: Module View, Identification, Optical Line, Optical Band, Inventory, and Alarm Behavior.

C.2.20.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.20.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-408 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.

Table C-408 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.20.3 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-409 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	Displays the port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Status	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Attenuation Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) and APC are the only functions that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
Warning Thresh 15 Min	

Table C-409 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
VOA Degrade High	Sets the high VOA settings.
VOA Degrade Low	Sets the low VOA settings.

C.2.20.4 Optical Band

The Optical Band Properties pane allows you to view and update optical band threshold information.

Table C-410 Field Descriptions for the Optical Band Properties Pane

Field	Description
Parameters	
Port Number	Displays the port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.

Table C-410 Field Descriptions for the Optical Band Properties Pane (continued)

Field	Description
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
Actual Band	Shows the current optical band setting.
Expected Band	Allows you to set the expected band.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
VOA Degrade High	Allows you to set the high VOA settings.
VOA Degrade Low	Allows you to set the low VOA settings.

C.2.20.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-411 Field Descriptions for the Inventory Properties Pane

Field	Description
Vendor ID	The ID of the vendor.
IL-REF	The reference insertion loss.
Serial Number	The serial number that is unique to each card.
Part Number	The part number that is printed on the top of the card.
HW Version	The hardware version number.
Firmware Version	The revision number of the software used by the ASIC chip installed on the card.

C.2.20.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-412 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

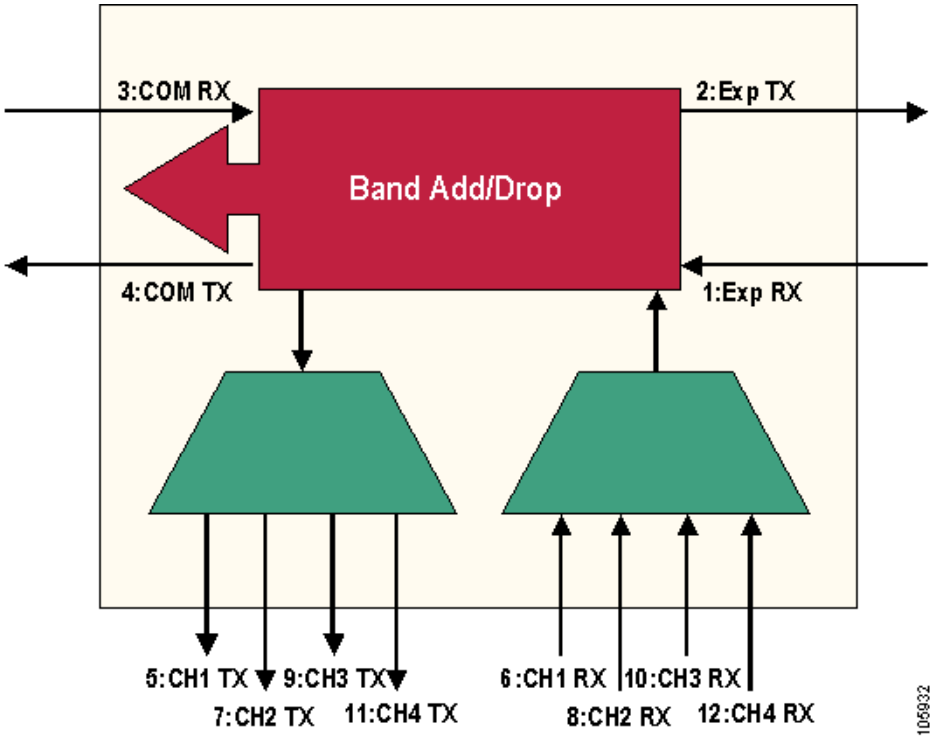
C.2.21 Slot Properties—AD_4C_xx.x

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The AD-4C-xx.x module is a single-slot four-channel OADM filter card that has interferential filters with VOAs and photodiode for each input port. Each VOA is software controlled per channel input power. The AD_4C_xx.x card features twelve LC-PC-II optical connectors.

The following figure shows the block diagram.

Figure C-28 AD_4C_xx.x Module



For the AD_4C_xx.x module, the slot properties pane displays the following properties: Module View, Identification, Optical Line, Optical Channel, Inventory, and Alarm Behavior.

C.2.21.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.21.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-413 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.

Table C-413 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.21.3 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-414 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	Displays the port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Status	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).

Table C-414 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
VOA Attenuation Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
VOA Degrade High	Sets the high VOA settings.
VOA Degrade Low	Sets the low VOA settings.

C.2.21.4 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information.

Table C-415 Field Descriptions for the Optical Channel Properties Pane

Field	Description
Parameters	
Port Number	Displays the port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	Places the port in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state. **Note** You can only change the state from OOS to OOS_MT or vice versa. All other state transitions are controlled by the NE's software.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.

Table C-415 Field Descriptions for the Optical Channel Properties Pane (continued)

Field	Description
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
VOA Attenuation Ref.	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Expected Wavelength	Shows the value of the expected wavelength for the given port. The wavelengths for these ports are not provisionable.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power settings.
Power High	Allows you to set the high power settings.
Alarm Threshold	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure settings.
Power Degrade High	Allows you to set the high power settings.
Power Degrade Low	Allows you to set the low power settings.
VOA Degrade High	Allows you to set the high VOA settings.
VOA Degrade Low	Allows you to set the low VOA settings.

C.2.21.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-416 Field Descriptions for the Inventory Properties Pane

Field	Description
Vendor ID	The ID of the vendor.
IL-REF	The reference insertion loss.
Serial Number	The serial number that is unique to each card.

Table C-416 Field Descriptions for the Inventory Properties Pane (continued)

Field	Description
Part Number	The part number that is printed on the top of the card.
HW Version	The hardware version number.
Firmware Version	The revision number of the software used by the ASIC chip installed on the card.

C.2.21.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-417 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.22 Slot Properties—ADM-10G

The slot properties pane displays information about the ADM-10G card that is selected in the NE Explorer. Use this properties pane to change the card properties.

The ADM-10G card operates on ONS 15454 SONET, ONS 15454 SDH, and DWDM networks to carry optical signals and Gigabit Ethernet signals over DWDM wavelengths for transport. The card aggregates lower bit-rate client SONET or SDH signals (OC-3/STM-1, OC-12/STM-4, OC-48/STM-16, or Gigabit Ethernet) onto a C-band tunable DWDM trunk operating at a higher OC-192/STM-64 rate. In a DWDM network, the ADM-10G card transports traffic over DWDM by mapping Gigabit Ethernet and SONET or SDH circuits onto the same wavelength with multiple protection options.

The ADM-10G card is a double-slot card that can be installed in slots 1 through 5 or 12 through 16 in standard and high-density SONET shelves (15454-SA-ANSI or 15454-SA-HD), the ONS 15454 SDH standard shelf assembly, or the ONS 15454 SDH high-density shelf assembly. Installation is supported in any of these slots.

Note

- The recommended slots are 1, 3, 5 and 12, 14, 16.
- In a single-card configuration, you can configure ports 17, 18, and 19 as trunk ports supporting the OC-192 payload. After it is configured as trunk ports, you can use ports 17, 18 and 19 in circuit, link, and server trail configurations.

Caution Fan-tray assembly 15454E-CC-FTA (ETSI shelf)/15454-CC-FTA (ANSI shelf) must be installed on a shelf where the ADM-10G card is installed.

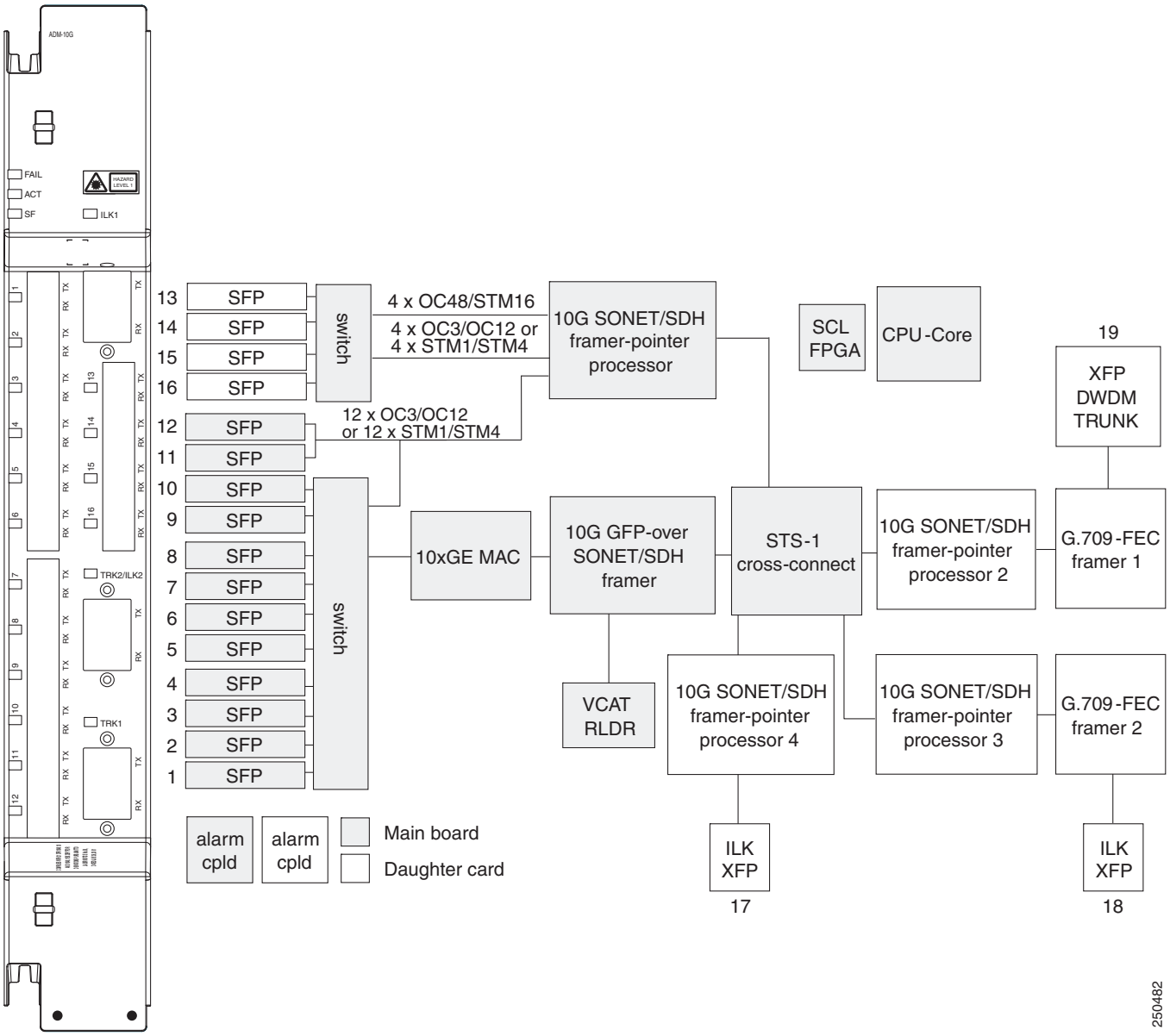
The card is compliant with ITU-T G.825 and ITU-T G.783 for SDH signals. It supports concatenated and nonconcatenated AU-4 mapped STM-1, STM-4, and STM-16 signals as specified in ITU-T G.707. The card also complies with Section 5.6 of Telcordia GR-253-CORE and supports synchronous transport signal (STS) mapped OC-3, OC-12, and OC-48 signals as specified in the standard.

The client SFP and trunk XFP are compliant with interface requirements in Telcordia GR-253-CORE, ITU-T G.957 and/or ITU-T G.959.1, and IEEE 802.3.

The ADM-10G card defaults to GFP-F encapsulation that is compliant with ITU-T G.7041. This mode allows the card to operate with ONS 15310 CL, ONS 15310 MA, or ONS 15454 data cards (for example, ONS 15454 CE-100T-8 or ML1000-2 cards). GFP encapsulation also allows the ADM-10G card to interoperate with other vendors' Gigabit Ethernet interfaces that adhere to the ITU-T G.7041 standard.

The following figure shows the card faceplate.

Figure C-29 ADM-10G Faceplate



C.2.22.1 Module View

The Module View displays a graphic of the ADM-10G card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Moving the mouse pointer over the graphic also displays the alarm counts.) Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.2.22.2 Identification

The Identification Properties pane allows you to view and update identification information.

Table C-418 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Suppress Alarms	When checked, all alarms are suppressed for the port.

C.2.22.3 Card

The Card Properties pane allows you to view and update card information.

Table C-419 Field Descriptions for the Card Properties Pane

Field	Description
Regeneration Peer Slot	Allows you to select like cards so that you can configure a peer group.
Regeneration Group Name	Allows you to set the name of the peer group.

C.2.22.4 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-420 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual plugin module that is installed in the slot.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the PPM number and port number.
Rate	Displays the port rate.

C.2.22.4.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.22.5 Line

The Line Properties pane allows you to configure line settings. If the card is installed on an ONS 15454 SONET NE, the Properties pane contains the subtabs and fields in Table C-421. If the card is installed on an ONS 15454 SDH NE, the Properties pane contains the subtabs and fields in Table C-422.

Table C-421 Field Descriptions for the Line Properties Pane — ONS 15454 SONET

Field	Description
Section Trace	
Port No.	The port number.
Trace Mode	The trace mode (Off or Manual).
Disable AIS/RDI on TIM-S	Disables the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Allows you to select a transmit length for the trace. Values are 1 byte or 16 bytes; the default is 16 bytes.
Current Transmit String	Displays the current transmit string; sets a new transmit string.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
Ports	
Port No.	The port number.
Port Name	The port name.

Table C-421 Field Descriptions for the Line Properties Pane — ONS 15454 SONET (continued)

Field	Description
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Auto in service soak. The determination of duration left before the traffic/termination transitions to IS state. The range is from 15 minutes to 48 hours.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test). ALS is a laser safety feature defined by ITU G.664. ALS can be provisioned on client and trunk ports for SONET and SDH payload types only.

Table C-421 Field Descriptions for the Line Properties Pane — ONS 15454 SONET (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance) • CWDM • DWDM
Wavelength	Allows you to provision the wavelength frequency.
SONET Line	
Port No.	The port number.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	The port type (SONET).
ProvidesSync	When checked, the card is provisioned as an NE timing reference.

Table C-421 Field Descriptions for the Line Properties Pane — ONS 15454 SONET (continued)

Field	Description
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Admin SSM	Allows you to override the STU value with one of the following: • PRS—Primary Reference Source (Stratum 1) • STU • ST2—Stratum 2 • ST3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4 • DUS—Do not use for timing synchronization • RES—Reserved; quality level set by user
Ethernet	
Port No.	The port number of the client port.
MTU	Maximum transmission unit (MTU). The largest acceptable packet size configured for that port. The default value is 1548.
Mode	Values are 1000 Mb/s or Auto.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Framing	Shows the encapsulation type. Values are: • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices.
CRC Encap	Shows the cyclic redundancy check (CRC) encapsulation size. Values are 32-bit and None.
Section Thresh 15 Min - Near End	
Port No.	The port number.
CV-S	Coding violations section.
ES-S	Errored seconds section.
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Section Thresh 1 Day - Near End	
Port No.	The port number.
CV-S	Coding violations section.
ES-S	Errored seconds section.
SES-S	Severely errored seconds section.

Table C-421 Field Descriptions for the Line Properties Pane — ONS 15454 SONET (continued)

Field	Description
SEFS-S	Severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Line Thresh 15 Min - Near End, Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Failure count line.
PSC	Protection Switching Count (PSC) is a count of the number of times service switches from a working port to a protection port, plus the number of times service switches back to the working port. For a protection port, PSC is a count of the number of times service switches to a working port from a protection port, plus the number of times service switches back to the protection port.
PSD	Protection Switching Duration (PSD) applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, PSD is a count of the seconds that the line was used to carry service.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Line Thresh 1 Day - Near End, Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Failure count line.
PSC	Protection Switching Count (PSC) is a count of the number of times service switches from a working port to a protection port, plus the number of times service switches back to the working port. For a protection port, PSC is a count of the number of times service switches to a working port from a protection port, plus the number of times service switches back to the protection port.
PSD	Protection Switching Duration (PSD) applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, PSD is a count of the seconds that the line was used to carry service.
Reset to Defaults button	Resets the value of the port parameters to the default value.
RMON Thresholds	
Index No.	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.

Table C-421 Field Descriptions for the Line Properties Pane — ONS 15454 SONET (continued)

Field	Description
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period (sec)	Displays the sample period, in seconds.
Rising Thresholds (count)	Displays the number of occurrences for the rising threshold.
Falling Thresholds (count)	Displays the number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold.
STS	
STS Number	Displays the synchronous transport signal number information.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.

Table C-422 Field Descriptions for the Line Properties Pane — ONS 15454 SDH

Field	Description
Section Trace	
Port No.	The port number.
Trace Mode	The trace mode (Off or Manual).
Disable AIS/RDI on TIM-S	Disables the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Allows you to select a transmit length for the trace. Values are 1 byte or 16 bytes; the default is 16 bytes.
Current Transmit String	Displays the current transmit string; sets a new transmit string.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
Ports	
Port No.	The port number.
Port Name	The port name.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

Table C-422 Field Descriptions for the Line Properties Pane — ONS 15454 SDH (continued)

Field	Description
AINS Soak	Auto in service soak. The determination of duration left before the traffic/termination transitions to IS state. The range from is 15 minutes to 48 hours.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test). ALS is a laser safety feature defined by ITU G.664. ALS can be provisioned on client and trunk ports for SONET and SDH payload types only.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance) • CWDM • DWDM
Wavelength	Allows you to provision the wavelength frequency.
SDH Line	
Port No.	The port number.
SD BER	Sets the signal degrade bit error rate.

Table C-422 Field Descriptions for the Line Properties Pane — ONS 15454 SDH (continued)

Field	Description
SF BER	Sets the signal fail bit error rate.
Type	The port type (SDH).
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Admin SSM	Allows you to override the STU value with one of the following: • G811 • STU • G812T • G812L • SETS • DUS
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Ethernet	
Port No.	The port number of the client port.
MTU	Maximum transmission unit (MTU). The largest acceptable packet size configured for that port. Possible values are 1548 (default) and Jumbo.
Mode	Values are 1000 Mb/s or Auto.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Framing	Shows the encapsulation type. Values are: • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices.
CRC Encap	Sets the cyclic redundancy check (CRC) encapsulation size. Values are 32-bit and None.
RS Thresh 15 Min - Near End	
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
RS Thresh 1 Day - Near End	
Port No.	The port number.
EB-RS	Errored blocks regenerator section.

Table C-422 Field Descriptions for the Line Properties Pane — ONS 15454 SDH (continued)

Field	Description
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
MS Thresh 15 Min - Near End, Far End	
Port No.	The port number.
EB-MS	Errored blocks–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
PSC	Protection Switching Count (PSC) is a count of the number of times service switches from a working port to a protection port, plus the number of times service switches back to the working port. For a protection port, PSC is a count of the number of times service switches to a working port from a protection port, plus the number of times service switches back to the protection port.
PSD	Protection Switching Duration (PSD) applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, PSD is a count of the seconds that the line was used to carry service.
Reset to Defaults button	Resets the value of the port parameters to the default value.
MS Thresh 1 Day - Near End, Far End	
Port No.	The port number.
EB-MS	Errored blocks–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
PSC	Protection Switching Count (PSC) is a count of the number of times service switches from a working port to a protection port, plus the number of times service switches back to the working port. For a protection port, PSC is a count of the number of times service switches to a working port from a protection port, plus the number of times service switches back to the protection port.
PSD	Protection Switching Duration (PSD) applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, PSD is a count of the seconds that the line was used to carry service.
Reset to Defaults button	Resets the value of the port parameters to the default value.
RMON Thresholds	

Table C-422 Field Descriptions for the Line Properties Pane — ONS 15454 SDH (continued)

Field	Description
Index No.	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period (sec)	Displays the sample period, in seconds.
Rising Thresholds (count)	Displays the number of occurrences for the rising threshold.
Falling Thresholds (count)	Displays the number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold.
VC4	
VC No.	Displays the VC number.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.

C.2.22.6 OTN

The OTN Properties pane allows you to change the line optical transport network (OTN) settings for cards. The Properties pane contains the following tabs:

- C.2.22.6.1 OTN Line Tab, page C-296
- C.2.22.6.2 G.709 Thresh 15 Min Tab, page C-297
- C.2.22.6.3 G.709 Thresh 1 Day Tab, page C-298
- C.2.22.6.4 FEC Thresh 15 Min Tab, page C-299
- C.2.22.6.5 FEC Thresh 1 Day Tab, page C-299
- C.2.22.6.6 Trail Trace Identifier Tab, page C-299

C.2.22.6.1 OTN Line Tab

The OTN Line tab allows you to view and change the OTN line settings of the ADM-10G card.

Table C-423 Field Descriptions for the OTN Line Tab

Field	Description
Port No.	Displays the port number.
G.709 OTN	Disables or enables the G.709 OTN feature.
FEC	Disables or enables forward error correction. **Note** OTN must be enabled before you can enable FEC.

Table C-423 Field Descriptions for the OTN Line Tab (continued)

Field	Description
Asynch/Synch Mapping	The card can perform multiplexing per ITU-T G.709. The ODUK (client SONET/SDH payload) can be mapped to the optical channel (OTUK) synchronously (synch mapping) with this setting.
SF BER	Displays the signal fail bit error rate.
SD BER	Displays the signal degrade bit error rate.

C.2.22.6.2 G.709 Thresh 15 Min Tab

The G.709 Thresh 15 Min tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 15 minutes.

Table C-424 Field Descriptions for the G.709 Thresh 15 Min Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	

Table C-424 Field Descriptions for the G.709 Thresh 15 Min Tab (continued)

Field	Description
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.22.6.3 G.709 Thresh 1 Day Tab

The G.709 Thresh 1 Day tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 24 hours.

Table C-425 Field Descriptions for the G.709 Thresh 1 Day Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.

Table C-425 Field Descriptions for the G.709 Thresh 1 Day Tab (continued)

Field	Description
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.22.6.4 FEC Thresh 15 Min Tab

The FEC Thresh 15 Min tab allows you to view and change the 15-minute FEC threshold information of the ADM-10G card.

Table C-426 Field Descriptions for the FEC Thresh 15 Min Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.22.6.5 FEC Thresh 1 Day Tab

The FEC Thresh 1 Day tab allows you to view and change the 1-day FEC threshold information of the ADM-10G card.

Table C-427 Field Descriptions for the FEC Thresh 1 Day Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.22.6.6 Trail Trace Identifier Tab

The Trail Trace Identifier tab allows you to provision the trail trace identifier for the ADM-10G card.

Table C-428 Field Descriptions for the Trail Trace Identifier Tab

Field	Description
Port Number	Displays port number information.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.

C.2.22.7 Loopback

The Loopback Properties pane allows you to view and update ADM-10G loopback information.

Table C-429 Field Descriptions for the Loopback Properties Pane

Field	Description
Port No.	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.2.22.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-430 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).

Table C-430 Field Descriptions for the Auto Laser Shutdown Properties Pane (continued)

Field	Description
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.22.9 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane contains the following tabs:

- C.2.22.9.1 TCA 15 Min Tab, page C-301
- C.2.22.9.2 TCA 1 Day Tab, page C-301
- C.2.22.9.3 Alarm Thresh Tab, page C-302

C.2.22.9.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to view and change the 15-minute TCA settings of the ADM-10G card.

Table C-431 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port No.	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.22.9.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to view and change the 1-day TCA settings of the ADM-10G card.

Table C-432 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.

Table C-432 Field Descriptions for the TCA 1 Day Tab (continued)

Field	Description
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.22.9.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-433 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.22.10 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update alarm profile information.

Table C-434 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
DWDM	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
Payload	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.

Table C-434 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
GFP	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.22.11 Protection

The Protection Properties pane allows you to view and update protection group information.

Table C-435 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.

C.2.22.12 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update J1 path trace information.

Table C-436 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	(*Available in ONS 15454 SONET only*) Displays the STS number.
VC4 Number	(*Available in ONS 15454 SDH only*) Displays the VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.

C.2.22.13 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-437 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.23 Slot Properties—GE_XP and 10GE_XP

The GE_XP and 10GE_XP cards are Gigabit Ethernet (GE) transponders for the ONS 15454 SONET and ONS 15454 SDH platforms. The cards aggregate Ethernet packets received on the client ports for transport on C-band trunk ports that operate on a 100-GHz grid. The trunk ports operate with ITU-T G.709 framing and either FEC or E-FEC. The GE_XP and 10GE_XP cards are designed for bulk point-to-point transport over 10GE LAN PHY wavelengths for video-on-demand (VoD), or broadcast video across protected 10GE LAN PHY wavelengths.

The GE_XP and 10GE_XP cards can be installed in slots 1 through 6 or 12 through 17. The GE_XP is a double-slot card with twenty GE client ports and two 10 GE trunk ports. The 10GE_XP is a single-slot card with two 10 GE client ports and two 10 GE trunk ports. The client ports support SX, LX, and ZX SFPs, and SR and 10GBASE-LR XFPs. (LR2 XFPs are not supported.) The trunk ports support a DWDM XFP.

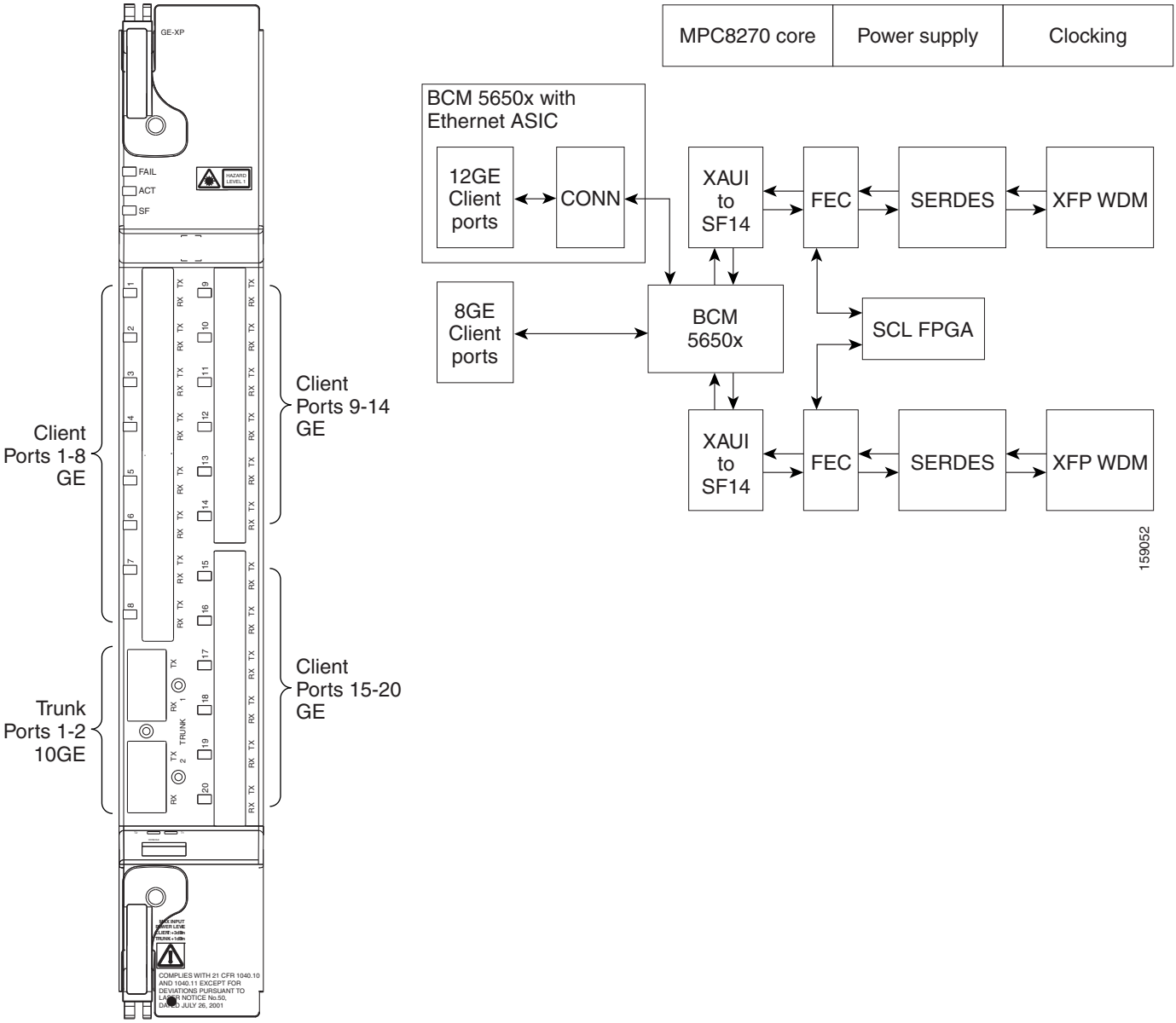
Caution A fan-tray assembly (15454E-CC-FTA for the SDH shelf, or 15454-CC-FTA for the SONET shelf) must be installed on a shelf where a GE_XP or 10GE_XP card is installed.

GE_XP and 10GE_XP cards can be provisioned to perform different GE transport roles. Both cards can perform as Layer 2 switches. However, the 10GE_XP can also perform as a 10GE transponder, and the GE_XP can perform as a 10GE or 20GE muxponder.

Prime Optical supports the FE payload on RAD SFPs. For the 10GE_XP card, Prime Optical supports the 10GE payload, and for the GE_XP card, Prime Optical supports the 10GE payload on trunk ports 21 and 22.

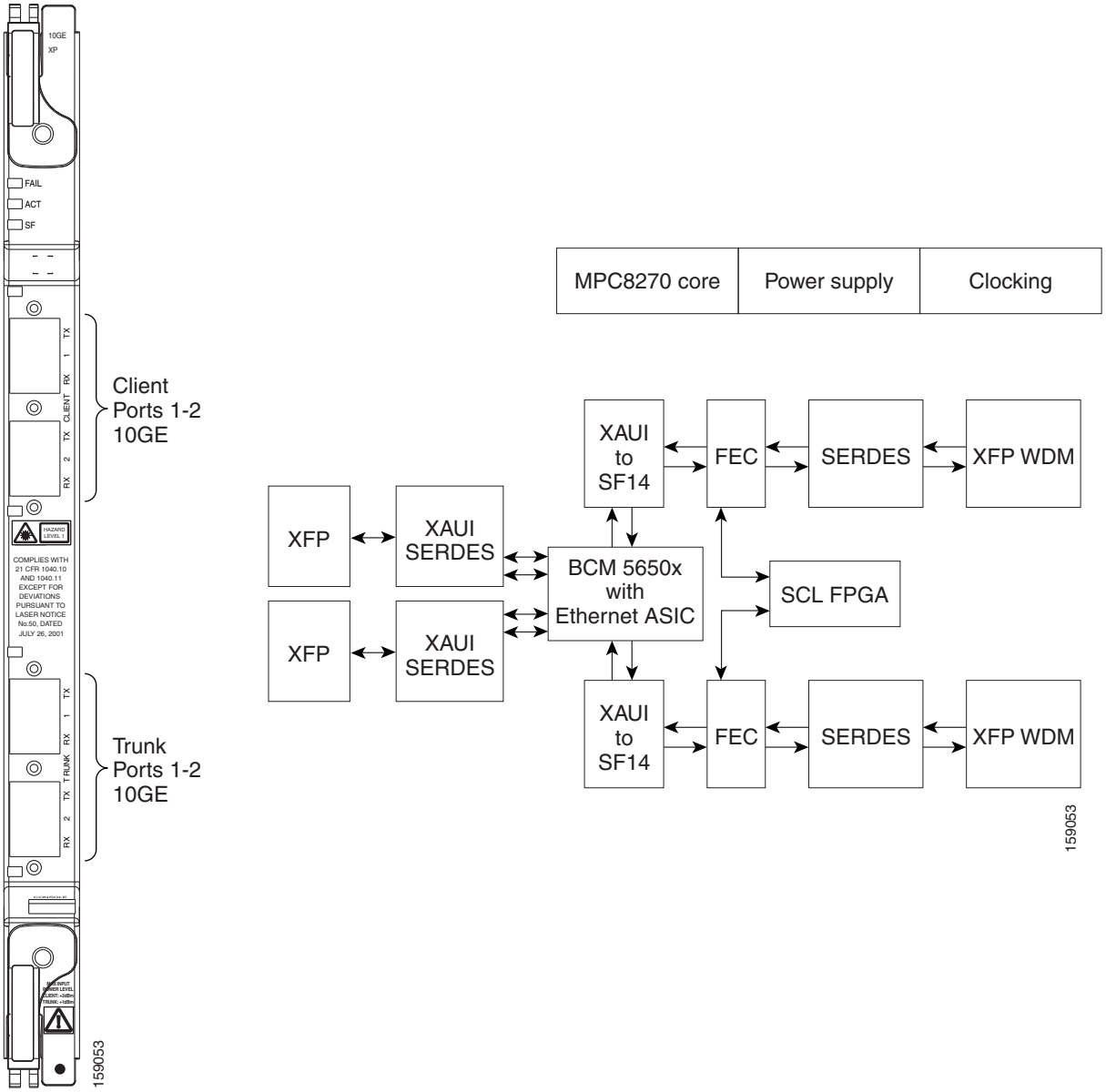
The following figure shows the GE_XP faceplate and block diagram.

Figure C-30 GE_XP Faceplate and Block Diagram



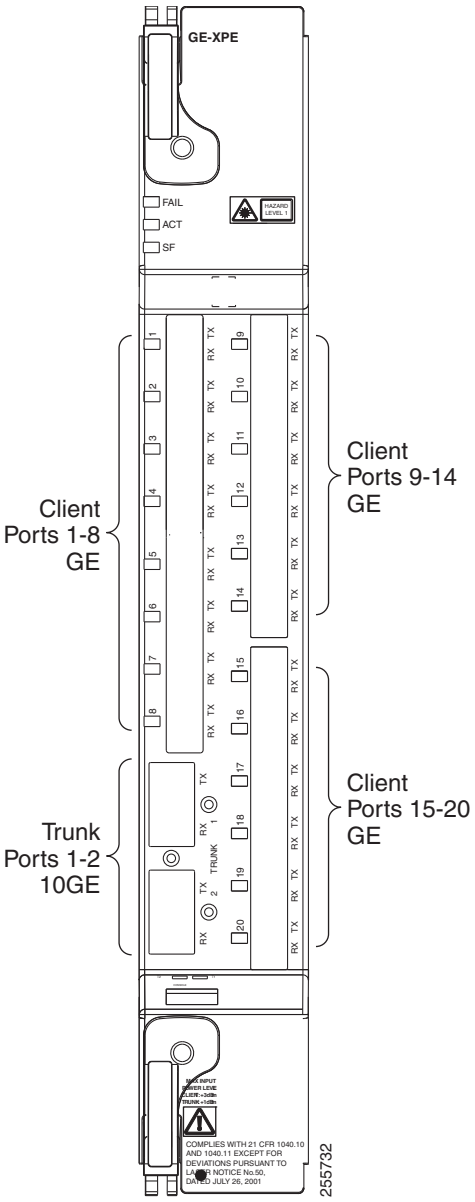
The following figure shows the 10GE_XP faceplate and block diagram.

Figure C-31 10GE_XP Faceplate and Block Diagram



The following figure shows the GE_XPE faceplate.

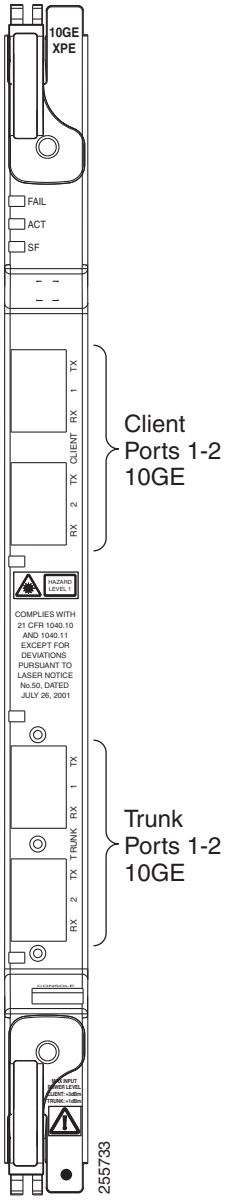
Figure C-32 GE_XPE Faceplate



Note GE_XPE card is an enhanced version of the GE_XP card. GE_XPE trunk ports 1-2 are mapped to physical ports 21 and 22.

The following figure shows the 10GE_XPE faceplate.

Figure C-33 10GE_XPE Faceplate



Note 10GE_XPE card is an enhanced version of the 10GE_XP card. 10GE_XPE trunk ports 1-2 are mapped to physical ports 3 and 4.

For GE_XP and 10GE_XP cards, the slot properties pane displays the following properties: Module View, Identification, Alarm Behavior, Auto Laser Shutdown, Card, CFM, Channel Groups, EFM, Ether Ports, Info, Loopback, MAC Addresses, MVR, Optical Thresh, OTN, PPM, Profiles Mapping, Protection, Protection Groups, QinQ, QoS, REP, RMON Thresholds, Security, Show Command, SVLAN, and SVLAN AIS.

C.2.23.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Moving the mouse pointer over the graphic also displays the alarm counts.) Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.23.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-438 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance • Unlocked • Locked, disabled • Unlocked, automatic In Service • Locked, maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Suppress Alarms	When checked, all alarms are suppressed for the port.

C.2.23.3 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update alarm profile information.

Table C-439 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, all alarms are suppressed for the card or its port(s).
DWDM	
Port No.	Displays the card port number. **Note** DWDM ports are trunk ports.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
Payload	
Port No.	Displays the card port number. **Note** Payload ports are client ports.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
Channel Groups	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.23.4 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-440 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and 200 to 2000 seconds for trunk ports.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is set to Shutdown.

C.2.23.5 Card

The Card Properties pane allows you to provision GE_XP and 10GE_XP card parameters.

Table C-441 Field Descriptions for the Card Properties Pane

Field	Description
Card Mode	Sets the card mode: **Note** Any provisioned client or trunk ports must be in the OOS-MA,DSBLD (SONET) or Locked-enabled,disabled (SDH) service state. You can change the state on the Ether Ports Properties pane > Ethernet tab. • L2 over DWDM—(GE_XP and 10GE_XP) Provisions the GE_XP or 10GE_XP as a Layer 2 switch. • 10GE TXP—(10GE_XP only) Provisions the 10GE_XP as a 10GE transponder. Traffic received on the 10GE client port 1-1 is sent to 10GE trunk port 3-1, and traffic received on 10GE client port 2-1 is sent to 10GE trunk port 4-1. • 10GE MXP—(GE_XP) Provisions the GE_XP as a 10GE muxponder. Traffic received on GE client ports 1-1 through 10-1 is multiplexed and sent to 10GE trunk port 21-1, and traffic received on GE client ports 11-1 through 20-1 is multiplexed and sent to 10GE trunk port 22-1. • 20GE MXP—(GE_XP) Provisions the GE_XP as a 20GE muxponder. Traffic received on GE client ports 1-1 through 20-1 is multiplexed and sent to 10GE trunk port 21-1. Trunk port 22-1 is not used.

C.2.23.6 CFM

The CFM Properties pane allows you to enable or disable CFM on the cards.

Note For the CFM Properties pane to be enabled, the card mode must be L2 over DWDM.

C.2.23.6.1 Configuration Tab

The Configuration tab allows you to enable or disable CFM for each port on the cards.

Table C-442 Field Descriptions for the Configuration Tab

Field	Description
Interface Configuration	
Port	*Display only.* Port number (n-n) and rate (ONE_GE or TEN_GE).
Enable CFM check box	Check the CFM check box to enable CFM on a port.
Card Configuration	
Enable CFM check box	Check the CFM check box to enable CFM on the card.
CC Timer	Choose the value for the CC Timer. Values are: • 1 second • 10 seconds • 1 minute

C.2.23.7 Channel Groups

The Channel Groups Properties pane allows you to manage channel group settings for GE_XP and 10GE_XP cards.

Note For the Channel Groups Properties pane to be enabled, the card mode must be L2 over DWDM.

Table C-443 Field Descriptions for the Channel Groups Properties Pane

Field	Description
Channel Group	*Display only.* ID and name of the channel group.
Port Name	Displays the name of the channel group.
Ports	*Display only.* Port number (n-n) and rate (ONE_GE or TEN_GE of the channel group).
LACP Mode	Sets the LACP mode. The channel group must be in OOS-DSBLD admin state. The options are: • On—Default mode. Ports will not exchange LACP packets with the partner ports. • Active—Places a port into an active negotiating state, in which the port initiates negotiations with remote ports by sending LACP packets. • Passive—Places a port into a passive negotiating state, in which the port responds to LACP packets it receives, but does not initiate LACP negotiation. In this mode, the port channel group attaches the interface to the bundle.

Table C-443 Field Descriptions for the Channel Groups Properties Pane (continued)

Field	Description
Hashing	Sets the LACP hashing algorithm. The channel group must be in OOS-DSBLD admin state. The following hashing algorithms are supported: • Unicast SA VLAN Incoming Port • Unicast DA VLAN Incoming Port • Unicast SA DA VLAN Incoming port • Unicast Src IP TCP UDP • Unicast Dst IP TCP UDP • Unicast Src Dst IP TCP UDP
Admin State	Sets the administrative state on the channel group. The Admin State can be: • IS—In Service • OOS, DSBLD—Out of Service, Disabled
Service State	*Display only.* Sets the service state that indicates the operational state of the channel group. The Service State can be: • IS-NR—In Service–Normal. • OOS-MA, DSBLD—Out of Service and Management, Disabled.
MTU	Sets the maximum transfer unit (MTU), which sets the maximum number of bytes per frame accepted on the port. The member ports must be in OOS-DSBLD admin state. The default MTU value in the channel group is taken from the default settings in the node. The default value is 9700. The valid range is from 64 to 9700.
Mode	Sets the provisional port mode. If the port mode is Auto, the Expected Speed field determines which ports can belong to the bundle. The member ports must be in OOS-DSBLD admin state. The values are: • Auto • 1000 Mb/s
Expected Speed	Sets the expected speed of ports of the channel group. The channel group must be in OOS-DSBLD admin state. The values are: • 10 Mb/s • 100 Mb/s • 1000 Mb/s
Duplex	*Display only.* Expected duplex capability of ports of the channel group. The value is Full.
Committed Info Rate	Sets the guaranteed information rate as per the service provider service-level agreement. The channel group must be in OOS-DSBLD admin state. The default value is 100. The valid range is from 0 to 100 percent.

Table C-443 Field Descriptions for the Channel Groups Properties Pane (continued)

Field	Description
Committed Burst Size	Sets the maximum number of bits transferred per second. The channel group must be in OOS-DSBLD admin state. The options are: • 4 k (default) • 8 k • 16 k • 32 k • 64 k • 128 k • 256 k • 512 k • 1 M • 2 M • 4 M • 8 M • 16 M
Excess Burst Size	Sets the maximum number of bits credited for later transfer if the committed burst rate cannot be transmitted. The channel group must be in OOS-DSBLD admin state. The options are: • 4 k (default) • 8 k • 16 k • 32 k • 64 k • 128 k • 256 k • 512 k • 1 M • 2 M • 4 M • 8 M • 16 M

Table C-443 Field Descriptions for the Channel Groups Properties Pane (continued)

Field	Description
NIM	Sets the port network interface mode (NIM) for the channel group. The member ports must be in OOS-DSBLD admin state. The channel group NIM is set to UNI or NNI based on the mode of the first port that is added to the channel group. The options are: • UNI Mode (Default)—Provisions the port as a UNI. This is the interface that faces the subscriber. • NNI Mode—Provisions the port as an NNI. This is the interface that faces the service provider network.
Ingress CoS	Provisions the IEEE 802.1p ingress class of service (CoS). Ingress CoS is used to set the priority of the Ethernet frame in the service provider network. The member ports must be in OOS-DSBLD admin state. The options are: • 0 • 1 • 2 • 3 • 4 • 5 • 6 • 7 • Trust • CVLAN • Differentiated Services Code Point (DSCP)
Inner Ethertype (Hex)	Defines the Inner Ethertype field. The Inner Ethertype field indicates which protocol is being transported in an Ethernet frame. The member ports must be in OOS-DSBLD admin state to modify the Inner Ethertype value to a non-default value. The default is 8100 (IEEE Standard 802.1Q customer VLAN tag type) and the range is from 0x600 to 0xffff.
Outer Ethertype (Hex)	Defines the Outer Ethertype field. The Outer Ethertype field identifies which protocol is being transported in an Ethernet frame. The member ports must be in OOS-DSBLD admin state. The default is 8100 (IEEE standard 802.1Q service provider VLAN tag type) and the range is from 0x600 to 0xffff.
MAC Learning	Enables or disables MAC learning for the port on GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards. MAC learning is used by Layer 2 switches to learn the MAC addresses of network nodes so that the Layer 2 switches send traffic to the right location. On GE_XPE or 10GE_XPE cards, enable MAC address learning per SVLAN. The options are: • Checked—MAC learning is enabled for this port. • Unchecked—(Default) MAC learning is disabled for this port.
Delete	Allows you to delete an existing row from the LACP table. The Delete button is enabled when a particular row is selected in the table.

Table C-443 Field Descriptions for the Channel Groups Properties Pane (continued)

Field	Description
Add/Remove Ports	Allows you to add or remove ports to an existing channel group. Click the **Add/Remove Ports** button to open the Add/Remove Ports dialog box. To add ports to an existing channel group, complete the following: • Choose the required ports from the Standalone list. • Click the arrow (>>) to move the selected ports to the Bundled list. To remove ports from an existing channel group, complete the following: • Choose the required ports from the Bundled list. • Click the arrow (<<) to move the selected ports to the Standalone list. Click **Apply** to save the changes or click **Cancel** to exit without saving.
Create	Allows you to add a new row to the LACP table. Click **Create**. The Create Channel Group dialog box appears. Do the following: • Enter the name of the channel group in the Name field. • From the ID drop-down list, select a valid group ID. • From the Standalone list, choose the ports that will belong to this channel group and click the right arrow button to move the selected ports to the Bundled list. • From the LACP Mode drop-down list, choose the LACP mode as needed: – On – Active – Passive • From the LACP Hashing drop-down list, select the LACP hashing algorithm that the protocol uses to perform the load balancing task between the bundled ports. The following hashing algorithms are supported: – Unicast SA VLAN Incoming Port – Unicast DA VLAN Incoming Port – Unicast SA DA VLAN Incoming port – Unicast Src IP TCP UDP – Unicast Dst IP TCP UDP – Unicast Src Dst IP TCP UDP Click **Create** to create a new channel group or click **Cancel** to exit without saving. A new row is added to the Channel Groups Properties pane.

C.2.23.8 EFM

The EFM Properties pane allows you to configure EFM parameters, link monitoring parameters, and enable remote loopback on each port on the GE_XP and 10GE_XP cards. The Properties pane contains the following tabs:

- C.2.23.8.1 Configuration Tab, page C-317
- C.2.23.8.2 Link Monitoring Tab, page C-317

- C.2.23.8.3 Loopback Tab, page C-318

Note This Properties pane is applicable only when the Card Mode is set to L2 over DWDM in the Card Properties pane.

C.2.23.8.1 Configuration Tab

The Configuration tab allows you to configure EFM parameters on the GE_XP and 10GE_XP cards.

Table C-444 Field Descriptions for the Configuration Tab

Field	Description
Port	*Display only.* Port number (n-n) and rate (ONE_GE or TEN_GE).
EFM State	Sets the state of the EFM protocol for each port. Values are: • Enabled—Enables EFM for that port. • Disabled—Disables EFM for that port.
Mode	Sets the operating mode of the port. Values are: • Active—The port sends OAM Protocol Data Units (OAMPDUs) at regular intervals to the partner ports. • Passive—The port will not send OAMPDUs until the partner ports send OAMPDUs.
Link Fault	Sets the Remote Failure Indication (RFI) action. If the link is down on a port, the link fault RFI is sent to the partner port through OAMPDU. An alarm indicating the remote failure indication link fault (RFI-LF) is raised. The alarm is cleared after you clear the link fault condition. You can specify the following actions for link fault RFI: • Error Block—The interface is placed in the error-block state and the RFI-LF alarm is raised. • NONE—Only the RFI-LF alarm is raised.
Session Timer	Sets the duration up to when the EFM session is retained with the partner port without receiving OAMPDUs. The valid range is from 2 to 30 seconds.

C.2.23.8.2 Link Monitoring Tab

The Link Monitoring tab allows you to configure EFM link monitoring parameters for each port on the GE_XP and 10GE_XP cards.

Table C-445 Field Descriptions for the Link Monitoring Tab

Field	Description
Port	*Display only.* Port number (n-n) and rate (ONE_GE or TEN_GE).
EF Max	Sets the threshold value for the maximum number of errored frames to detect during a specific period. The valid range is from 0 to 65535. **Note** If the EF max value is set to zero, 0 (Not Provisioned) is displayed.
EF Min	Sets the threshold value for the minimum number of errored frames to detect during a specific period. The valid range is from 0 to 65535.

Table C-445 Field Descriptions for the Link Monitoring Tab (continued)

Field	Description
EF Action	The following EF actions are available: • NONE—If the parameter value exceeds the maximum threshold value, the applicable action is None. • Squelch—If the parameter value falls below the minimum threshold value, a threshold crossing alert (transient condition) is generated.
EF Window	Sets the threshold value for the maximum number of errored frames within the last *n* frames. The valid range is from 10 to 600.
EFP Max	Sets the threshold value for the maximum number of errored frames within the last *n* frames. The valid range is from 0 to 65535. **Note** If the EFP max value is set to zero, 0 (Not Provisioned) is displayed.
EFP Min	Sets the threshold value for the minimum number of errored frames within the last *n* frames. The valid range is from 0 to 65535.
EFP Action	The following EFP actions are available: • NONE—If the parameter value exceeds the maximum threshold value, the applicable action is NONE. • Squelch—If the parameter value falls below the minimum threshold value, a threshold crossing alert (transient condition) is generated.
EFP Window	Period in which the EFP parameters are monitored. The valid range is from 1 to 65535.
EFSS Max	Sets the threshold value for the maximum number of errored seconds within the last *m* seconds. The valid range is from 0 to 900. **Note** If the EFSS max value is set to zero, 0 (Not Provisioned) is displayed.
EFSS Min	Sets the threshold value for the minimum number of errored seconds within the last *m* seconds. The valid range is from 0 to 900.
EFSS Action	The following EFSS actions are available: • NONE—If the parameter value exceeds the maximum threshold value, the applicable action is None. • Squelch—If the parameter value falls below the minimum threshold value, a threshold crossing alert (transient condition) is generated.
EFSS Window	Specifies the period when the EFSS parameters are monitored. The valid range is from 100 to 9000.

C.2.23.8.3 Loopback Tab

The Loopback tab allows you to enable remote loopback for each port on the GE_XP and 10GE_XP cards.

Table C-446 Field Descriptions for the Loopback Tab

Field	Description
Port	*Display only.* Port number (n-n) and rate (ONE_GE or TEN_GE).
Remote Loopback Type	Ensures link quality with a remote peer during installation or troubleshooting. Values are: • Remote Loopback—Allows you to configure a port to terminal loopback. • NONE—Allows you to clear the current loopback.

C.2.23.9 Ether Ports

The Ether Ports Properties pane allows you to provision Ethernet ports for GE_XP and 10GE_XP cards. The options that can be set depend on the card mode. You can set the card mode in the Card Properties pane.The Ether Ports contains the following tabs:

- C.2.23.9.1 Ports Tab, page C-319
- C.2.23.9.2 Ethernet Tab, page C-320
- C.2.23.9.3 PDH Ethernet Parameters Tab, page C-324
- C.2.23.9.4 DS1 Line Tab, page C-324
- C.2.23.9.5 DS3 Line Tab, page C-325

C.2.23.9.1 Ports Tab

The Ports tab allows you to view and change the port settings.

Table C-447 Field Descriptions for the Ports Tab

Field	Description
Port Number	Displays the port number on the selected card.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Admin State	Displays the status of the line. The line can be In Service (IS); In Service–Auto In Service Soak (IS_AINS); Out of Service (OOS); Out of Service–Maintenance (OOS_MT); unlocked; locked, disabled; or locked, maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test). ALS is a laser safety feature defined by ITU G.664. ALS can be provisioned on client and trunk ports for SONET and SDH payload types only.
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.

Table C-447 Field Descriptions for the Ports Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card and line (client or trunk) that are selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance) • CWDM • DWDM
Wavelength	Allows you to provision the wavelength frequency.

C.2.23.9.2 Ethernet Tab

The Ethernet tab allows you to view Ethernet line information.

Table C-448 Field Descriptions for the Ethernet Tab

Field	Description
Port	Displays the card port number. The GE_XP is a double-slot card with twenty GE client ports (displayed as ONE_GE) and two 10 GE trunk ports (displayed as TEN_GE). The 10GE_XP is a single-slot card with two 10 GE client ports and two 10 GE trunk ports (all displayed as TEN_GE).
Egress QoS	Enables Quality of Service (QoS) on the port's egress, or output queues. The options are: • Checked—QoS is enabled on the port's egress queues. • Unchecked—(Default) QoS is disabled on the port's egress queues. To set this option, the card mode must be L2 over DWDM.
IGMP Static Router Port	Adds multicast-capable ports to the forwarding table for every IP multicast. The options are: • Checked—IGMP static router port is enabled. • Unchecked—(Default) IGMP static router port is disabled. To set this option, the card mode must be L2 over DWDM.
AIS Action	Defines the AIS action type provisioned on the port. The options are: • None—No action. • Squelch—When an AIS packet is received on a SVLAN terminating on the UNI-port, the UNI port is squelched. To set this option, the card mode must be L2 over DWDM.
Protection Action	Configures the standby port behavior. The options are: • None—No action. • Squelch—The laser on the standby port in a 1+1 protection group is squelched. This setting has no effect if the port is not part of the 1+1 protection group. To set this option, the card mode must be L2 over DWDM.
MTU	Sets the maximum transmission unit (MTU), which is the largest acceptable packet size configured for that port. The range is from 64 to 9700 bytes; the default size is 1548. To set this option, the card mode must be one of the following values: • L2 over DWDM • 10GE TXP • 10GE MXP • 20GE MXP
Mode	Displays the Ethernet mode. The values are: • Auto (default, GE ports only) • 1000 Mb/s (GE ports only) • 10000 Mb/s (default, 10 GE ports only) To set this option, the card mode must be one of the following: • L2 over DWDM • 10GE TXP • 10GE MXP • 20GE MXP

Table C-448 Field Descriptions for the Ethernet Tab (continued)

Field	Description
Flow Control	Enables or disables flow control messaging with its peer port. When enabled, the port can send and receive PAUSE frames when buffer congestion occurs. Values are: • ON—Flow control is enabled • OFF—(Default) Flow control is disabled To set this option, the card mode must be one of the following: • L2 over DWDM • 10GE MXP • 20GE MXP
Media Type	(GE_XPE card only) Sets the Media Type. To set this option, the card mode must be one of the following: • L2 over DWDM • 10GE MXP • 20GE MXP
Committed Info Rate	Sets the guaranteed information rate as provided by the service provider service-level agreement. To set this option, the card mode must be one of the following: • L2 over DWDM • 10GE MXP • 20GE MXP
Committed Burst Size	In Frame Relay links, sets the maximum number of bits that are transferred per second. To set this option, the card mode must be one of the following: • L2 over DWDM • 10GE MXP • 20GE MXP
Excess Burst Size	Sets the maximum number of bits that are credited for later transfer in the event the committed burst rate cannot be transmitted. To set this option, the card mode must be one of the following: • L2 over DWDM • 10GE MXP • 20GE MXP
NIM	Sets the port network interface mode (NIM). This parameter classifies port types designed for the Metro Ethernet market to simplify deployment, management, and troubleshooting. The options are: • UNI Mode—Provisions the port as a user-to-network interface (UNI). This is the interface that faces the subscriber. • NNI Mode—Provisions the port as a network-to-network interface (NNI). This is the interface that faces the service provider network. When a port is in UNI mode, tagging can be configured as transparent or selective. In transparent mode, only service provider virtual LANs (SVLANs) in the node VLAN database can be configured. In selective mode, the customer virtual LAN (CVLAN)-to-SVLAN relationship can be defined. To set this option, the card mode must be L2 over DWDM.

Table C-448 Field Descriptions for the Ethernet Tab (continued)

Field	Description
MAC Learning	Enables or disables MAC learning for the port. MAC learning is used by Layer 2 switches to learn the MAC addresses of network nodes so they know where to send traffic. Layer 2 switches—including GE_XP and 10GE_XP cards in L2 over DWDM mode—maintain a MAC learning table that associates the MAC addresses and VLANs with a given port. **Note** MAC address table aging is 300 seconds. It cannot be changed. To set this option, the card mode must be L2 over DWDM.
Ingress CoS	Provisions the IEEE 802.1p ingress Class of Service (CoS). The CoS .1p bits set the Ethernet frame priority. The options are: • 0—(Default) Sets the .1p bit to 0. • 1—Sets the .1p bit to 1. • 2—Sets the .1p bit to 2. • 3—Sets the .1p bit to 3. • 4—Sets the .1p bit to 4. • 5—Sets the .1p bit to 5. • 6—Sets the .1p bit to 6. • 7—Sets the .1p bit to 7. • Trust—Copies the .1p bit from the incoming packet. • Differentiated Services Code Point (DSCP) **Note** Ingress CoS applies only to ports provisioned as UNI mode. It does not apply to ports provisioned as NNI mode. To set this option, the card mode must be L2 over DWDM.
Inner Ethertype (Hex)	Defines the Inner Ethertype field. The Ethertype field indicates which protocol is being transported in an Ethernet frame. The inner Ethertype applies to ports provisioned for UNI mode only. It does not apply to ports provisioned for NNI mode. The ports must be out of service (OOS) before the inner Ethertype can be provisioned. The default is 8100 (IEEE standard 802.1Q customer VLAN tag type) and the range is from 0x600 to 0xfff. To set this option, the card mode must be L2 over DWDM.
Outer Ethertype (Hex)	Defines the Outer Ethertype field. The Ethertype field indicates which protocol is being transported in an Ethernet frame. The default is 8100 (IEEE standard 802.1Q customer VLAN tag type) and the range is from 0x600 to 0xfff. To set this option, the card mode must be L2 over DWDM.
Speed	Displays the operating speed for the ports.
Duplex	Actual setting of the port. Values are Auto, Full, and Half.

C.2.23.9.3 PDH Ethernet Parameters Tab

Note
- The PDH Ethernet Parameters tab is available in GE_XP card view only, provided the PPM for the card ports are created in Fast Ethernet (FE) mode.
- The PDH Ethernet Parameters tab is enabled only when the Card Mode is set to L2 over DWDM in the Card Properties pane.

Table C-449 Field Descriptions for the PDH Ethernet Parameters Tab

Field	Description
Port No	Displays the port number.
Port Name	Displays the name of the port.
MPLS Inner Label	Sets the MPLS Inner Label value. The default value is 16. The valid range is from 1 to 127.
MPLS Outer Label	Sets the MPLS Outer Label value. The default value is 16. The valid range is from 1 to 8063.
Jitter Buffer	Sets the jitter buffer value. The default value is 1500. The valid range is from 400 to 200000.
RX Sensitivity	Sets the RX sensitivity value.
Source IP Address	Allows you to enter the source IP address. Only Unicast IP addresses are accepted.
Peer IP Address	Allows you to enter the peer IP address. Only Unicast IP addresses are accepted.

C.2.23.9.4 DS1 Line Tab

The DS1 Line tab allows you to view and change the DS1 line settings.

Note
- The DS1 Line tab is available in GE_XP card view only, provided the PPM for the card ports are created in FE mode.
- The DS1 Line tab is enabled only when the Card Mode is set to L2 over DWDM in the Card Properties pane.

Table C-450 Field Descriptions for the DS1 Line Tab

Field	Description
Port No	Displays the port number.
Port Name	Displays the name of the port.
Clock Source	Sets the Clock Source.
Line Type	Allows you to select the line framing type.

Table C-450 Field Descriptions for the DS1 Line Tab (continued)

Field	Description
Line Coding	Allows you to define the DS-1 transmission coding type.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. • 0–131 (default) • 132–262 • 263–393 • 394–524 • 525–655

C.2.23.9.5 DS3 Line Tab

The DS3 Line tab allows you to view and change the DS3 line settings.

Note
- The DS3 Line tab is available in GE_XP card view only, provided the PPM for the card ports are created in FE mode.
- The DS3 Line tab is enabled only when the Card Mode is set to L2 over DWDM in the Card Properties pane.

Table C-451 Field Descriptions for the DS3 Line Tab

Field	Description
Port No	Displays the port number.
Port Name	Displays the name of the port.
Clock Source	Sets the Clock Source.
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the DS-1 transmission coding type.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. • 0–131 (default) • 132–262 • 263–393 • 394–524 • 525–655

C.2.23.10 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-452 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

C.2.23.11 Loopback

The Loopback Properties pane allows you to view and update GE_XP and 10GE_XP loopback information.

Table C-453 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance • Unlocked • Locked, disabled • Locked, maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (None).

C.2.23.12 MAC Addresses

The MAC Addresses Properties pane allows you to configure MAC address learning, which facilitates switch processing. The Properties pane contains the following tabs:

- C.2.23.12.1 Multicast Tab, page C-326
- C.2.23.12.2 Card Tab, page C-327
- C.2.23.12.3 Learned Tab, page C-327

C.2.23.12.1 Multicast Tab

The Multicast tab allows you to view multicast port information for GE_XP and 10GE_XP cards.

Table C-454 Field Descriptions for the Multicast Tab

Field	Description
Multicast IP Address	Displays the multicast IP address.
SVLAN	Displays the SVLAN number.
Multicast dialog box	This dialog box appears when you double-click a row in the table. It provides a list of ports that are related to the selected SVLAN.

C.2.23.12.2 Card Tab

The Card tab allows you to retrieve a list of internal MAC addresses on GE_XP and 10GE_XP cards. Internal card MAC addresses are retrieved as cached values from the Prime Optical database.

Table C-455 Field Descriptions for the Card Properties Pane Tab

Field	Description
Port	Displays the port number. There is one MAC address per port, plus one MAC address that identifies the CPU.
MAC Address	Displays the MAC address that corresponds to the selected port.

C.2.23.12.3 Learned Tab

The Learned tab allows you to retrieve learned MAC addresses per SVLAN on GE_XP and 10GE_XP cards, which support 32K MAC addresses. Learned MAC addresses are not cached and are retrieved directly from the NE. The cards learn the MAC address of packets they receive on each port and add the MAC address and its associated port number to the MAC address learning table. As stations are added or removed from the network, the GE_XP and 10 GE_XP cards update the MAC address learning table, adding new dynamic addresses and aging out those that are no longer in use.

Table C-456 Field Descriptions for the Learned Tab

Field	Description
MAC Address	Displays the learned MAC address on the GE_XP or 10GE_XP card.
SVLAN	Displays the SVLAN ID associated with the learned MAC address.
SVLAN Name	Displays the SVLAN name associated with the SVLAN ID. The following values are displayed in the SVLAN Name field if the SVLAN ID is invalid: • N/A—Unable to associate a valid SVLAN ID to a valid SVLAN name. • Invalid—Invalid SVLAN ID.
Port	Displays the port associated with the learned MAC address.
SVLANs text box	Enter a single SVLAN or a range of SVLANs for which to retrieve learned MAC addresses. The range is from 1 to 4093 SVLANs.

Table C-456 Field Descriptions for the Learned Tab (continued)

Field	Description
Refresh	After specifying the SVLAN range, click the **Refresh** button to monitor the progress of the learned MAC address retrieval. If the TCC card is busy processing another request on the same GE_XP or 10GE_XP card, the following error message is displayed: `The resource is already in use. Try again later.`
Clear	Click the **Clear** button to clear the learned MAC addresses from the GE_XP or 10GE_XP card. The following warning message is displayed: `You are about to clear all of the learned MAC addresses on the card. Do you want to continue?`

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.23.13 MVR

The MVR Properties pane allows you to enable multicast VLAN registration (MVR) and set a multicast address for a single multicast SVLAN.

Table C-457 Field Descriptions for the MVR Properties Pane

Field	Description
Enabled check box	When checked, enables MVR on the card. If unchecked, disables MVR on the card.
IGMP CVLAN check box	When checked, enables IGMP snooping on CVLAN. The IGMP CVLAN check box is not enabled if MVR on the card is not enabled.
Multicast SVLAN	Sets the MVR VLAN ID. From the list of available IDs, select an SVLAN ID that is not part of the QinQ configuration on any of the card's UNI ports.
Multicast Address	Sets the specified multicast group address as the MVR multicast group. The range is from 224.0.0.0 to 239.255.255.255, excluding the following IP addresses: (224-239).0/128.0.(0-255)
Count	Sets the range of multicast group addresses. The count range is from 1 to 256.

C.2.23.14 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane contains the following tabs:

- C.2.23.14.1 TCA 15 Min Tab, page C-328
- C.2.23.14.2 TCA 1 Day Tab, page C-329
- C.2.23.14.3 Alarm Thresh Tab, page C-329

C.2.23.14.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to view and change the 15-minute TCA settings of GE_XP and 10GE_XP cards.

Table C-458 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.23.14.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to view and change the 1-day TCA settings of GE_XP and 10GE_XP cards.

Table C-459 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.23.14.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-460 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.23.15 OTN

The OTN Properties pane allows you to change the line optical transport network (OTN) settings for cards. The Properties pane contains the following tabs:

- C.2.23.15.1 OTN Line Tab, page C-330
- C.2.23.15.2 G.709 Thresh 15 Min Tab, page C-330
- C.2.23.15.3 G.709 Thresh 1 Day Tab, page C-331
- C.2.23.15.4 FEC Thresh 15 Min Tab, page C-332
- C.2.23.15.5 FEC Thresh 1 Day Tab, page C-333
- C.2.23.15.6 Trail Trace Identifier Tab, page C-333

C.2.23.15.1 OTN Line Tab

The OTN Line tab allows you to view and change the OTN line settings of GE_XP and 10GE_XP cards.

Table C-461 Field Descriptions for the OTN Line Tab

Field	Description
Port No.	Displays the port number.
G.709 OTN	Disables or enables the G.709 OTN feature.
FEC	Disables or enables forward error correction. **Note** OTN must be enabled before you can enable FEC.
Asynch/Synch Mapping	Indicates whether the card can perform multiplexing per ITU-T G.709. The ODUK (client SONET/SDH payload) can be mapped to the optical channel (OTUK) either asynchronously (asynch mapping) or synchronously (synch mapping) with this setting. **Note** For 10GE_XP and GE_XP cards, this field is set to “Not Used” and is not editable.
SF BER	Displays the signal fail bit error rate.
SD BER	Displays the signal degrade bit error rate.

C.2.23.15.2 G.709 Thresh 15 Min Tab

The G.709 Thresh 15 Min tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 15 minutes.

Table C-462 Field Descriptions for the G.709 Thresh 15 Min Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.

Table C-462 Field Descriptions for the G.709 Thresh 15 Min Tab (continued)

Field	Description
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.23.15.3 G.709 Thresh 1 Day Tab

The G.709 Thresh 1 Day tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 24 hours.

Table C-463 Field Descriptions for the G.709 Thresh 1 Day Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.

Table C-463 Field Descriptions for the G.709 Thresh 1 Day Tab (continued)

Field	Description
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.23.15.4 FEC Thresh 15 Min Tab

The FEC Thresh 15 Min tab allows you to view and change the 15-minute FEC threshold information of GE_XP and 10GE_XP cards.

Table C-464 Field Descriptions for the FEC Thresh 15 Min Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.23.15.5 FEC Thresh 1 Day Tab

The FEC Thresh 1 Day tab allows you to view and change the 1-day FEC threshold information of GE_XP and 10GE_XP cards.

Table C-465 Field Descriptions for the FEC Thresh 1 Day Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.23.15.6 Trail Trace Identifier Tab

The Trail Trace Identifier tab allows you to provision the trail trace identifier for GE_XP and 10GE_XP cards.

Table C-466 Field Descriptions for the Trail Trace Identifier Tab

Field	Description
Modify button	Allows you to open the Modify Trace dialog box, where you can change the section trace information for applicable cards. For more information, see 7.2.21 Modifying Traces, page 7-177.
Port Number	Displays port number information.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.

C.2.23.16 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-467 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual plugin module that is installed in the slot.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the status of the plugin module: In Service (IS); Out of Service–Maintenance (OOS_MT); Unlocked; or Locked, Maintenance. **Note** You can edit the Admin State value only for actual equipment, not preprovisioned equipment.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the PPM number and port number.
Rate	Displays the port rate.

C.2.23.16.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.23.17 Profiles Mapping

The Profiles Mapping Properties pane allows you to map a port to an SVLAN and a CVLAN with a specific profile. The Properties pane contains a row for each VLAN that is present in the card's VLAN database, plus a column for each port. The Properties pane contains the following tabs:

- C.2.23.17.1 SVLAN Tab, page C-334
- C.2.23.17.2 CVLAN Tab, page C-335

C.2.23.17.1 SVLAN Tab

The SVLAN tab allows you to associate the SVLAN profile to an SVLAN on a port.

Table C-468 Field Descriptions for the SVLAN Tab

Field	Description
SVLAN	*Display only*. Lists each VLAN that is present in the card's VLAN database.
Port (*number*)	Lists each port number. When you click a cell, the drop-down list displays all of the SVLAN profiles created for the NE. To map a port to a VLAN with a specific profile, click the port's cell, choose the profile, and click **Apply**. To detach a previously mapped profile, click the port's cell, choose **Detach Current**, and click **Apply**.

C.2.23.17.2 CVLAN Tab

The CVLAN tab allows you to associate the CVLAN profile to a CVLAN on a UNI port.

Table C-469 Field Descriptions for the CVLAN Tab

Field	Description
CVLAN	*Display only.* Lists each VLAN that is present in the card's VLAN database.
Port (number)	Lists each port number. When you click a cell, the drop-down list displays all of the CVLAN profiles created for the NE. To map a port to a VLAN with a specific profile, click the port's cell, choose the profile, and click **Apply**.

C.2.23.18 Protection

The Protection Properties pane allows you to provision protection for GE_XP and 10GE_XP cards. To provision protection, the card mode must be L2 over DWDM. You can set the card mode on the Card Properties pane.

Table C-470 Field Descriptions for the Protection Properties Pane

Field	Description
Port	Displays the card port number.
Status	Sets the spanning-tree protocol port states. If you have designated the card as a master, you must set one of the trunk ports to the blocked state to avoid loops in the network. • Blocking—Sets the port to the blocked (standby) state. A port in the blocked state does not participate in frame forwarding. • Forwarding—Sets the port to the forwarded state. A port in the forwarded state forwards frames.
Actual Status	Sets the port states. It can be: • Blocking—Sets the port to the blocked state. A port in the blocked state blocks the Ethernet packets that are received by the port. • Forwarding—Sets the port to the forwarded state. A port in the forwarding state forwards the Ethernet packets that are received by the port.
Protection	Sets the protection: • Enabled—Enables protection. • Disabled—Disables protection. • Forced—Forces the protection.

Table C-470 Field Descriptions for the Protection Properties Pane (continued)

Field	Description
Master	Sets the card as the master card for the network. Only one card in the network should be set as a master card.
Hold Off Time	Sets the hold off time. Choose one of the following values from the Hold Off Time drop-down list: • Disabled—Disables Fast Automatic Protection Switch (FAPS) protection (default) • 50 milliseconds • 100 milliseconds • 200 milliseconds • 500 milliseconds • 1 sec • 2 sec • 5 sec

C.2.23.19 Protection Groups

The Protection Groups Properties pane allows you to view and update protection group information.

Table C-471 Field Descriptions for the Protection Groups Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.

C.2.23.20 QinQ

The QinQ Properties pane allows you to provision the IEEE 802.1 QinQ VLAN tags on GE_XP or 10GE_XP cards. QinQ tags expand the VLAN capability by tagging the tagged packets to produce a "double-tagged" Ethernet frame. For service providers, the expanded VLAN allows specific services to be provided on specific VLANs for specific customers, while other types of services can be provided to other customers on other VLANs.

To provision QinQ settings, the card mode must be L2 over DWDM. You can set the card mode on the Card Properties pane.

The QinQ tab displays only ports in UNI mode. You can set UNI mode on the Ether Ports Properties pane > Ethernet tab.

Table C-472 Field Descriptions for the QinQ Properties Pane

Field	Description
Port Configuration	
Port	Sets the port where you want to provision QinQ. **Note** Channel groups configured in UNI mode appear in the Port field along with the physical ports.

Table C-472 Field Descriptions for the QinQ Properties Pane (continued)

Field	Description
QinQ Mode	Sets the QinQ mode. The options are: • Selective—Allows you to specify the mapping between CVLANs and SVLANs. • Transparent—Allows you to specify a single SVLAN.
BPDU	Sets the bridge protocol data unit (BPDU) modes. The options are: • Drop—Discards incoming packets with the MAC address on the BPDU list. • Tunnel—Transports packets with MAC addresses on the BPDU list. BPDU list: • 01-80-c2-00-00-00 (802.1D) • 01-80-c2-00-00-02 (LACP) • 01-00-0c-cc-cc-cd (PVST+) • 01-00-0c-cc-cc-cc (CDP (type 0x2000), VTP (type 0x2003), PAgP (type 0x0104), UDLD (type 0x0111), DTP (type 0x2004)
Transparent SVLAN ID	Displays the SVLAN ID used when the QinQ mode is set to transparent. When the QinQ mode is set to selective, you can specify the mapping between the customer VLAN and the service VLAN.
DSCP-CoS	Click the **DSCP-CoS** button. The DSCP-CoS mapping table to provision the CoS based on DSCP for each port is displayed with the following information: • DSCP—Displays the DSCP value. • CoS Value—Displays the CoS value. Choose a CoS value from 0 to 7 and click **OK**. The **DSCP-CoS** button is enabled only when the following conditions are met: • QinQ mode is set to Selective. • Ingress CoS is set to DSCP on Ether and Channel Group ports. **Note** The DSCP-CoS button is enabled only if XPE cards are provisioned in the slot.
Selective Mode	
Filter	Click the filter icon to view the SVLAN details. A text box is available under each head; type the parameter based on which you want the data to be filtered. To sort the data, click the column title.
Add Row	Click the **Add Row** button to add a new QinQ setting to the table. The QinQ mode must be set to Selective. If the client source port mode is set to Transparent, the Add Row button is dimmed.
Add Range	Click the **Add Range** button to open the Add CVLAN Range dialog box and specify a CVLAN range. In the SVLAN drop-down list, choose the SVLAN ID. In the Range text field, specify the CVLAN range; then, click **OK**. A source QinQ table entry will be added for each CVLAN in the range. The QinQ mode must be set to Selective. If the client source port mode is set to Transparent, the **Add Range** button is dimmed.
Remove Row	Click the **Remove Row** button to remove an existing source QinQ table entry. The QinQ mode must be set to Selective. If the client source port mode is set to Transparent, the Remove Row button is dimmed.

Table C-472 Field Descriptions for the QinQ Properties Pane (continued)

Field	Description
Show VLAN	Click the **Show VLAN** button to show the VLAN name. The VLAN name gets added to the SVLAN column. Click the **Show VLAN** button again to remove the VLAN name.
CVLAN	Enter the CVLAN range.
SVLAN	Choose the SVLAN from the drop-down list. You can also perform the following activities: • To show the VLAN name—Click the **Show VLAN** button. • To update the list of VLAN names—Click the **Update** button in the NE Explorer. • To hide the VLAN name—Click the **Show VLAN** button again.
Operation	Sets the operation mode. The options are: • Add—Appends a new .1Q tag with a specific SVLAN ID to all the incoming Ethernet frames tagged with a CVLAN ID. • Double Add—Adds a double tag for the incoming untagged packets. • Translate—Translates the incoming VLAN ID of the incoming Ethernet frames tagged with a CVLAN ID. The CVLAN ID is translated into an SVLAN ID. After this translation, the .1Q tag of the frame is SVLAN. • Translate Add—Adds the outer SVLAN and translates the inner VLAN for incoming single-tagged packets.
Inner SVLAN	This parameter is configurable only when the Operation field is set to Double Add or Translate Add. • If Double Add is chosen, the incoming frame must be untagged and the card will first add the inner SVLAN and then the SVLAN. • If Translate Add is chosen, the incoming frame must be tagged and the card will translate the CVLAN tag with the Inner SVLAN and then will add the SVLAN.

Table C-472 Field Descriptions for the QinQ Properties Pane (continued)

Field	Description
CoS	Class of service for the CVLAN. The CoS .1p bits set the Ethernet frame priority. The options are: • 0 (default)—Sets the .1p bit to 0. • 1—Sets the .1p bit to 1. • 2—Sets the .1p bit to 2. • 3—Sets the .1p bit to 3. • 4—Sets the .1p bit to 4. • 5—Sets the .1p bit to 5. • 6—Sets the .1p bit to 6. • 7—Sets the .1p bit to 7.
IGMP CVLAN	Displays the IGMP CVLAN values. An IGMP CVLAN check box is provided for each row to set the IGMP CVLAN. Note the following IGMP CVLAN setting restrictions: • You can only set one IGMP CVLAN. • You cannot set IGMP CVLAN on the CVLAN range. • You cannot set IGMP CVLAN when the operation mode is set to either Double Add or Translate Add. To set this option, the card mode must be L2 over DWDM. **Note** If the IGMP CVLAN check box is not enabled in the MVR Properties pane, the field shows N/A.

C.2.23.21 QoS

The QoS Properties pane allows you to provision the Weighted Round Robin (WRR) value and bandwidth for QoS Class of Service (CoS) egress queues on GE_XP and 10GE_XP card ports.

To provision QoS settings, the card mode must be L2 over DWDM. You can set the card mode on the Card Properties pane.

You can perform this task only on ports with QoS enabled. You can enable QoS on the Ether Ports Properties pane > Ethernet tab.

Table C-473 Field Descriptions for the QoS Properties Pane

Field	Description
CoS	Displays the CoS egress queue (0 through 7).
Bandwidth	Sets the bandwidth allocated for the CoS egress queue. 100 is the default.
WRR Weight	Sets the Weighted Round Robin (WRR) level for the CoS egress queue. The default is 0 (Strict Priority). The range is from 0 to 15.
Port	Sets the port where you want to provision the QoS settings.

C.2.23.22 REP

The REP Properties pane allows you to control network loops, handle link failures, and improve the convergence time. The Properties pane contains the following tabs:

- C.2.23.22.1 Admin VLAN Configuration Tab, page C-340
- C.2.23.22.2 Segment Tab, page C-340

Note For the REP Properties pane to be enabled, the card mode must be L2 over DWDM.

C.2.23.22.1 Admin VLAN Configuration Tab

The Admin VLAN Configuration tab allows you to manage the VLAN configuration.

Table C-474 Field Descriptions for the Admin VLAN Configuration Tab

Field	Description
Admin VLANs	
SVLAN	Choose the SVLAN from the drop-down list. The valid range is from 1 to 4093.
CVLAN	Sets the CVLAN value. The valid range is from 1 to 4094.

C.2.23.22.2 Segment Tab

The Segment tab allows you to view, create, edit, and delete the segment parameters.

Table C-475 Field Descriptions for the Segment Tab

Field	Description
Segment	Choose the segment from the Segment drop-down list.
Selected Segment	
Port	Displays the port number.
Port Role	Displays the port role. The port is configured as an edge port or as a regular port. The options are: • Edge—The port is configured as an edge port. • None—The port is configured as a regular port.
Port Preferred	Check the Port Preferred check box to configure the regular port as a preferred alternate port.
VLB Enabled	Check the VLAN Load Balancing (VLB) check box to enable VLB. VLAN Load Balancing is configured on GE_XP and 10GE_XP by specifying the VLB preempt delay.
SVLAN	Lists the available SVLANs on the selected card.
VLB Preempt Delay	Displays the trigger delay for automatic VLB activation.
VLB Port ID	Specifies the port identifier that is set for the VLB.
VLB Preferred Port	Specifies if the preferred port identifier should be used for VLB.
STCN Enabled	If checked, enables the show topology change notification (STCN).
STCN Port	Specifies the port used for STCN.

Table C-475 Field Descriptions for the Segment Tab (continued)

Field	Description
STCN Segment	Specifies the segment used for STCN.
Create button	Click the Create button to create a new REP segment.
Edit button	Click the Edit button to edit an existing REP segment.
Activate VLB button	Click the Activate VLB button to activate VLAN load balancing.
Deactivate VLB button	Click the Deactivate VLB button to deactivate VLAN load balancing.
Delete button	Click the Delete button to delete an existing REP segment.

C.2.23.23 RMON Thresholds

The RMON Thresholds Properties pane allows you to view RMON thresholds for GE_XP and 10GE_XP cards.

Table C-476 Field Descriptions for the RMON Thresholds Properties Pane

Field	Description
Port No.	Displays the port number.
Index No.	Displays the selected interface number.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Thresholds	Displays the number of occurrences for the rising threshold.
Falling Thresholds	Displays the number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold.
Create	Click the **Create** button to create a threshold for the POS ports. **Note** You can select a Channel Group when you create a threshold.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.2.23.24 Security

The Security Properties pane allows you to change the MAC filtering properties on the Ethernet ports and provision storm control settings on GE_XP and 10GE_XP cards. The Properties pane contains the following tabs:

- C.2.23.24.1 MAC Filter Tab, page C-342
- C.2.23.24.2 Storm Control Tab, page C-342

Note For the Security Properties pane to be enabled, the card mode must be L2 over DWDM.

C.2.23.24.1 MAC Filter Tab

The MAC Filter Properties pane allows you to provision MAC addresses filter for GE_XP and 10GE_XP cards.

Table C-477 Field Descriptions for the MAC Filter Tab

Field	Description
Port	Displays the port on the selected card.
MAC List	Displays the list of MAC addresses that are filtered or allowed on the Ethernet port. Click the MAC address fields to edit them.
Allowed	Check the **Allowed** check box to specify that only the MAC address listed will be allowed to pass through. If left unchecked, the MAC address will be denied by the port.
Create	Click the **Create** button to add new MAC addresses to the MAC list. A maximum of eight MAC addresses are allowed.
Delete	Click the **Delete** button to delete MAC addresses from the MAC list.

C.2.23.24.2 Storm Control Tab

The Storm Control Properties pane allows you to provision storm control settings for the GE_XP and 10GE_XPE cards.

Table C-478 Field Descriptions for the Storm Control Tab

Field	Description
Port	Displays the port on the selected card.
DLF Storm Control	Enables or disables DLF storm control on the card. The options are: • Checked—DLF storm control is enabled. • Unchecked—DLF storm control is disabled.
DLF Storm Control Threshold (pps)	Enables you to set the threshold value for the number of unknown unicast packets per second. The valid range is from 0 to 16777215 packets per second.
Mcast Storm Control	Enables or disables Multicast storm control on the card. The options are: • Checked—Multicast storm control is enabled. • Unchecked—Multicast storm control is disabled.
Mcast Storm Control Threshold (pps)	Enables you to set the threshold value for the number of multicast packets per second. The valid range is from 0 to 16777215 packets per second.
Bcast Storm Control	Enables or disables Broadcast storm control on the card. The options are: • Checked—Broadcast storm control is enabled. • Unchecked—Broadcast storm control is disabled.
Bcast Storm Control Threshold (pps)	Enables you to set the threshold value for the number of broadcast packets per second. The valid range is from 0 to 16777215 packets per second.

C.2.23.25 Show Command

The Show Command Properties pane allows you to run commands on the node.

Table C-479 Field Descriptions for the Show Command

Field	Description
Command	Choose a command from the Command drop-down list. Values are: • ETH LACP—Displays detailed LACP information from the GE_XP and 10GE_XP cards. • REP TOPO—Displays the topology information for a specific Resilient Ethernet Protocol (REP) segment. • REP TOPO ARCHIVE—Displays the previous topology information for a specific REP segment. • REP INTERFACE—Displays information on the REP interface status and configuration. You can retrieve detailed information for each segment by selecting Detailed from the Level drop-down list and providing the segment ID. • OAM DISCOVERY—Displays discovery information for all the EFM interfaces or for a specific EFM interface. • OAM STATUS—Displays information about the EFM configurations for all the EFM interfaces or for a specific interface. • OAM SUMMARY—Displays the active EFM sessions on a device. • OAM STATISTICS—Displays detailed information about the EFM packets.
Level	Choose the level from the Level drop-down list. Values are: • Normal—Displays the normal information about the segments. • Detailed—Displays the detailed information about the segments.
Key	Enter the key for the selected command. The key value should be an integer. **Note** The Key field is editable only when the command is set to REP.

Table C-479 Field Descriptions for the Show Command (continued)

Field	Description
Show	Click the **Show** button. Depending on the command, the appropriate output appears in the text area.

Save to File	Click the **Save to File** button to save the details of the result to a file on your PC. The Save In window is displayed. Specify the filename and the destination directory. The default location is *client-installation-directory/reports/*.
	Note The **Save to File** button is enabled only when the command output is executed.
	The following message appears in the dialog box. Click **Yes** to overwrite or **No** to cancel the operation.
	`File already exist, Overwrite?`
	The following input/output (I/O) exception appears while saving the file.
	`File not saved, IO Exception occurred`
	Reasons for exception:
	• Failed I/O operations
	• Interrupted I/O operations
	• File directory is write-access protected
	• Access denied to the user

C.2.23.26 SVLAN

The SVLAN Properties pane allows you to change the SVLAN settings for GE_XP or 10GE_XP cards.

To provision SVLAN settings, the card mode must be L2 over DWDM. You can set the card mode on the Card Properties pane. You can perform this task only on ports provisioned as NNI. You can set NNI on the Ether Ports Properties pane > Ethernet tab.

The SVLAN Properties pane contains the following tabs:

- C.2.23.26.1 SVLAN Tab, page C-344
- C.2.23.26.2 SVLAN Database Tab, page C-345

C.2.23.26.1 SVLAN Tab

The SVLAN tab allows you to add an SVLAN to a GE_XP or 10GE_XP port.

Table C-480 Field Descriptions for the SVLAN Tab

Field	Description
SVLAN	Lists the available SVLANs on the selected card.
Port *port number*	Check the port check box to enable the SVLAN on that port. Uncheck the check box to disable the SVLAN on that port. A warning message is displayed when you disable an SVLAN. The SVLAN tab uses the following visual indicators to highlight user changes: • If the background color of the port check box is white, the value has not been modified by a user. • If the background color of the port check box is gray, the value has been modified by a user. • If an SVLAN has been modified by a user, the SVLAN name appears in bold font in the SVLAN list. **Note** Ports assigned to channel groups in the NNI mode will be displayed.

C.2.23.26.2 SVLAN Database Tab

The SVLAN Database tab allows you to view SVLAN database information on a GE_XP or 10GE_XP card.

Table C-481 Field Descriptions for the SVLAN Database Tab

Fields	Description
SVLAN ID	*Display only.* Displays the SVLAN identifier.
SVLAN Name	*Display only.* Displays the SVLAN name.
Protection	*Display only.* Displays whether VLAN protection is enabled.
MAC Learning	*Display only.* Displays whether MAC learning is enabled for the port. MAC learning is used by Layer 2 switches to learn the MAC addresses of network nodes so they know where to send traffic. Layer 2 switches—including GE_XP and 10GE_XP cards in L2 over DWDM mode—maintain a MAC learning table that associates the MAC addresses and VLANs with a given port. **Note** MAC address table aging is 300 seconds. It cannot be changed. For MAC learning to be enabled, the card mode must be L2 over DWDM.
IGMP	*Display only.* Displays whether Internet Group Management Protocol (IGMP) is enabled. IGMP is a protocol used by IPv4 systems to report IP multicast memberships to neighboring multicast routers. IGMP is used to dynamically register individual hosts in a multicast group on a particular LAN. IGMP provides a means to automatically control and limit the flow of multicast traffic throughout your network with the use of special multicast queriers and hosts.
IGMP Fast Leave	*Display only.* Displays whether IGMP fast leave is enabled. IGMP-snooping, fast-leave processing allows the switch to remove an interface from the forwarding table entry without first sending out MAC-based general queries to the interface. The VLAN interface is pruned from the multicast tree for the multicast group specified in the original leave message. Fast-leave processing ensures optimal bandwidth management for all hosts on a switched network, even when multiple multicast groups are being used simultaneously.

Table C-481 Field Descriptions for the SVLAN Database Tab (continued)

Fields	Description
IGMP Suppression	*Display only.* Displays whether IGMP report suppression is enabled. Switches use IGMP report suppression to forward only one IGMP report per multicast router query to multicast devices. When IGMP router suppression is enabled (the default), the switch sends the first IGMP report from all hosts for a group to all the multicast routers. The switch does not send the remaining IGMP reports for the group to the multicast routers. This feature prevents duplicate reports from being sent to the multicast devices.
Load	Click the **Load** button to display or reload the SVLAN database information for the GE_XP or 10GE_XP card.

C.2.23.27 SVLAN AIS

The SVLAN AIS Properties pane allows you to view the SVLAN AIS port information for GE_XP and 10GE_XP cards.

Table C-482 Field Descriptions for the SVLAN AIS Properties Pane

Field	Description
Port	Displays the SVLAN AIS port.
SVLAN AIS dialog box	This dialog box appears when you double-click a row in the table. It provides a list of VLAN IDs that are related to the selected port.

C.2.24 Slot Properties—MXP_2.5G_10E

The slot properties pane displays information about the Cisco ONS 15454 SONET and ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The MXP_2.5G_10E card is a DWDM muxponder for the ONS 15454 platform that supports full optical transparency on the client side. The card multiplexes four 2.5-Gb/s client signals (4 x OC48/STM-16 SFP) into a single 10-Gb/s DWDM optical signal on the trunk side. The MXP_2.5G_10E provides wavelength transmission service for the four incoming 2.5-Gb/s client interfaces. The MXP_2.5G_10E muxponder passes all SONET/SDH overhead bytes transparently.

The MXP_2.5G_10E_C and MXP_2.5G_10E_L cards are DWDM muxponders for the ONS 15454 platform that support full optical transparency on the client side. The cards multiplex four 2.5-Gb/s client signals (4 x OC48/STM-16 SFP) into a single 10-Gb/s DWDM optical signal on the trunk side. The MXP_2.5G_10E_C and MXP_2.5G_10E_L cards provide wavelength transmission service for the four incoming 2.5-Gb/s client interfaces. The MXP_2.5G_10E_C and MXP_2.5G_10E_L muxponders pass all SONET/SDH overhead bytes transparently.

Note When an MLSE transponder module is installed on the MXP_2.5G_10E_C card, Prime Optical displays the card as MXP_2.5G_10EX.

The digital wrapper function (ITU-T G.709 compliant) formats the DWDM wavelength so that it can be used to set up GCCs for data communications, enable FEC, or facilitate PM.

The MXP_2.5G_10E_C and MXP_2.5G_10E_L cards work with OTN devices defined in ITU-T G.709. The cards support ODU1-to-OTU2 multiplexing, an industry-standard method for asynchronously mapping a SONET/SDH payload into a digitally wrapped envelope.

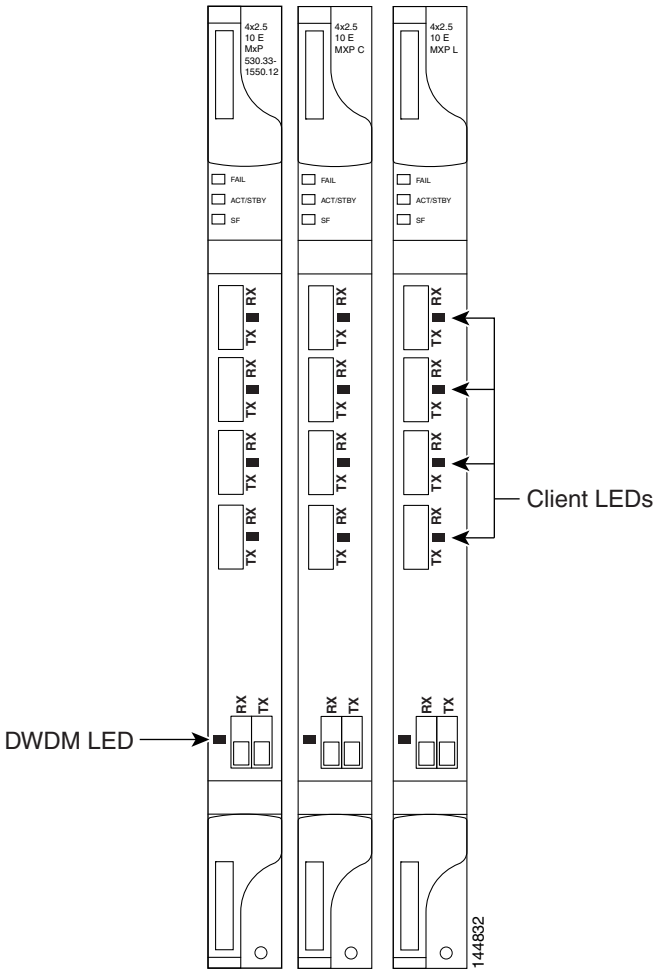
The MXP_2.5G_10E_C and MXP_2.5G_10E_L cards are not compatible with the MXP_2.5G_10G card, which does not support full optical transparency. The faceplate designation of the cards is 4x2.5G 10E MXP C for the MXP_2.5G_10E_C card and 4x2.5G 10E MXP L for the MXP_2.5G_10E_L card.

You can install MXP_2.5G_10E_C and MXP_2.5G_10E_L cards in slots 1 to 6 and 12 to 17. You can provision a card in a linear configuration, as a BLSR/MS-SPRing, a UPSR/SNCP, or a regenerator. The cards can be used in the middle of BLSR/MS-SPRing or 1+1 spans when the cards are configured for transparent termination mode.

The MXP_2.5G_10E_C card features a tunable 1550-nm C-band laser on the trunk port. The laser is tunable across 82 wavelengths on the ITU grid with 50-GHz spacing between wavelengths. The MXP_2.5G_10E_L features a tunable 1580-nm L-band laser on the trunk port. The laser is tunable across 80 wavelengths on the ITU grid, also with 50-GHz spacing. Each card features four 1310-nm lasers on the client ports and contains five transmit and receive connector pairs (labeled) on the card faceplate. The cards use dual LC connectors on the trunk side and SFP modules on the client side for optical cable termination. The SFP pluggable modules are SR or IR and support an LC fiber connector.

The following figure shows the card faceplates.

Figure C-34 MXP-2.5G-10E, MXP-2.5G-10E-C, and MXP-2.5G-10E-L Faceplates



For the MXP_2.5G_10E module, the slot properties pane displays the following properties: Module View, Identification, Card, PPM, Line, OTN, Loopback, Auto Laser Shutdown, Optical Thresh, Alarm Behavior, Protection, and Info.

Note The properties shown depend on the NE configuration.

C.2.24.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.24.2 Identification

The Identification Properties pane allows you to view and update identification information.

Table C-483 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Suppress Alarms	When checked, all alarms are suppressed for the port.

C.2.24.3 Card

The Card Properties pane allows you to view and update card information.

Table C-484 Field Descriptions for the Card Properties Pane

Field	Description
Termination Mode	Allows you to set the mode of termination.
AIS/Squelch Configuration	Allows you to configure the remote client to squelch or send an AIS signal.

C.2.24.4 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-485 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual plugin module that is installed in the slot.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the status of the plugin module: In Service (IS); Out of Service–Maintenance (OOS_MT); Unlocked; or Locked, Maintenance. **Note** You can edit the Admin State value only for actual equipment, not preprovisioned equipment.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the PPM number and port number.
Rate	Displays the port rate.

C.2.24.4.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.24.5 Line

The Line Properties pane allows you to configure line settings. If the card is installed on an ONS 15454 SONET NE, the Properties pane contains the subtabs and fields in Table C-486. If the card is installed on an ONS 15454 SDH NE, the Properties pane contains the subtabs and fields in Table C-487.

Note The following information is the same if the payload is SDH on an ONS 15454 SONET NE.

Table C-486 Field Descriptions for the Line Properties Pane (SONET)

Field	Description
Section Trace	
Port No.	The port number.
Trace Mode	The trace mode (Off or Manual).
Disable AIS/RDI on TIM-S	Disables the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Allows you to select a transmit length for the trace. Values are 1 byte or 16 bytes; the default is 16 bytes.

Table C-486 Field Descriptions for the Line Properties Pane (SONET) (continued)

Field	Description
Current Transmit String	Displays the current transmit string; sets a new transmit string.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
SONET Line	
Port No.	The port number.
Port Name	The port name.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Auto in service soak. The determination of duration left before the traffic/termination transitions to IS state. The range is from 15 minutes to 48 hours.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test). ALS is a laser safety feature defined by ITU G.664. ALS can be provisioned on client and trunk ports for SONET and SDH payload types only.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	The port type (SONET or SDH).
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.

Table C-486 Field Descriptions for the Line Properties Pane (SONET) (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.
Section Thresh 15 Min - Near End	
Port No.	The port number.
CV-S	Coding violations section.
ES-S	Errored seconds section.
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Section Thresh 1 Day - Near End	
Port No.	The port number.

Table C-486 Field Descriptions for the Line Properties Pane (SONET) (continued)

Field	Description
CV-S	Coding violations section.
ES-S	Errored seconds section.
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Line Thresh 15 Min - Near End, Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Line Thresh 1 Day - Near End, Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Wavelength Trunk Settings	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). This single-band card's value is set to *C*.
Trunk	
Port No.	The port number.
Port Name	The port name.

Table C-486 Field Descriptions for the Line Properties Pane (SONET) (continued)

Field	Description
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Error Decorrelator Settings	
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Error Decorrelator	Allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

Table C-487 Field Descriptions for the Line Properties Pane (SDH)

Field	Description
Section Trace	
Port No.	The port number.
Trace Mode	The trace mode (Off or Manual).
Disable AIS/RDI on TIM-S	Disables the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Allows you to select a transmit length for the trace. Values are 1 byte or 16 bytes; the default is 16 bytes.
Current Transmit String	Displays the current transmit string; sets a new transmit string.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
SDH Line	
Port No.	The port number.
Port Name	The port name.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance

Table C-487 Field Descriptions for the Line Properties Pane (SDH) (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Auto in service soak. The determination of duration left before the traffic/termination transitions to IS state. The range is from 15 minutes to 48 hours.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test). ALS is a laser safety feature defined by ITU G.664. ALS can be provisioned on client and trunk ports for SONET and SDH payload types only.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	The port type (SONET or SDH).
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.

Table C-487 Field Descriptions for the Line Properties Pane (SDH) (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.
RS Thresh 15 Min	
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
RS Thresh 1 Day	

Table C-487 Field Descriptions for the Line Properties Pane (SDH) (continued)

Field	Description
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
MS Thresh 15 Min - Near End, Far End	
Port No.	The port number.
EB-MS	Errored blocks–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
MS Thresh 1 Day - Near End, Far End	
Port No.	The port number.
EB-MS	Errored blocks–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Wavelength Trunk Settings	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). This single-band card's value is set to *C*.
Trunk	
Port No.	The port number
Port Name	The port name.

Table C-487 Field Descriptions for the Line Properties Pane (SDH) (continued)

Field	Description
State	Displays the port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • unlocked—Puts the port in service. The port service state changes to unlocked-enabled. • unlocked,automaticInService—Puts the port in automatic in-service. The port service state changes to unlocked-disabled,automaticInService. • locked-disabled—Removes the port from service and disables it. The port service state changes to locked-enabled,disabled. • locked,maintenance—Removes the port from service for maintenance. The port service state changes to locked-enabled,maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Error Decorrelator Settings	
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Error Decorrelator	Allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

C.2.24.6 OTN

The OTN Properties pane allows you to change the line optical transport network (OTN) settings for cards. The Properties pane contains the following tabs:

- C.2.24.6.1 OTN Line Tab, page C-358
- C.2.24.6.2 G.709 Thresh 15 Min Tab, page C-359
- C.2.24.6.3 G.709 Thresh 1 Day Tab, page C-360
- C.2.24.6.4 FEC Thresh 15 Min Tab, page C-361
- C.2.24.6.5 FEC Thresh 1 Day Tab, page C-361
- C.2.24.6.6 Trail Trace Identifier Tab, page C-361

C.2.24.6.1 OTN Line Tab

The OTN Line tab allows you to view and change the OTN line settings of the MXP-2.5G-10E card.

Table C-488 Field Descriptions for the OTN Line Tab

Field	Description
Port No.	Displays the port number.
G.709 OTN	Disables or enables the G.709 OTN feature.

Table C-488 Field Descriptions for the OTN Line Tab (continued)

Field	Description
FEC	Disables or enables forward error correction. **Note** OTN must be enabled before you can enable FEC.
Asynch/Synch Mapping	The card can perform multiplexing per ITU-T G.709. The ODUK (client SONET/SDH payload) can be mapped to the optical channel (OTUK) either asynchronously (asynch mapping) or synchronously (synch mapping) with this setting.
SF BER	Displays the signal fail bit error rate.
SD BER	Displays the signal degrade bit error rate.

C.2.24.6.2 G.709 Thresh 15 Min Tab

The G.709 Thresh 15 Min tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 15 minutes.

Table C-489 Field Descriptions for the G.709 Thresh 15 Min Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.

Table C-489 Field Descriptions for the G.709 Thresh 15 Min Tab (continued)

Field	Description
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.24.6.3 G.709 Thresh 1 Day Tab

The G.709 Thresh 1 Day tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 24 hours.

Table C-490 Field Descriptions for the G.709 Thresh 1 Day Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.

Table C-490 Field Descriptions for the G.709 Thresh 1 Day Tab (continued)

Field	Description
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.24.6.4 FEC Thresh 15 Min Tab

The FEC Thresh 15 Min tab allows you to view and change the 15-minute FEC threshold information of the MXP-2.5G-10E card.

Table C-491 Field Descriptions for the FEC Thresh 15 Min Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.24.6.5 FEC Thresh 1 Day Tab

The FEC Thresh 1 Day tab allows you to view and change the 1-day FEC threshold information of the MXP-2.5G-10E card.

Table C-492 Field Descriptions for the FEC Thresh 1 Day Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.24.6.6 Trail Trace Identifier Tab

The Trail Trace Identifier tab allows you to provision the trail trace identifier for the MXP-2.5G-10E card.

Table C-493 Field Descriptions for the Trail Trace Identifier Tab

Field	Description
Port Number	Displays port number information.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.

C.2.24.7 Loopback

The Loopback Properties pane allows you to view and update MXP-2.5G-10E loopback information.

Table C-494 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).

C.2.24.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-495 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.

Table C-495 Field Descriptions for the Auto Laser Shutdown Properties Pane (continued)

Field	Description
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.24.9 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane contains the following tabs:

- C.2.24.9.1 TCA 15 Min Tab, page C-363
- C.2.24.9.2 TCA 1 Day Tab, page C-363
- C.2.24.9.3 Alarm Thresh Tab, page C-364

C.2.24.9.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to view and change the 15-minute TCA settings of the MXP-2.5G-10E card.

Table C-496 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.24.9.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to view and change the 1-day TCA settings of the MXP-2.5G-10E card.

Table C-497 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.

Table C-497 Field Descriptions for the TCA 1 Day Tab (continued)

Field	Description
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.24.9.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-498 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.24.10 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update alarm profile information.

Table C-499 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
DWDM	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
Payload	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.

Table C-499 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.24.11 Protection

The Protection Properties pane allows you to view and update protection group information.

Table C-500 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.

C.2.24.12 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-501 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.25 Slot Properties—MXP_2.5G_10G

The slot properties pane displays information about the Cisco ONS 15454 SONET and ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

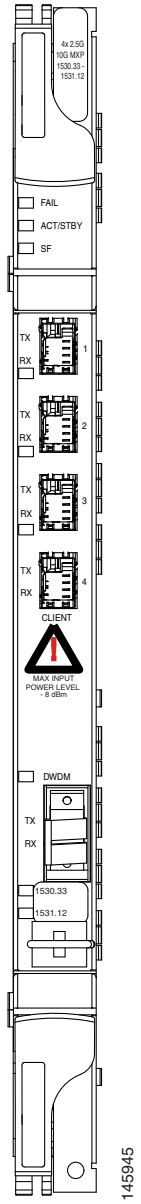
The MXP_2.5G_10G card multiplexes/demultiplexes four 2.5-Gb/s signals (client side) into one 10-Gb/s, 100-GHz DWDM signal (trunk side). It provides one extended long-range STM-64/OC-192 port per card on the trunk side (compliant with ITU-T G.707, ITU-T G.709, ITU-T G.957, and Telcordia GR-253-CORE) and four intermediate- or short-range OC-48/STM-16 ports per card on the client side. The port operates at 9.95328 Gb/s over unamplified distances up to 80 km (50 miles) with different types of fiber such as C-SMF or dispersion-compensated fiber limited by loss and/or dispersion. Prime Optical supports the STM-16 L1 payload over 4x2.5G MXP.

Client ports on the MXP_2.5G_10G card are also interoperable with SONET OC-1 (STS-1) fiber optic signals defined in Telcordia GR-253-CORE. An OC-1 signal is the equivalent of one DS-3 channel transmitted across optical fiber. OC-1 is primarily used for trunk interfaces to phone switches in the United States. There is no SDH equivalent for SONET OC-1.

The MXP_2.5G_10G card is tunable over two neighboring wavelengths in the 1550-nm, ITU 100-GHz range. It is available in 16 different versions, each of which covers two wavelengths, for a total coverage of 32 different wavelengths in the 1550-nm range.

The following figure shows the card faceplate.

Figure C-35 MXP_2.5G_10G Faceplate



For the MXP_2.5G_10G module, the slot properties pane displays the following properties: Module View, Identification, Card, PPM, Line, OTN, Loopback, Auto Laser Shutdown, Optical Thresh, Alarm Behavior, Protection, Inventory, and Info. The properties shown depend on the NE configuration.

C.2.25.1 Module View

The Module View displays a graphic of the MXP_2.5G_10G that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.25.2 Identification

The Identification Properties pane allows you to view and update MXP_2.5G_10G identification information.

Table C-502 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.25.3 Card

The Card Properties pane allows you to view and update card information.

Table C-503 Field Descriptions for the Card Properties Pane

Field	Description
Termination Mode	Allows you to set the mode of termination.

C.2.25.4 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-504 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual plugin module that is installed in the slot.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the status of the plugin module: In Service (IS); Out of Service–Maintenance (OOS_MT); Unlocked; or Locked, Maintenance. **Note** You can edit the Admin State value only for actual equipment, not preprovisioned equipment.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the PPM number and port number.
Rate	Displays the port rate.

C.2.25.4.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.25.5 Line

The Line Properties pane allows you to configure line settings. If the card is installed on an ONS 15454 SONET NE, the Properties pane contains the subtabs and fields in Table C-505. If the card is installed on an ONS 15454 SDH NE, the Properties pane contains the subtabs and fields in Table C-506.

Note The following information is the same if the payload is SDH on an ONS 15454 SONET NE.

Table C-505 Field Descriptions for the Line Properties Pane (SONET)

Field	Description
Section Trace	
Port No.	The port number.
Trace Mode	The trace mode (Off or Manual).
Disable AIS/RDI on TIM-S	Disables the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Allows you to select a transmit length for the trace. Values are 1 byte or 16 bytes; the default is 16 bytes.
Current Transmit String	Displays the current transmit string; sets a new transmit string.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
SONET Line	
Port No.	The port number.
Port Name	The port name.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Auto in service soak. The determination of duration left before the traffic/termination transitions to IS state. The range is from 15 minutes to 48 hours.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test). ALS is a laser safety feature defined by ITU G.664. ALS can be provisioned on client and trunk ports for SONET and SDH payload types only.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	The port type (SONET or SDH).
Section Thresh 15 Min - Near End	
Port No.	The port number.
CV-S	Coding violations section.
ES-S	Errored seconds section.
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Section Thresh 1 Day - Near End	
Port No.	The port number.

Table C-505 Field Descriptions for the Line Properties Pane (SONET) (continued)

Field	Description
CV-S	Coding violations section.
ES-S	Errored seconds section.
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Line Thresh 15 Min - Near End, Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Line Thresh 1 Day - Near End, Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Wavelength Trunk Settings	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). For this single-band card, the band value is fixed to *C*, and this value cannot be altered.

Table C-506 Field Descriptions for the Line Properties Pane (SDH)

Field	Description
Section Trace	
Port Number	The port number.
Trace Mode	Set the trace mode (Off/None or Manual).

Table C-506 Field Descriptions for the Line Properties Pane (SDH) (continued)

Field	Description
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string; sets a new transmit string.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
SDH Line	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	The port type (SONET or SDH).
RS Thresh 15 Minutes - Near End	
Port Number	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
SES-RS	Severely errored seconds regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
RS Thresh 1 Day - Near End	
Port Number	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
SES-RS	Severely errored seconds regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
MS Thresh 15 Minutes - Near End, Far End	
Port Number	The port number.

Table C-506 Field Descriptions for the Line Properties Pane (SDH) (continued)

Field	Description
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
EB-MS	Errored blocks multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
MS Thresh 1 Day - Near End, Far End	
Port Number	The port number.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
EB-MS	Errored blocks multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Wavelength Trunk Settings	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). For this single-band card, the band value is fixed to *C*, and this value cannot be altered.

C.2.25.6 OTN

The OTN Properties pane allows you to change the line optical transport network (OTN) settings for MXP_2.5G_10G cards.

Table C-507 Field Descriptions for the OTN Properties Pane

Field	Description
OTN Line	
Port No.	The port number.
G.709 OTN	Disables or enables the G.709 OTN feature.
FEC	Disables or enables forward error correction. **Note** OTN must be enabled before you can enable FEC.
SF BER	The signal fail bit error rate.
SD BER	The signal degrade bit error rate.

Table C-507 Field Descriptions for the OTN Properties Pane (continued)

Field	Description
G.709 Thresh 15 Min	
SM (OTUK) Near End, Far End	
Port No.	The port number.
BBE-SM	Background block errors.
ES-SM	Errored seconds.
SES-SM	Severely errored seconds.
UAS-SM	Unavailable seconds.
FC-SM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End, Far End	
Port No.	The port number.
BBE-PM	Background block errors.
ES-PM	Errored seconds.
SES-PM	Severely errored seconds.
UAS-PM	Unavailable seconds.
FC-PM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
G.709 Thresh 1 Day	
SM (OTUK) Near End, Far End	
Port No.	The port number.
BBE-SM	Background block errors.
ES-SM	Errored seconds.
SES-SM	Severely errored seconds.
UAS-SM	Unavailable seconds.
FC-SM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End, Far End	
Port No.	The port number.
BBE-PM	Background block errors.
ES-PM	Errored seconds.
SES-PM	Severely errored seconds.
UAS-PM	Unavailable seconds.
FC-PM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
FEC Thresh 15 Minutes	
Port Number	Displays the port number.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.

Table C-507 Field Descriptions for the OTN Properties Pane (continued)

Field	Description
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.
FEC Thresh 1 Day	
Port Number	Displays the port number.
Bit Errors Corrected	Displays the bit errors corrected in one-day intervals.
Uncorrectable Words	Displays the uncorrectable words in one-day intervals.
Trail Trace Identifier	
Port No.	The port number.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch alarms.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.

C.2.25.7 Loopback

The Loopback Properties pane allows you to view and update MXP_2.5G_10G loopback information.

Table C-508 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none).

C.2.25.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-509 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.25.9 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings.

Table C-510 Field Descriptions for the Optical Thresh Properties Pane

Field	Description
TCA 15 Min	
Port Number	Displays the port number.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Laser Bias High	Displays the upper laser bias threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.
TCA 1 Day	
Port Number	Displays the port number.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
Rx Power High	Displays the upper receive power threshold.

Table C-510 Field Descriptions for the Optical Thresh Properties Pane (continued)

Field	Description
Rx Power Low	Displays the lower receive power threshold.
Laser Bias High	Displays the upper laser bias threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Alarm Thresh	
Port Number	Displays the port number.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Laser Bias High	Displays the upper laser bias threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.25.10 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update MXP_2.5G_10G alarm profile information.

Table C-511 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
DWDM	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
Payload	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Table C-511 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
GFP	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.25.11 Protection

The Protection Properties pane allows you to view and update MXP_2.5G_10G protection group information.

Table C-512 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.

C.2.25.12 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the MXP_2.5G_10G module.

Table C-513 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.26 Slot Properties—MXP_MR_10DME

The MXP_MR_10DME-C and MXP_MR_10DME-L cards aggregate a mix of client SAN service client inputs (GE, FICON, and Fibre Channel) into one 10.0-Gb/s STM-64/OC-192 DWDM signal on the trunk side. It provides one long-reach STM-64/OC-192 port per card and is compliant with Telcordia GR-253-CORE and ITU-T G.957.

The cards support aggregation of the following signal types:

- 1-Gigabit Fibre Channel
- 2-Gigabit Fibre Channel
- 4-Gigabit Fibre Channel
- 1-Gigabit Ethernet
- 1-Gigabit ISC-Compatible (ISC-1)
- 2-Gigabit ISC-Peer (ISC-3

The MXP_MR_10DME-C and MXP_MR_10DME-L muxponders pass all SONET/SDH overhead bytes transparently.

The digital wrapper function (ITU-T G.709 compliant) formats the DWDM wavelength so that it can be used to set up GCCs for data communications, enable FEC, or facilitate PM. The MXP_MR_10DME-C and MXP_MR_10DME-L cards work with the OTN devices defined in ITU-T G.709. The cards support ODU1-to-OTU2 multiplexing, an industry-standard method for asynchronously mapping a SONET/SDH payload into a digitally wrapped envelope.

Note Because the client payload cannot oversubscribe the trunk, a mix of client signals can be accepted, up to a maximum limit of 10 Gb/s.

You can install MXP_MR_10DME-C and MXP_MR_10DME-L cards in slots 1 to 6 and 12 to 17.

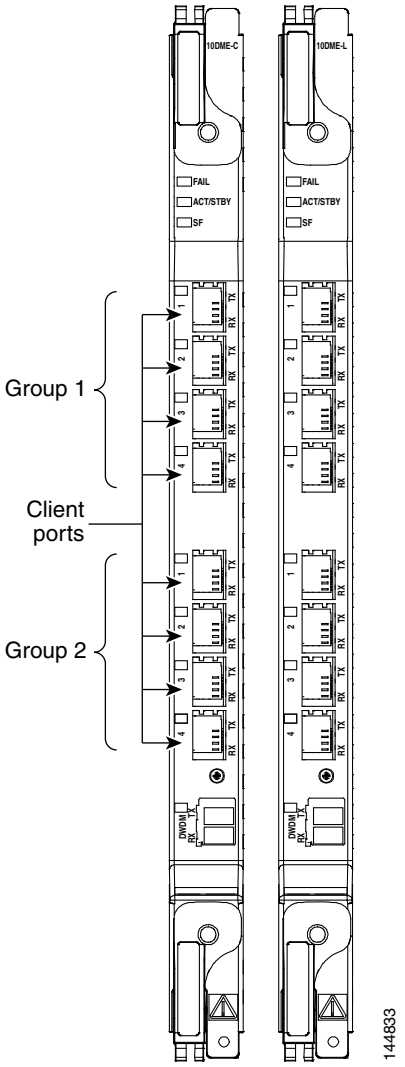
Note

- When an MLSE transponder module is installed on the MXP_MR_10DME-C card, Prime Optical displays the card as MXP_MR_10DMEX.
- On the card faceplates, the MXP_MR_10DME-C and MXP_MR_10DME-L cards are displayed as 10DME-C and 10DME-L, respectively.
- The MXP_MR_10DME-C and MXP_MR_10DME-L cards are not compatible with the MXP_2.5G_10G card, which does not support full optical transparency.

The MXP_MR_10DME-C card features a tunable 1550-nm C-band laser on the trunk port. The laser is tunable across 82 wavelengths on the ITU grid with 50-GHz spacing between wavelengths. The MXP_MR_10DME_L features a tunable 1580-nm L-band laser on the trunk port. The laser is tunable across 80 wavelengths on the ITU grid, also with 50-GHz spacing. Each card features four 1310-nm lasers on the client ports and contains five transmit and receive connector pairs (labeled) on the card faceplate. The cards use dual LC connectors on the trunk side and SFP modules on the client side for optical cable termination. The SFP pluggable modules are SR or IR and support an LC fiber connector.

The following figure shows the MXP_MR_10DME-C and MXP_MR_10DME-L faceplates.

Figure C-36 MXP_MR_10DME-C and MXP_MR_10DME-L Faceplates



For the card, the slot properties pane displays the following properties: Module View, Identification, Card, PPM, Line, OTN, Loopback, Auto Laser Shutdown, Optical Thresh, Alarm Behavior, Protection, and Info.

Note The properties shown depend on the NE configuration.

C.2.26.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.2.26.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-514 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part No.	Displays the part number that is printed on the top of the card.
HW Revision	Displays the hardware version number of the card.
Serial No.	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Suppress Alarms	When checked, all alarms are suppressed for the port.

C.2.26.3 Card

The Card Properties pane allows you to change the working mode of the selected card.

Table C-515 Field Descriptions for the Card Properties Pane

Field	Description
Card Mode	Select the card mode. It can be: • Port 1-4: FC-GE-ISC, Port 5-8: FC-GE-ISC • Port 1-4: FC-GE-ISC, Port 5-8: FC4G • Port 1-4: FC4G Port, 5-8: FC-GE-ISC • Port 1-4: FC4G Port, 5-8: FC4G

C.2.26.4 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-516 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual plugin module that is installed in the slot.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the status of the plugin module: In Service (IS); Out of Service–Maintenance (OOS_MT); Unlocked; or Locked, Maintenance. **Note** You can edit the Admin State value only for actual equipment, not preprovisioned equipment.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the PPM number and port number.
Rate	Displays the port rate.

C.2.26.4.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.26.5 Line

The Line Properties pane allows you to configure line information.

If the card is installed on an ONS 15454 SONET NE, the Line Properties pane contains the following tabs:

- C.2.26.5.1 Section Trace Tab, page C-382
- C.2.26.5.2 SONET Line Tab, page C-382
- C.2.26.5.3 Section Thresh 15 Min Tab, page C-383
- C.2.26.5.4 Section Thresh 1 Day Tab, page C-383
- C.2.26.5.5 Line Thresh 15 Min Tab, page C-383
- C.2.26.5.6 Line Thresh 1 Day Tab, page C-384
- C.2.26.5.7 Client Tab, page C-385
- C.2.26.5.8 RMON Thresholds Tab, page C-386
- C.2.26.5.9 Distance Extension Tab, page C-387
- C.2.26.5.10 Wavelength Trunk Settings Tab, page C-387
- C.2.26.5.11 Error Decorrelator Settings Tab, page C-388

If the card is installed on an ONS 15454 SDH NE, the Properties pane contains the following tabs:

- C.2.26.5.12 SDH Line Tab, page C-388
- C.2.26.5.13 RS Thresh 15 Min Tab, page C-389
- C.2.26.5.14 RS Thresh 1 Day Tab, page C-390
- C.2.26.5.15 MS Thresh 15 Min Tab, page C-390
- C.2.26.5.16 MS Thresh 1 Day Tab, page C-391
- C.2.26.5.17 Wavelength Trunk Settings Tab, page C-391
- C.2.26.5.18 Error Decorrelator Settings Tab, page C-391

C.2.26.5.1 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the card.

Table C-517 Field Descriptions for the Section Trace Tab

Field	Description
Port No.	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is either 1 or 16 bytes.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.2.26.5.2 SONET Line Tab

The SONET Line tab allows you to view and change the SONET line settings of the card.

Table C-518 Field Descriptions for the SONET Line Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.

Table C-518 Field Descriptions for the SONET Line Tab (continued)

Field	Description
Provides Sync	When checked, the card is provisioned as an NE timing reference.
Enable Sync Msg	When checked, enables synchronization status messages, which allow the node to choose the best timing source.
Send Do Not Use	When checked, sends a do not use (DUS) message on the S1 byte.
Wavelength Trunk Settings	Allows you to provision the wavelength frequency and reach value.

C.2.26.5.3 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the 15-minute section threshold information for the card.

Table C-519 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.5.4 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the 1-day section threshold information for the card.

Table C-520 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.5.5 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute line threshold information for the card.

Table C-521 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.5.6 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day line threshold information for the card.

Table C-522 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.

Table C-522 Field Descriptions for the Line Thresh 1 Day Tab (continued)

Field	Description
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.5.7 Client Tab

The Client tab allows you to provision PPM parameters for the MXP_MR_10DME-C and MXP_MR_10DME-L cards.

Table C-523 Field Descriptions for the Client Tab

Field	Description
Port No.	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AIS/Squelch Configuration	Allows you to configure the remote client to squelch or send an AIS signal.

Table C-523 Field Descriptions for the Client Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.26.5.8 RMON Thresholds Tab

The RMON Thresholds tab allows you to view RMON thresholds for the MXP_MR_10DME-C and MXP_MR_10DME-L cards.

Table C-524 Field Descriptions for the RMON Thresholds Tab

Field	Description
Index No.	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.

Table C-524 Field Descriptions for the RMON Thresholds Tab (continued)

Field	Description
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period (sec)	Displays the sample period, in seconds.
Rising Thresholds (count)	Displays the number of occurrences for the rising threshold.
Falling Thresholds (count)	Displays the number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold.
Create	Click the **Create** button to create a threshold for the ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.2.26.5.9 Distance Extension Tab

The Distance Extension tab allows you to enable the buffer-to-buffer extension between the client and the MXP_MR_10DME card.

Table C-525 Field Descriptions for the Distance Extension Tab

Field	Description
Port No.	Displays the port number.
Enable Distance Extension	Check to enable end-to-end distances of up to 1600 km for 1 GFC and up to 800 km for 2 GFC. When enabled, all the fields for the port are enabled.
Fast Switch	Check to allow the interoperability of MXP_MR_10DME card with other devices. **Note** To allow interoperability, the MXP_MR_10DME card should be Y-cable configured.

C.2.26.5.10 Wavelength Trunk Settings Tab

The Wavelength Trunk Settings tab allows you to change the wavelength and band settings for the card.

Table C-526 Field Descriptions for the Wavelength Trunk Settings Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.

Table C-526 Field Descriptions for the Wavelength Trunk Settings Tab (continued)

Field	Description
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). When the card is plugged in, the selection is disabled and the correct value of the band is displayed. When the card is preprovisioned, you can select either L- or C-band.

C.2.26.5.11 Error Decorrelator Settings Tab

Note This Properties pane appears only when the MLSE transponder module is installed.

The Error Decorrelator Settings tab allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

Table C-527 Field Descriptions for the Error Decorrelator Settings Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Error Decorrelator	Allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

C.2.26.5.12 SDH Line Tab

The SDH Line tab allows you to view and change the SDH line settings of the card.

Table C-528 Field Descriptions for the SDH Line Tab

Field	Description
Port No.	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.

Table C-528 Field Descriptions for the SDH Line Tab (continued)

Field	Description
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.26.5.13 RS Thresh 15 Min Tab

The RS Thresh 15 Min tab allows you to view and change the 15-minute regeneration section threshold for the card.

Table C-529 Field Descriptions for the RS Thresh 15 Min Tab

Field	Description
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.5.14 RS Thresh 1 Day Tab

The RS Thresh 1 Day tab allows you to view and change the 1-day regeneration section threshold for the card.

Table C-530 Field Descriptions for the RS Thresh 1 Day Tab

Field	Description
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.5.15 MS Thresh 15 Min Tab

The MS Thresh 15 Min tab allows you to view and change the 15-minute near- and far-end multiplex section threshold for the card.

Table C-531 Field Descriptions for the MS Thresh 15 Min Tab

Field	Description
Port No.	The port number.
EB-MS	Errored blocks multiplexer section.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.5.16 MS Thresh 1 Day Tab

The MS Thresh 1 Day tab allows you to view and change the 1-day near- and far-end multiplex section threshold for the card.

Table C-532 Field Descriptions for the MS Thresh 1 Day Tab

Field	Description
Port Number	The port number.
EB-MS	Errored blocks multiplexer section.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.5.17 Wavelength Trunk Settings Tab

The Wavelength Trunk Settings tab allows you to change the wavelength and band settings for the card.

Table C-533 Field Descriptions for the Wavelength Trunk Settings Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). When the card is plugged in, the selection is disabled and the correct value of the band is displayed. When the card is preprovisioned, you can select either L - or C-band.

C.2.26.5.18 Error Decorrelator Settings Tab

Note This Properties pane appears only when the MLSE transponder module is installed.

The Error Decorrelator Settings tab allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

Table C-534 Field Descriptions for the Error Decorrelator Settings Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Error Decorrelator	Allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

C.2.26.6 OTN

The OTN Properties pane allows you to change the line optical transport network (OTN) settings for MXP_MR_10DME cards. The Properties pane contains the following tabs:

- C.2.26.6.1 OTN Line Tab, page C-392
- C.2.26.6.2 G.709 Thresh 15 Min Tab, page C-392
- C.2.26.6.3 G.709 Thresh 1 Day Tab, page C-393
- C.2.26.6.4 FEC Thresh 15 Min Tab, page C-394
- C.2.26.6.5 FEC Thresh 1 Day Tab, page C-395
- C.2.26.6.6 Trail Trace Identifier Tab, page C-395

C.2.26.6.1 OTN Line Tab

The OTN Line tab allows you to view and change the OTN line settings of the card.

Table C-535 Field Descriptions for the OTN Line Tab

Field	Description
Port No.	The port number.
G.709 OTN	Disables or enables the G.709 OTN feature.
FEC	Disables or enables forward error correction. **Note** OTN must be enabled before you can enable FEC.
Asynch/Synch Mapping	The card can perform multiplexing per ITU-T G.709. The ODUK (client SONET/SDH payload) can be mapped to the optical channel (OTUK) either asynchronously (asynch mapping) or synchronously (synch mapping) with this setting.
SF BER	The signal fail bit error rate.
SD BER	The signal degrade bit error rate.

C.2.26.6.2 G.709 Thresh 15 Min Tab

The G.709 Thresh 15 Min tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 15 minutes.

Table C-536 Field Descriptions for the G.709 Thresh 15 Min Tab

Field	Description
SM (OTUK) Near End	
Port No.	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.

Table C-536 Field Descriptions for the G.709 Thresh 15 Min Tab (continued)

Field	Description
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port No.	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port No.	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port No.	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.6.3 G.709 Thresh 1 Day Tab

The G.709 Thresh 1 Day tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 24 hours.

Table C-537 Field Descriptions for the G.709 Thresh 1 Day Tab

Field	Description
SM (OTUK) Near End	
Port No.	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.

Table C-537 Field Descriptions for the G.709 Thresh 1 Day Tab (continued)

Field	Description
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port No.	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port No.	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port No.	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.6.4 FEC Thresh 15 Min Tab

The FEC Thresh 15 Min tab allows you to view and change the 15-minute FEC threshold values of the card.

Table C-538 Field Descriptions for the FEC Thresh 15 Min Tab

Field	Description
Port No.	Displays port number information.

Table C-538 Field Descriptions for the FEC Thresh 15 Min Tab (continued)

Field	Description
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.26.6.5 FEC Thresh 1 Day Tab

The FEC Thresh 1 Day tab allows you to view and change the 1-day FEC threshold values of the card.

Table C-539 Field Descriptions for the FEC Thresh 1 Day Tab

Field	Description
Port No.	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.26.6.6 Trail Trace Identifier Tab

The Trail Trace Identifier tab allows you to provision the trail trace identifier for the card.

Table C-540 Field Descriptions for the Trail Trace Identifier Tab

Field	Description
Port No.	Displays port number information.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.

C.2.26.7 Loopback

The Loopback Properties pane allows you to view and update loopback information.

Table C-541 Field Descriptions for the Loopback Properties Pane

Field	Description
Port No.	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state.

Table C-541 Field Descriptions for the Loopback Properties Pane (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (None).

C.2.26.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-542 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.26.9 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane contains the following tabs:

- C.2.26.9.1 TCA 15 Min Tab, page C-396
- C.2.26.9.2 TCA 1 Day Tab, page C-397
- C.2.26.9.3 Alarm Thresh Tab, page C-397

C.2.26.9.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to view and change the 15-minute TCA settings of the card.

Table C-543 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port No.	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.

Table C-543 Field Descriptions for the TCA 15 Min Tab (continued)

Field	Description
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.9.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to view and change the 1-day TCA settings of the card.

Table C-544 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port No.	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.9.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-545 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.26.10 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update alarm profile information.

Table C-546 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.

Table C-546 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
DWDM	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
Payload	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
GFP	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.26.11 Protection

The Protection Properties pane allows you to view and update card protection group information.

Table C-547 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.

C.2.26.12 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-548 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

C.2.27 Slot Properties—OPT-AMP-17-C and OPT-AMP-C

This section contains information about the following cards:

- C.2.27.1 OPT-APM-17-C, page C-399
- C.2.27.2 OPT-AMP-C, page C-401

C.2.27.1 OPT-APM-17-C

The OPT-AMP-17-C is a 17-dB gain, C-band, DWDM EDFA amplifier/preamplifier with OSC add-and-drop capability. It supports 80 channels at 50-GHz channel spacing in the C-band (that is, the 1529 nm to 1562.5 nm wavelength range). When an ONS 15454 has an OPT-AMP-17-C installed, an OSCM card is needed to process the OSC. You can install the OPT-AMP-17-C in slots 1 to 6 and 12 to 17.

The card's features include:

- Fixed gain mode (no programmable tilt)
- Standard gain range of 14 to 20 dB at startup when configured as a preamplifier
- Standard gain range of 20 to 23 dB in the transient mode when configured as a preamplifier
- Gain range of 14 to 23 dB (with no transient gain range) when configured as a booster amplifier
- True variable gain
- Fast transient suppression
- Nondistorting low-frequency transfer function
- Settable maximum output power
- Fixed output power mode (mode used during provisioning)
- ASE compensation in fixed gain mode
- Full monitoring and alarm handling with settable thresholds
- Optical safety remote interlock (OSRI)
- ALS

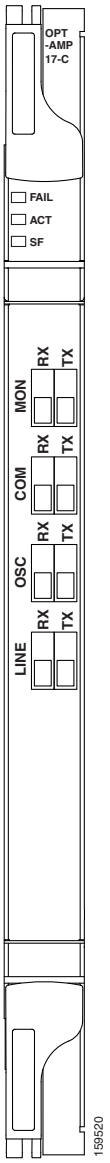
The OPT-AMP-17-C amplifier card has eight optical ports located on the faceplate:

- MON RX—Output monitor port (receive section).
- MON TX—Output monitor port.
- COM RX—Input signal port.

- LINE TX—Output signal port.
- LINE RX—Input signal port (receive section).
- COM TX—Output signal port (receive section).
- OSC RX—OSC add input port.
- OSC TX—OSC drop output port.

The following figure shows the OPT-AMP-17-C amplifier card faceplate.

Figure C-37 OPT-AMP-17-C Faceplate



C.2.27.2 OPT-AMP-C

The OPT-AMP-C is a 20-dB output power, C-band, DWDM EDFA amplifier/preamplifier. It contains midstage access loss for a Dispersion Compensation Unit (DCU). To control gain tilt, a VOA is used. The VOA is also used to pad the DCU to a reference value. The amplifier module also includes the OSC add (TX direction) and drop (RX direction) optical filters.

The OPT-AMP-C supports 80 channels at 50-GHz channel spacing in the C-band (that is, the 1529 nm to 1562.5 nm wavelength range). When an ONS 15454 has an OPT-AMP-C installed, an OSCM card is needed to process the OSC. You can install the OPT-AMP-C in slots 1 to 6 and 12 to 17. Slots 2 to 6 and slots 12 to 16 are the default slots for provisioning the OPT-AMP-C card as a preamplifier, and slots 1 and 17 are the default slots for provisioning the OPT-AMP-C card as a booster amplifier.

The card's features include:

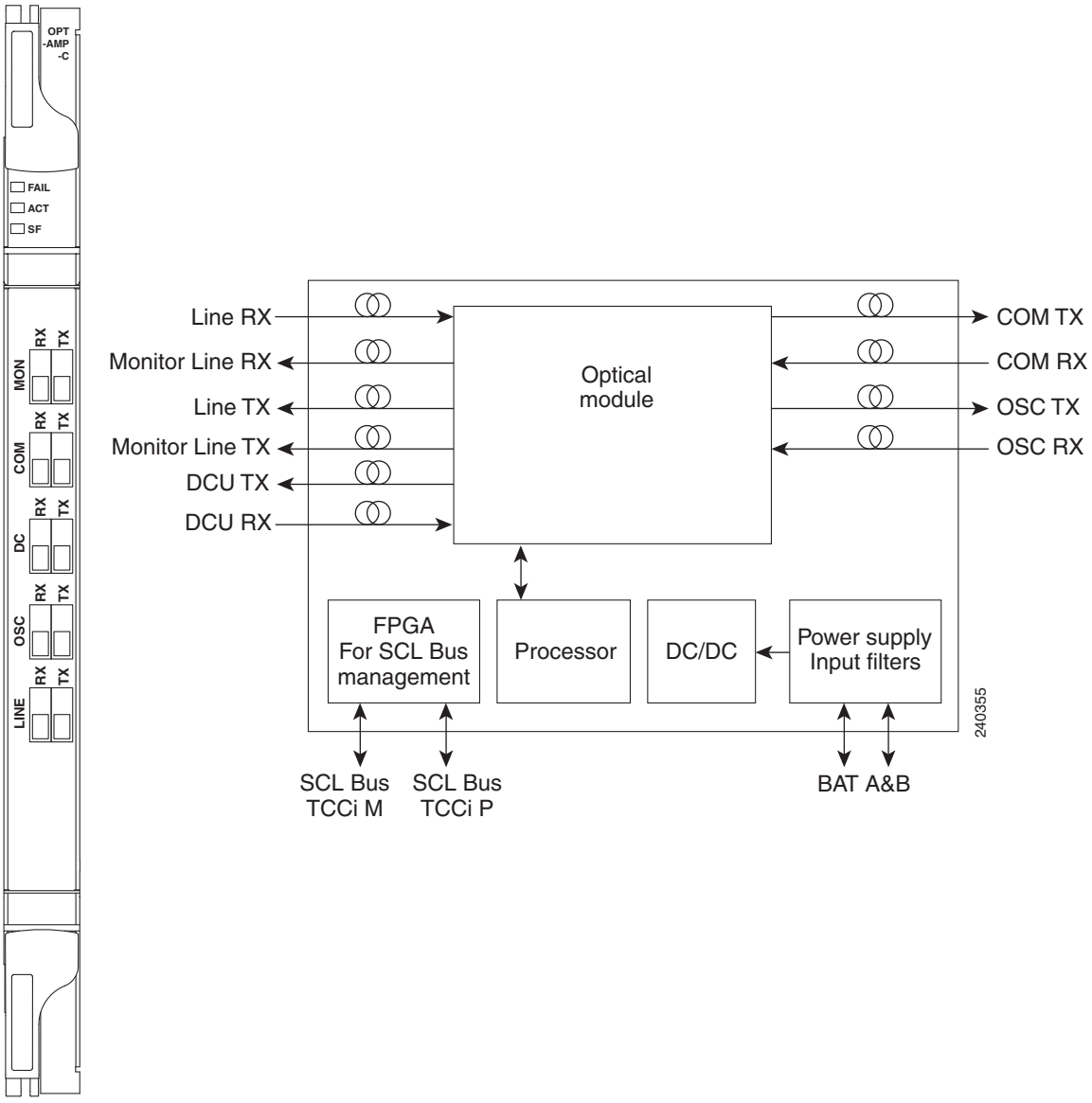
- Fast transient suppression
- Nondistorting low-frequency transfer function
- Midstage access for dispersion compensation unit
- Constant pump current mode (test mode)
- Fixed output power mode (mode used during provisioning)
- Constant gain mode
- ASE compensation in constant gain and constant output power modes
- Programmable tilt
- Full monitoring and alarm handling capability
- Gain range with gain tilt control of 12 to 24 dB
- Extended gain range (with uncontrolled tilt) of 24 to 35 dB
- Full monitoring and alarm handling with settable thresholds
- OSRI
- ALS

The OPT-AMP-C amplifier card has 10 optical ports located on the faceplate:

- MON RX is the output monitor port (receive section).
- MON TX is the output monitor port.
- COM RX is the input signal port.
- COM TX is the output signal port (receive section).
- DC RX is the input DCU port.
- DC TX is the output DCU port.
- OSC RX is the OSC add input port.
- OSC TX is the OSC drop output port.
- LINE RX is the input signal port (receive section).
- LINE TX is the output signal port.

The following figure shows the OPT-AMP-C amplifier card faceplate.

Figure C-38 OPT-AMP-C Faceplate



For the OPT-AMP-17-C and OPT-AMP-C modules, the slot properties pane displays the following properties: Module View, Identification, Card, Optical Line, Optical Amplified Line, Inventory, Alarm Behavior, and Auto Laser Shutdown.

C.2.27.3 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.27.4 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-549 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.27.5 Card

The Card Properties pane allows you to change the working mode of the selected card.

Table C-550 Field Descriptions for the Card Properties Pane

Field	Description
Card Working Mode	Select the card working mode: • OPT_LINE—The card is working as a booster amplifier. • OPT_PRE—The card is working as a preamplifier. In this state the OSC ports are disabled.

C.2.27.6 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-551 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • IS, AINS—In Service. The port service state changes to IS_NR. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT Administration State must be initiated.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.
AINS Soak	Auto in service soak. The determination of duration left before the traffic/termination transitions to IS state.
Attenuator Value	Displays the value of an external attenuator required by DWDM network design.
OSC Power	Shows the current optical service channel (OSC) power level per port.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Warning Thresh 15 Min	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power threshold.
Power High (dBm)	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power threshold.
Power High (dBm)	Allows you to set the high power threshold.
Alarm Thresh	

Table C-551 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low (dBm)	Allows you to set the low power failure threshold.
Power Degrade High (dBm)	Allows you to set the high power degrade threshold.
Power Degrade Low (dBm)	Allows you to set the low power degrade threshold.
Gain Degrade Low (dBm)	Allows you to set the low gain degrade threshold.
Gain Degrade High (dBm)	Allows you to set the high gain degrade threshold.
OSC Power Failure High	Allows you to set the high OSC power failure threshold.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.

C.2.27.7 Optical Amplified Line

The Optical Amplified Line Properties pane allows you to view and update optical amplified line threshold information.

Table C-552 Field Descriptions for the Optical Amplified Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Total Output Power	Shows the current power level per port.
Output Power Setpoint	Shows the total optical power going to the amplifier.
Channel Power Ref.	Shows the channel power setpoint.
Offset	Allows you to manually set the total optical power going to the amplifiers.
Signal Output Power	Shows the current output power leaving the amplifier, including the ASE contribution.
Attenuator Value	Displays the value of an external attenuator required by DWDM network design.

Table C-552 Field Descriptions for the Optical Amplified Line Properties Pane (continued)

Field	Description
OSC Power	Shows the current optical service channel (OSC) power level per port.
Mode	Shows the working mode of the amplifier: control gain or control power.
Gain	The current gain of the amplifiers.
Gain Set Point	The value of the gain that the amplifier must achieve. The value is display-only or numeric depending on the mode setting. When the system is configured as metro core, this field is display-only. When the system is configured as metro access, this field is configurable.
Tilt Reference	This field is set to zero. It represents the default value for the amplifier tilt. In a future software release this value will be managed by APC.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
AINS Soak	The automatic in-service soak period.
Tilt Calibration	(*Available in the OPT-AMP-C card only*) Allows you to manually set the amplifier tilt.
DCU Insertion Loss	(*Available in the OPT-AMP-C card only*) The dispersion compensation unit (DCU) insertion loss.
Warning Thresh 15 Min	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Output Line, Input Line, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Output Line, Input Line, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Alarm Thresh	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Output Line, Input Line, and Drop.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.
OSC Power Failure High	Allows you to set the high OSC power failure threshold.

Table C-552 Field Descriptions for the Optical Amplified Line Properties Pane (continued)

Field	Description
OSC Power Failure Low	Allows you to set the low OSC power failure threshold
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.

C.2.27.8 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-553 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.27.9 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-554 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.27.10 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-555 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
OSRI	Allows you to turn the optical safety remote interlock (OSRI) on or off.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur.	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int.	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Currently Shutdown	Indicates whether the laser is currently shut down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.28 Slot Properties—OPT-AMP-L

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

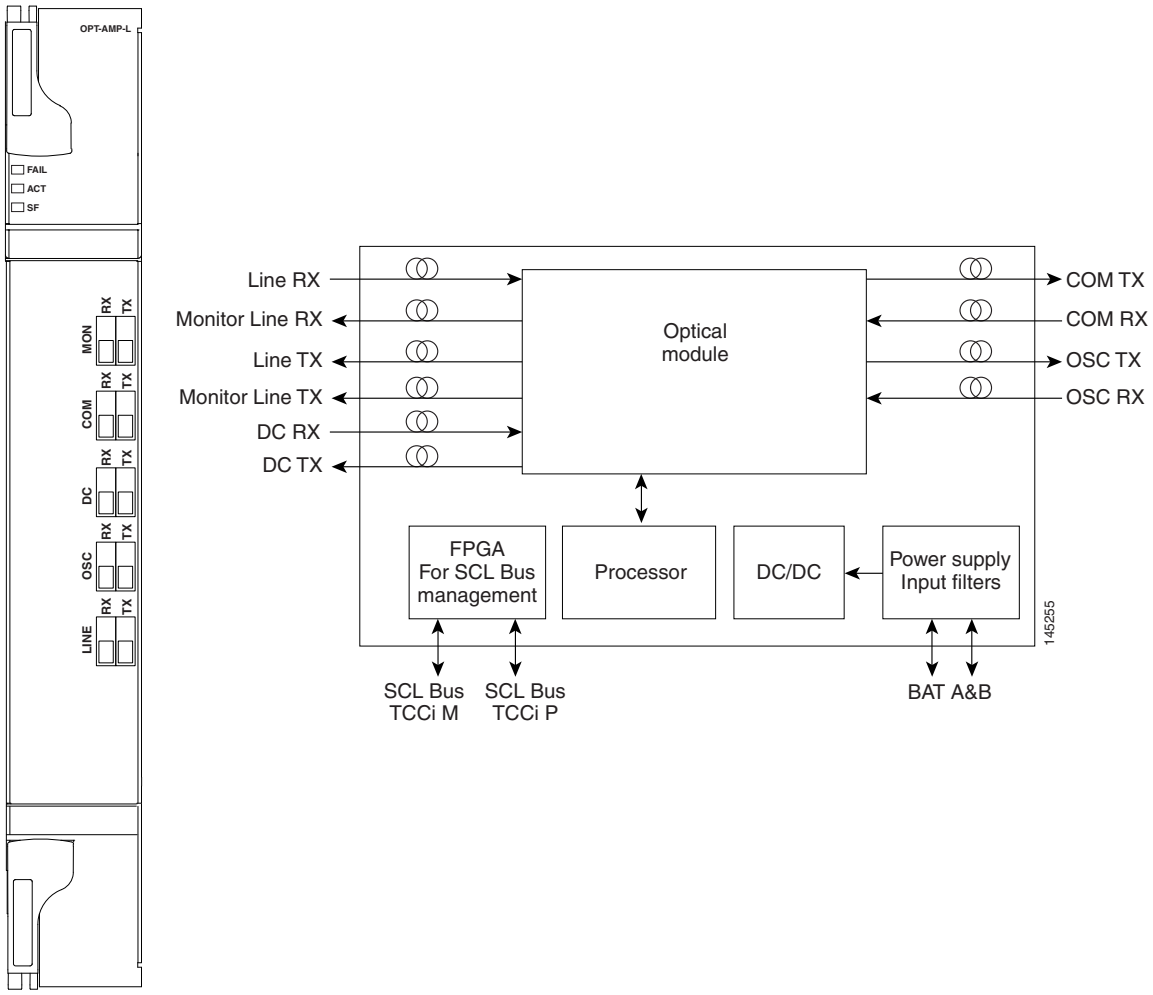
The OPT-AMP-L is an L-band DWDM optical amplifier module consisting of a two-stage EDFA with midstage access loss (MSL) for an external DCU and OSC add-and-drop capability. Using CTC, the card is provisionable as a preamplifier or booster amplifier and is well suited for use in networks that employ DS fiber or SMF-28 single-mode fiber. The amplifier can operate up to 64 optical transmission channels at a channel spacing of 50 GHz in the wavelength range from 1570 nm to 1605 nm.

The OPT-AMP-L can achieve a maximum signal power of 20 dBm throughout the gain and MSL ranges. The amplifier has a variable gain range that is settable from 12-dBm to 24-dBm in the standard gain range and from 24-dBm to 35-dBm with uncontrolled gain tilt. It also provides up to 12-dBm MSL for an external DCU.

When an ONS 15454 has an OPT-AMP-L installed, you only need the OSCM to process the OSC. You can install the two-slot OPT-AMP-L in slots 1 to 6 and 12 to 17. To control the gain tilt, the OPT-AMP-L is equipped with a built-in VOA.

The following figure shows the OPT-AMP-L amplifier faceplate and block diagram.

Figure C-39 OPT-AMP-L Faceplate



For the OPT-AMP-L module, the slot properties pane displays the following properties: Module View, Identification, Card, Optical Line, Optical Amplified Line, Inventory, and Alarm Behavior.

C.2.28.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.28.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-556 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.28.3 Card

The Card Properties pane allows you to change the working mode of the selected card.

Table C-557 Field Descriptions for the Card Properties Pane

Field	Description
Card Working Mode	Select the card working mode: • OPT-LINE—The card is working as preamplifier. In this state the OSC ports are disabled. • OPT_PRE—The card is working as booster amplifier.

C.2.28.4 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-558 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • IS, AINS—In Service. The port service state changes to IS_NR. • OOS, DSBLD—Out of Service, Disabled. The port service state changes to OOS_MA, DSBLD. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT Administration State must be initiated.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.
OSC Power	Shows the current optical service channel (OSC) power level per port.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Warning Thresh 15 Min	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Alarm Thresh	
Port Number	The port number.

Table C-558 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold.
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.

C.2.28.5 Optical Amplified Line

The Optical Amplified Line Properties pane allows you to view and update optical amplified line threshold information.

Table C-559 Field Descriptions for the Optical Amplified Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Total Output Power	Shows the current power level per port.
Output Power Setpoint	Shows the total optical power going to the amplifier.
Channel Power Ref.	Shows the channel power setpoint.
Offset	Allows you to manually set the total optical power going to the amplifiers.
Mode	Shows the working mode of the amplifier: control gain or control power.
Gain	The current gain of the amplifiers.
Gain Set Point	The value of the gain that the amplifier must achieve. The value is display-only or numeric depending on the mode setting. When the system is configured as metro core, this field is display-only. When the system is configured as metro access, this field is configurable.

Table C-559 Field Descriptions for the Optical Amplified Line Properties Pane (continued)

Field	Description
Tilt Reference	This field is set to zero. It represents the default value for the amplifier tilt. In a future software release this value will be managed by APC.
Tilt Calibration	Allows you to manually set the amplifier tilt.
DCU Insertion Loss	The dispersion compensation unit (DCU) insertion loss.
OSC Power	Shows the current optical service channel (OSC) power level per port.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Alarm Thresh	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold.
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.

C.2.28.6 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-560 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the card specification.

Table C-560 Field Descriptions for the Inventory Properties Pane (continued)

Field	Description
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.28.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-561 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.29 Slot Properties—OPT-RAMP-C and OPT-RAMP-CE

The OPT-RAMP-C is a double slot unit and improves unregenerated sections in long spans using the span fiber to amplify the optical signal. To achieve Raman amplification, two Raman signals (that do not carry any payload or overhead) are transmitted on the fiber and are used because the gain generated by one signal is not flat (different wavelengths in C-band receive different gain values). The energy of these Raman signals transfers to the higher region of the spectrum, thereby amplifying the signals transmitted at higher wavelengths. The Raman effect reduces span loss and does not compensate it completely.

The unit operates up to 80 optical transmission channels at 50-GHz channel spacing over the C-band of the optical spectrum (wavelengths from 1529 nm to 1562.5 nm). To provide a counter-propagating Raman pump into the transmission fiber, the Raman amplifier provides up to 500 mW at the LINE-RX connector. The OPT-RAMP-C card can be installed in slots 1 to 5 and 12 to 16. The OPT-RAMP-C card supports all network configurations. However, it can be equipped only on the endpoints of a span.

The OPT-RAMP-CE card is a 20-dBm output power, gain-enhanced version of the OPT-RAMP-C card and is optimized for short span. The OPT-RAMP-C or OPT-RAMP-CE card can operate up to 80 optical transmission channels at 50-GHz channel spacing over the C-band of the optical spectrum (wavelengths from 1529 nm to 1562.5 nm). To provide a counter-propagating Raman pump into the transmission fiber, the Raman amplifier provides up to 500 mW at the LINE-RX connector. The OPT-RAMP-C or

OPT-RAMP-CE card can be installed in Slots 1 to 5 and 12 to 16, and supports all network configurations. However, the OPT-RAMP-C or OPT-RAMP-CE card can be equipped only on endpoints of a span.

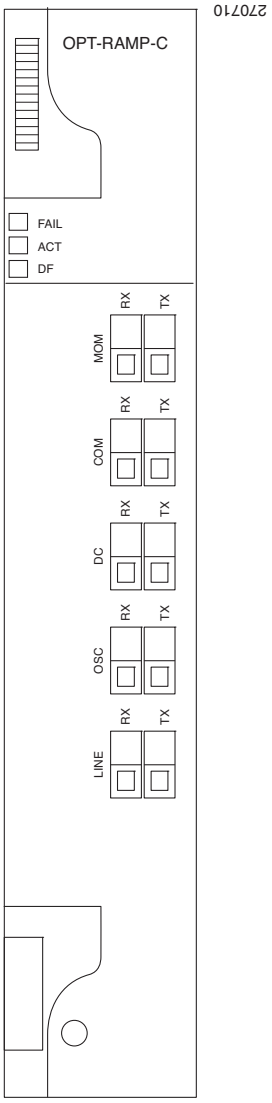
When the Raman optical powers are set correctly, a gain profile with limited ripple is achieved. The wavelengths of the Raman signals are not in the C-band of the spectrum (used by MSTP for payload signals). The two Raman wavelengths are fixed and always the same. Due to a limited Raman gain, an EDFA amplifier is embedded on the card to generate a higher total gain. An embedded EDFA gain block provides a first amplification stage, while the midstage access (MSA) is used for DCU loss compensation.

The features of the OPT-RAMP-C and OPT-RAMP-CE card include:

- Raman pump with embedded EDFA gain block
- Raman section: 500 mW total pump power for two pump wavelengths
- EDFA section:
  - OPT-RAMP-C: 16 dB gain and 17 dB output power
  - OPT-RAMP-CE: 11 dB gain and 20 dB output power
- Gain Flattening Filter (GFF) for Raman plus EDFA ripple compensation
- MSA for DC units
- VOA for DC input power control
- Full monitoring of pump, OSC, and signal power
- Fast gain control for transient suppression
- Low-FIT (hardware-managed) optical laser safety
- Hardware output signals for LOS monitoring at input photodiodes
- Optical service channel add and drop filters
- Raman pump back-reflection detector

The following figure shows the OPT-RAMP-C card faceplate.

Figure C-40 OPT-RAMP-C Faceplate



For the OPT-RAMP-C and OPT-RAMP-CE modules, the slot properties pane displays the following properties: Module View, Identification, Optical Line, Optical Amplified Line, Optical Raman Line, Alarm Behavior, Auto Laser Shutdown, Installation, and Inventory.

C.2.29.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.29.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-562 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.29.3 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-563 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.

Table C-563 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • IS—In Service. The port service state changes to IS_NR. • IS, AINS—Automatic In Service. The port service state changes to OOS_AU, AINS. • OOS, DSBLD—Out of Service, Disabled. The port service state changes to OOS_MA, DSBLD. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT Administration State must be initiated.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.
AINS Soak	Auto in service soak. The determination of duration left before the traffic/termination transitions to IS state.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Warning Thresh 15 Min	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power threshold.
Power High (dBm)	Allows you to set the high power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power threshold.
Power High (dBm)	Allows you to set the high power threshold.
Alarm Thresh	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low (dBm)	Allows you to set the low power failure threshold.
Power Degrade High (dBm)	Allows you to set the high power degrade threshold.
Power Degrade Low (dBm)	Allows you to set the low power degrade threshold.
Gain Degrade Low (dBm)	Allows you to set the low gain degrade threshold.
Gain Degrade High (dBm)	Allows you to set the high gain degrade threshold.

C.2.29.4 Optical Amplified Line

The Optical Amplified Line Properties pane allows you to view and update optical amplified line threshold information.

Table C-564 Field Descriptions for the Optical Amplified Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Total Output Power	Shows the current power level per port.
Offset	Allows you to manually set the total optical power going to the amplifiers.
Signal Output Power	Shows the current output power leaving the amplifier, including the ASE contribution.
Mode	Shows the working mode of the amplifier: control gain or control power.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Attenuation Ref	The VOA reference attenuation.
VOA Attenuation Calib	The VOA calibration attenuation.
DCU Insertion Loss	(*Available in the OPT-RAMP-C card only*) The dispersion compensation unit (DCU) insertion loss.
Gain	The current gain of the amplifiers.
Gain Set Point	The value of the gain that the amplifier must achieve. The value is display-only or numeric depending on the mode setting. When the system is configured as metro core, this field is display-only. When the system is configured as metro access, this field is configurable.
Tilt Reference	This field is set to zero. It represents the default value for the amplifier tilt. In a future software release this value will be managed by APC.
AINS Soak	The automatic in-service soak period.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Warning Thresh 15 Min	
Port Number	The port number.

Table C-564 Field Descriptions for the Optical Amplified Line Properties Pane (continued)

Field	Description
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Output Line, Input Line, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Output Line, Input Line, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Alarm Thresh	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Output Line, Input Line, and Drop.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.

C.2.29.5 Optical Raman Line

The Optical Raman Line Properties pane allows you to view and update optical Raman line information.

Table C-565 Field Descriptions for the Optical Raman Line

Field	Description
Parameters	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.

Table C-565 Field Descriptions for the Optical Raman Line (continued)

Field	Description
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Ratio	Displays the Raman pump ratio in percentage value.
Expected Total Power	Displays the Raman pump expected total power.
Warning Thresh 15 Min	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Output Line, Input Line, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Output Line, Input Line, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Alarm Thresh	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Output Line, Input Line, and Drop.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.

C.2.29.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-566 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.29.7 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-567 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the card port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
OSRI	Allows you to turn the optical safety remote interlock (OSRI) on or off.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur.	*Display only.* Allows you to set the recovery laser pulse duration, in seconds, for the initial recovery optical power pulse following a laser shutdown.
Rec. Pulse Int.	*Display only.* Allows you to set the recovery laser pulse interval, in seconds. This is the period of time that must pass before the recovery pulse is repeated.
Currently Shutdown	Indicates whether the laser is currently shut down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.
OSC Based Startup	When true, enables OSC-based startup for Raman optics line.

C.2.29.8 Installation

The Installation Properties pane displays installation information.

Table C-568 Field Descriptions for the Installation Properties Pane

Field	Description
Username	Provides the string for user login for the setup.
Status	Displays whether Raman is tuned or not tuned.
Gain	Displays the actual Raman gain.
Actual Tilt	Displays the actual Raman tilt.
Date	Displays the date and time for the setup.
Power	Displays the Raman pump total power.
Ratio	Displays the Raman pump ratio.
Fiber Cut Recovery	Displays the status of the Restore from Fiber Cut operation. Valid values are: • Not Need • Failed • Executed • Pending
Fiber Cut Date	Displays the date when the Restore from Fiber Cut operation was executed.

Table C-568 Field Descriptions for the Installation Properties Pane (continued)

Field	Description
S1 Low	Displays the power at node B when wavelength 1 is switched on at node A and the power is low.
S1 High	Displays the power at node B when wavelength 1 is switched on at node A and the power is high.
S2 Low	Displays the power at node B when wavelength 2 is switched on at node A and the power is low.
S2 High	Displays the power at node B when wavelength 2 is switched on at node A and the power is high.

C.2.29.9 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-569 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

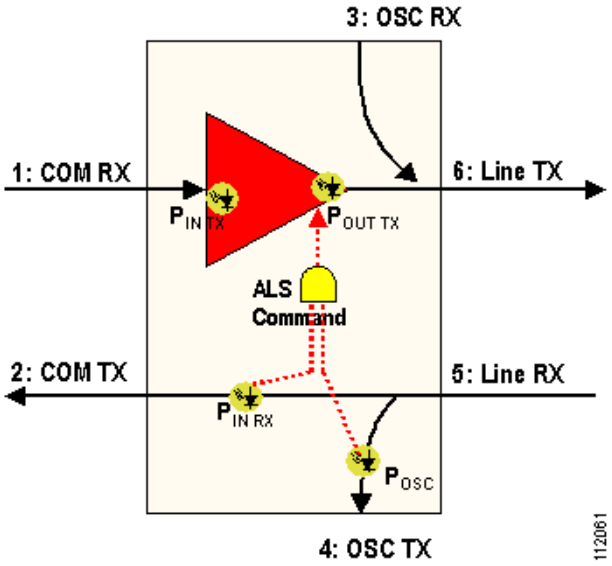
C.2.30 Slot Properties—OPT-BST

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Optical Booster Amplifier (OPT-BST) module is a single-slot card that has eight LC-PC-II optical connectors. The card features true variable gain, fixed gain mode (with programmable tilt), fast transient suppression, and configurable maximum output power. The OPT-BST card supports optical safety functionality by signal loss detection and alarm, fast power down control, and reduced maximum output power in safe power mode.

The following figure shows the block diagram.

Figure C-41 OPT-BST Module



For the OPT-BST module, the slot properties pane displays the following properties: Module View, Identification, Optical Line, Optical Amplified Line, Inventory, Alarm Behavior, and Auto Laser Shutdown.

C.2.30.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.30.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-570 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.

Table C-570 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.30.3 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-571 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	Displays the port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
OSC Power	Shows the current optical service channel (OSC) power level per port.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.

Table C-571 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Alarm Thresh	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure threshold. The range for each port is: • Port 1: –40 to 11-dBm • Port 2: –42 to 11-dBm • Port 3: N/A • Port 4: –43 to –2-dBm • Port 5: N/A
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold.
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.

C.2.30.4 Optical Amplified Line

The Optical Amplified Line Properties pane allows you to view and update optical amplified line threshold information.

Table C-572 Field Descriptions for the Optical Amplified Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.

Table C-572 Field Descriptions for the Optical Amplified Line Properties Pane (continued)

Field	Description
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Total Output Power	Shows the current power level per port.
Output Power Setpoint	Shows the total optical power going to the amplifier.
Channel Power Ref.	Shows the channel power setpoint.
Offset	Allows you to manually set the total optical power going to the amplifiers.
Mode	Shows the working mode of the amplifier: control gain or control power.
Gain	The current gain of the amplifiers.
Gain Set Point	The value of the gain that the amplifier must achieve. The value is display-only or numeric depending on the mode setting. When the system is configured as metro core, this field is display-only. When the system is configured as metro access, this field is configurable.
Tilt Reference	This field is set to zero. It represents the default value for the amplifier tilt. In a future software release this value will be managed by APC.
Tilt Calibration	Allows you to manually set the amplifier tilt.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Alarm Thresh	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure threshold. The range is from –10 to 20-dBm.
Power Degrade High	Allows you to set the high power degrade threshold. The range is from –10 to 20-dBm.

Table C-572 Field Descriptions for the Optical Amplified Line Properties Pane (continued)

Field	Description
Power Degrade Low	Allows you to set the low power degrade threshold. The range is from –10 to 20-dBm.
Gain Degrade Low	Allows you to set the low gain degrade threshold. The range is from 3 to 22-dBm.
Gain Degrade High	Allows you to set the high gain degrade threshold. The range is from 3 to 22-dBm.

C.2.30.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-573 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.30.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-574 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.30.7 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-575 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Currently Shutdown	Indicates whether the laser is currently shut down.
OSRI	Allows you to turn the optical safety remote interlock (OSRI) on or off.

Table C-575 Field Descriptions for the Auto Laser Shutdown Properties Pane (continued)

Field	Description
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.31 Slot Properties—OPT-BST-E

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

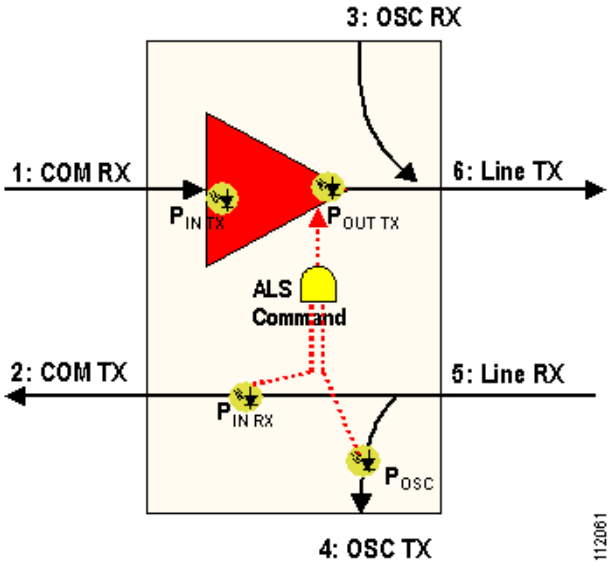
The Enhanced Optical Booster Amplifier (OPT-BST-E) card supports the transmission of 32 channels in the C-band on the ONS 15454 SONET and ONS 15454 SDH platforms. The OPT-BST-E card provides optical amplification in the line where a +1 dBm per channel power in fiber with the full 64-channel grid is required.

Compared to the standard amplifier card (OPT-BST), the enhanced card provides a a higher optical output power, up to a maximum of 20-dBm, to address longer unregenerated distances using the ONS 15454 platform.

Through the Power Restyling feature, six new levels of Optical Service Channel (OSC) power can be monitored. Prime Optical supports all of the six new parameters on all optical interfaces of cards supported by ONS 15454 SONET and ONS 15454 SDH.

The following figure shows the block diagram.

Figure C-42 OPT-BST-E Module



For the OPT-BST-E module, the slot properties pane displays the following properties: Module View, Identification, Optical Line, Optical Amplified Line, Inventory, Alarm Behavior, and Auto Laser Shutdown.

C.2.31.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.31.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-576 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.

Table C-576 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.31.3 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-577 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can contain up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
OSC Power	Shows the current optical service channel (OSC) power level per port.
Warning Thresh 15 Min	
Port Number	The port number.

Table C-577 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Alarm Thresh	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure threshold. The range for each port is: • Port 1: –31 to 13-dBm • Port 2: –42 to 11-dBm • Port 3: N/A • Port 4: –43 to –2-dBm • Port 5: N/A
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold
OSC Power Failure High	Allows you to set the high OSC power failure threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.

C.2.31.4 Optical Amplified Line

The Optical Amplified Line Properties pane allows you to view and update optical amplified line threshold information.

Table C-578 Field Descriptions for the Optical Amplified Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.

Table C-578 Field Descriptions for the Optical Amplified Line Properties Pane (continued)

Field	Description
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Total Output Power	Shows the current power level per port.
Output Power Setpoint	Shows the total optical power going to the amplifier.
Channel Power Ref.	Shows the channel power setpoint.
Offset	Allows you to manually set the total optical power going to the amplifiers.
Mode	Shows the working mode of the amplifier: control gain or control power.
Gain	The current gain of the amplifiers.
Gain Set Point	The value of the gain that the amplifier must achieve. The value is display-only or numeric depending on the mode setting. When the system is configured as metro core, this field is display-only. When the system is configured as metro access, this field is configurable.
Tilt Reference	This field is set to zero. It represents the default value for the amplifier tilt. In a future software release this value will be managed by APC.
Tilt Calibration	Allows you to manually set the amplifier tilt.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Alarm Thresh	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure threshold. The range is from –5 to 23-dBm.
Power Degrade High	Allows you to set the high power degrade threshold. The range is from –5 to 23-dBm.

Table C-578 Field Descriptions for the Optical Amplified Line Properties Pane (continued)

Field	Description
Power Degrade Low	Allows you to set the low power degrade threshold. The range is from –5 to 23-dBm.
Gain Degrade Low	Allows you to set the low gain degrade threshold. The range is from 10 to 28-dBm.
Gain Degrade High	Allows you to set the high gain degrade threshold. The range is from 6 to 24-dBm.

C.2.31.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-579 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.31.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-580 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.31.7 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-581 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Currently Shutdown	Indicates whether the laser is currently shut down.
OSRI	Allows you to turn the optical safety remote interlock (OSRI) on or off.

Table C-581 Field Descriptions for the Auto Laser Shutdown Properties Pane (continued)

Field	Description
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.32 Slot Properties—OPT-BST-L

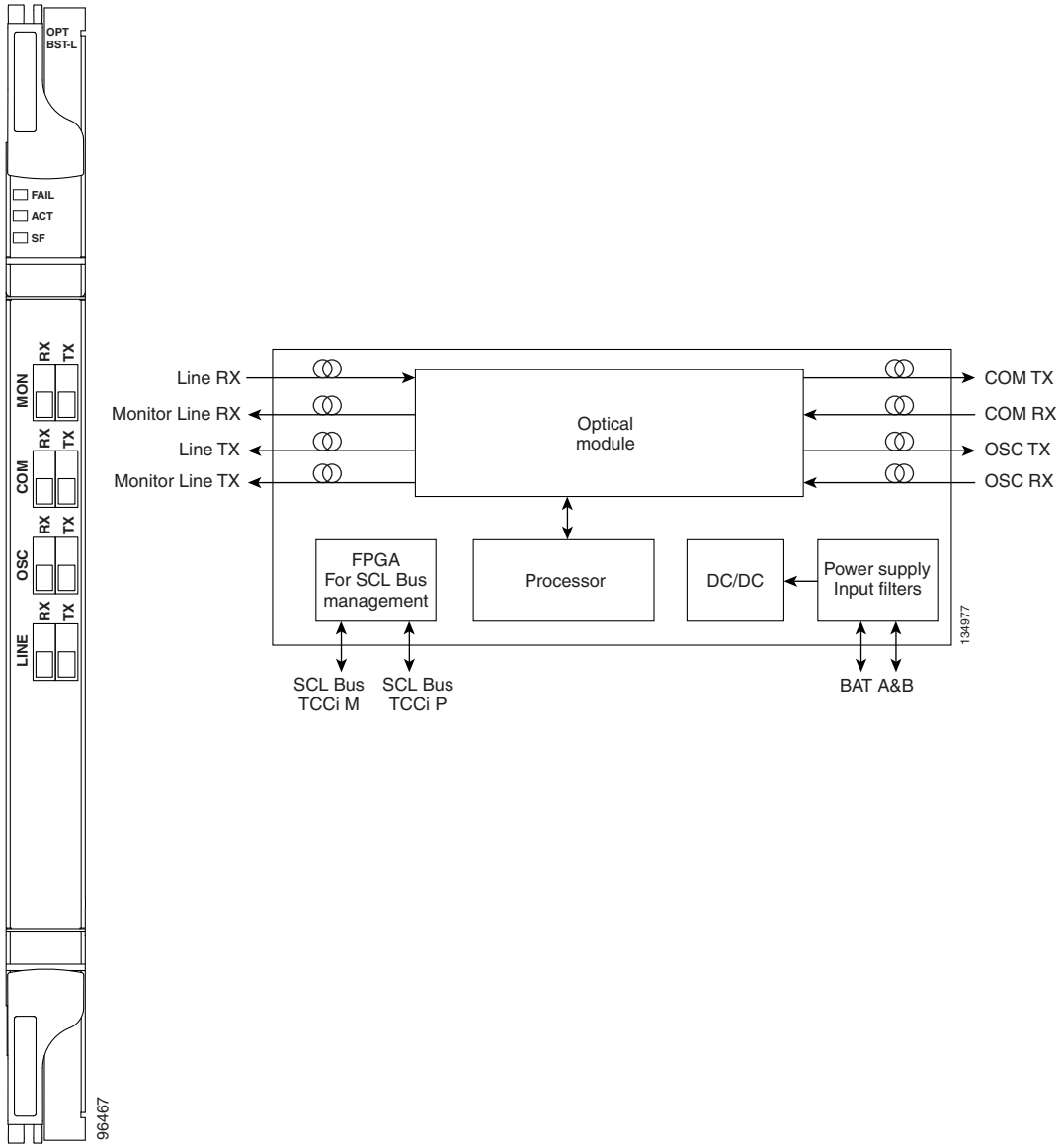
The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

This section describes the OPT-BST-L amplifier card. The OPT-BST-L standard gain range is from 8 to 20 dB in the controllable gain tilt mode, and from 20 to 27 dB in the uncontrolled gain tilt mode. The OPT-BST-L is designed to support 64 channels at 50-GHz channel spacing, but currently is limited to 32 channels at 100 GHz spacing. The OPT-BST-L is an L-band DWDM EDFA with OSC add-and-drop capability. The card is particularly well suited for use in networks that employ dispersion shifted (DS) fiber or SMF-28 single-mode fiber. When an ONS 15454 has an OPT-BST-L installed, you only need the OSCM to process the OSC. You can install the OPT-BST-L in slots 1 to 6 and 12 to 17. To control the gain tilt, the OPT-BST-L is equipped with a built-in VOA.

Note The optical splitters each have a ratio of 1:99. The result is that the power at the MON TX and MON RX ports is about 20 dB lower than the power at the COM TX and COM RX ports.

The following figure shows the block diagram.

Figure C-43 OPT-BST-L Faceplate



For the OPT-BST-L module, the slot properties pane displays the following properties: Module View, Identification, Optical Line, Optical Amplified Line, Inventory, Alarm Behavior, and Auto Laser Shutdown.

C.2.32.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.32.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-582 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.32.3 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-583 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.

Table C-583 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Power	Shows the current power level per port.
OSC Power	Shows the current optical service channel (OSC) power level per port.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Warning Thresh 15 Min	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Alarm Thresh	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.

Table C-583 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
Power Failure Low	Allows you to set the low power failure threshold. The range for each port is: • Port 1: –31 to 13-dBm • Port 2: –42 to 11-dBm • Port 3: N/A • Port 4: –43 to –2-dBm • Port 5: N/A
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold.
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.

C.2.32.4 Optical Amplified Line

The Optical Amplified Line Properties pane allows you to view and update optical amplified line threshold information.

Table C-584 Field Descriptions for the Optical Amplified Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Total Output Power	Shows the current power level per port.

Table C-584 Field Descriptions for the Optical Amplified Line Properties Pane (continued)

Field	Description
Output Power Setpoint	Shows the total optical power going to the amplifier.
Channel Power Ref.	Shows the channel power setpoint.
Offset	Allows you to manually set the total optical power going to the amplifiers.
Mode	Shows the working mode of the amplifier: control gain or control power.
Gain	The current gain of the amplifiers.
Gain Set Point	The value of the gain that the amplifier must achieve. The value is display-only or numeric depending on the mode setting. When the system is configured as metro core, this field is display-only. When the system is configured as metro access, this field is configurable.
Tilt Reference	This field is set to zero. It represents the default value for the amplifier tilt. In a future software release this value will be managed by APC.
Tilt Calibration	Allows you to manually set the amplifier tilt.
OSC Power	Shows the current optical service channel (OSC) power level per port.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Alarm Thresh	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure threshold. The range is from –5 to 23-dBm.
Power Degrade High	Allows you to set the high power degrade threshold. The range is from –5 to 23-dBm.
Power Degrade Low	Allows you to set the low power degrade threshold. The range is from –5 to 23-dBm.
Gain Degrade Low	Allows you to set the low gain degrade threshold. The range is from 10 to 28-dBm.
Gain Degrade High	Allows you to set the high gain degrade threshold. The range is from 6 to 24-dBm.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold.
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.

C.2.32.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-585 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.32.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-586 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Port Number	Displays the card port number.
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.32.7 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-587 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Currently Shutdown	Indicates whether the laser is currently shut down.
OSRI	Allows you to turn the optical safety remote interlock (OSRI) on or off.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.33 Slot Properties—OPT-EDFA-17 and OPT-EDFA-24

The OPT-EDFA-17 and OPT-EDFA-24 cards are 20-dBm (17/24 dBm gain) output power, C-band, DWDM EDFA amplifiers/preamplifiers. They do not contain mid-stage access loss for a Dispersion Compensation Unit (DCU). The OPT-EDFA-17 and OPT-EDFA-24 cards provide a noise-figure optimized version of the EDFA amplifiers to cope with new modulation formats such as PM-DQPSK, which does not need dispersion compensation. To control gain tilt, a VOA is used. The VOA can also be used to attenuate the signal to the DCU to a reference value. The amplifier module also includes the OSC add (TX direction) and drop (RX direction) optical filters.

The OPT-EDFA-17 and OPT-EDFA-24 cards share the same hardware platform and firmware architecture, and differ only in operative optical gain, which is 17dB and 24dB, respectively.

The OPT-EDFA-17 and OPT-EDFA-24 cards support 80 channels at 50-GHz channel spacing in the C-band (that is, the 1528.77 nm to 1566.72 nm wavelength range). When an ONS 15454 has an OPT-EDFA-17 or OPT-EDFA-24 card installed, an OSCM card is needed to process the OSC. You can install the OPT-AMP-C card in Slots 1 to 6 and 12 to 17. Slots 2 to 6 and Slots 12 to 16 are the default slots for provisioning an OPT-EDFA-17 or OPT-EDFA-24 card as a preamplifier, and slots 1 and 17 are the default slots for provisioning an OPT-EDFA-17 or OPT-EDFA-24 card as a booster amplifier.

The card's features include:

- Embedded Gain Flattening Filter
- Constant pump current mode (test mode)
- Constant output power mode
- Constant gain mode
- Nondistorting, low-frequency transfer function
- ASE compensation in Constant Gain and Constant Output Power modes
- Fast transient suppression
- Programmable tilt
- Full monitoring and alarm handling capability
- Gain range with gain tilt control of 5 to 17 dB (for OPT-EDFA-17) and 12 to 24 dB (for OPT-EDFA-24)
- Extended gain range (with uncontrolled tilt) of 17 to 20 dB (for OPT-EDFA-17) and 24 to 27 dB (for OPT-EDFA-24)
- Optical Safety Remote Interlock (OSRI)
- Automatic Alarm Shutdown (ALS)

You can also create a DWDM side for these cards. See "7.12.12 Creating Side Objects" section on page 7-343.

You can view the following properties for these cards:

- C.2.33.1 Identification

- C.2.33.2 Module View
- C.2.33.3 Alarm Behavior
- C.2.33.4 Auto Laser Shutdown
- C.2.33.5 Optical Line
- C.2.33.6 Inventory
- C.2.33.7 Optical Amplified Line

C.2.33.1 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-588 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.33.2 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.33.3 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-589 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Port Number	Displays the card port number.
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.33.4 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-590 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Currently Shutdown	Indicates whether the laser is currently shut down.
OSRI	Allows you to turn the optical safety remote interlock (OSRI) on or off.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.33.5 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-591 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Power	Shows the current power level per port.
OSC Power	Shows the current optical service channel (OSC) power level per port.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Warning Thresh 15 Min	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Alarm Thresh	
Port Number	The port number.

Table C-591 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure threshold. The range for each port is: • Port 1: –31 to 13-dBm • Port 2: –42 to 11-dBm • Port 3: N/A • Port 4: –43 to –2-dBm • Port 5: N/A
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold.
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.

C.2.33.6 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-592 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.33.7 Optical Amplified Line

The Optical Amplified Line Properties pane allows you to view and update optical amplified line threshold information.

Table C-593 Field Descriptions for the Optical Amplified Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.

Table C-593 Field Descriptions for the Optical Amplified Line Properties Pane (continued)

Field	Description
State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Total Output Power	Shows the current power level per port.
Output Power Setpoint	Shows the total optical power going to the amplifier.
Channel Power Ref.	Shows the channel power setpoint.
Offset	Allows you to manually set the total optical power going to the amplifiers.
Mode	Shows the working mode of the amplifier: control gain or control power.
Gain	The current gain of the amplifiers.
Gain Set Point	The value of the gain that the amplifier must achieve. The value is display-only or numeric depending on the mode setting. When the system is configured as metro core, this field is display-only. When the system is configured as metro access, this field is configurable.
Tilt Reference	This field is set to zero. It represents the default value for the amplifier tilt. In a future software release this value will be managed by APC.
Tilt Calibration	Allows you to manually set the amplifier tilt.
OSC Power	Shows the current optical service channel (OSC) power level per port.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Alarm Thresh	

Table C-593 Field Descriptions for the Optical Amplified Line Properties Pane (continued)

Field	Description
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure threshold. The range is from –5 to 23-dBm.
Power Degrade High	Allows you to set the high power degrade threshold. The range is from –5 to 23-dBm.
Power Degrade Low	Allows you to set the low power degrade threshold. The range is from –5 to 23-dBm.
Gain Degrade Low	Allows you to set the low gain degrade threshold. The range is from 10 to 28-dBm.
Gain Degrade High	Allows you to set the high gain degrade threshold. The range is from 6 to 24-dBm.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold.
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.

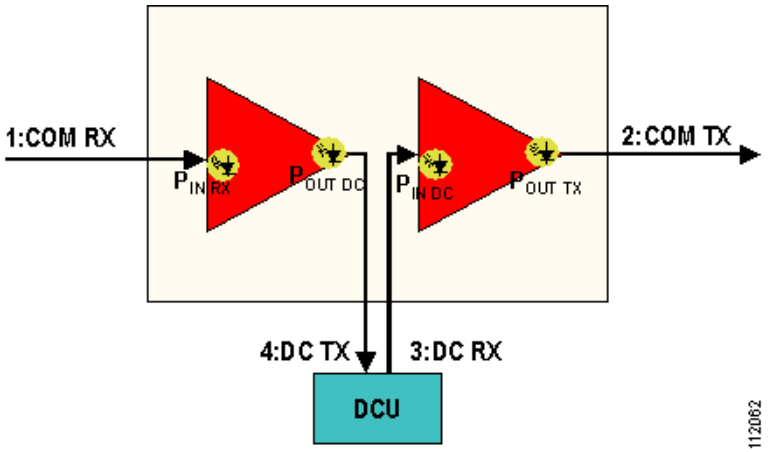
C.2.34 Slot Properties—OPT-PRE

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Optical Preamplifier (OPT-PRE) module is a single-slot card that has six LC-PC-II optical connectors. The card features true variable gain, fast transient suppression, and configurable maximum output power. The OPT_PRE card offers full monitoring and alarm handling capability with configurable thresholds. The card supports optical safety functionality by signal loss detection and alarm, fast power down control, and reduced maximum output power in safe power mode.

The following figure shows the block diagram.

Figure C-44 OPT_PRE Module



For the OPT_PRE module, the slot properties pane displays the following properties: Module View, Identification, Optical Line, Optical Amplified Line, Inventory, and Alarm Behavior.

C.2.34.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.34.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-594 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.34.3 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-595 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power	Shows the current power level per port.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Alarm Thresh	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.

C.2.34.4 Optical Amplified Line

The Optical Amplified Line Properties pane allows you to view and update optical amplified line threshold information.

Table C-596 Field Descriptions for the Optical Amplified Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Total Output Power	Shows the current power level per port.
Output Power Setpoint	Shows the total optical power going to the amplifier.
Channel Power Ref.	Shows the channel power setpoint.
Offset	Allows you to manually set the total optical power going to the amplifiers.
Mode	Shows the working mode of the amplifier: control gain or control power.
Gain	The current gain of the amplifiers.
Gain Set Point	The value of the gain that the amplifier must achieve. The value is display-only or numeric depending on the mode setting. When the system is configured as metro core, this field is display-only. When the system is configured as metro access, this field is configurable.
Tilt Reference	This field is set to zero. It represents the default value for the amplifier tilt. In a future software release this value will be managed by APC.
Tilt Calibration	Allows you to manually set the amplifier tilt.
DCU Insertion Loss	The dispersion compensation unit (DCU) insertion loss.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.

Table C-596 Field Descriptions for the Optical Amplified Line Properties Pane (continued)

Field	Description
Alarm Thresh	
Port Number	The port number.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.

C.2.34.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-597 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.34.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-598 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

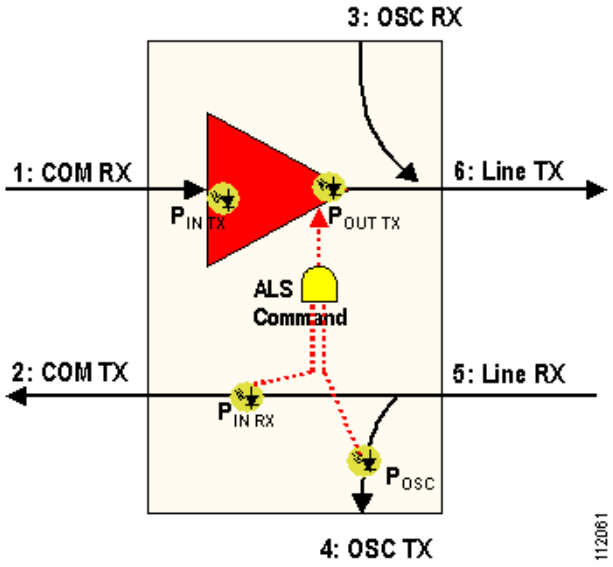
C.2.35 Slot Properties—OSC-CSM

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Optical Service Channel and Combiner/Separator Module (OSC-CSM) is a single-slot card with a 1510 nm OC-3 optical transceiver interface. The OSC-CSM is used to multiplex and demultiplex the service channel to and from the wavelength division multiplexing (WDM) signal. The OSC_CSM features a VOA in the transmit path and a 100BASE-T FE user data channel. The OSC-CSM also distributes the synchronous clock to all NEs on the ring.

The following figure shows the block diagram.

Figure C-45 OSC-CSM



For the OSC-CSM card, the slot properties pane displays the following properties: Module View, Identification, Line, Optical Line, Inventory, Alarm Behavior, and Auto Laser Shutdown.

C.2.35.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.35.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-599 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.35.3 Line

The Line Properties pane allows you to view and update line card information.

Table C-600 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port No.	The port number.
Port Name	The port name.
SD BER	The signal degrade bit error rate.
SF BER	The signal fail bit error rate.
Type	The port type (SONET or SDH).
PJSTSMon#	The STS that will be used for pointer justification. If set to zero, no STS is used.

Table C-600 Field Descriptions for the Line Properties Pane (continued)

Field	Description
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Auto in service soak. The determination of duration left before the traffic/termination transitions to IS state.
Line Thresh 15 Minute - Near End, Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count - line.
Line Thresh 1 Day - Near End, Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Section Thresh 15 Min, Near End	
Port No.	The port number.
CV-S	Coding violations section.
ES-S	Errored seconds section.
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.
Section Thresh 1 Day, Near End	
Port No.	The port number.
CV-S	Coding violations section.
ES-S	Errored seconds section.

Table C-600 Field Descriptions for the Line Properties Pane (continued)

Field	Description
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.

C.2.35.4 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-601 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Port Name	The port name.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Line Direction (*available in CTM R7.2 and earlier*)	The direction of the line (west-to-east or east-to-west).
Type	The port type.
Power	The laser power.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Power Ref	The VOA reference power.
VOA Power Calib	The VOA calibration power.
VOA Attenuation Ref	The VOA reference attenuation.
OSC Power	Shows the current optical service channel (OSC) power level per port.
VOA Attenuation Calib	The VOA calibration attenuation.
Warning Thresh 15 Min	
Port Number	The port number.
Power Low	The lower power threshold.
Power High	The upper power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.

Table C-601 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
Warning Thresh 1 Day	
Port Number	The port number.
Power Low	The lower power threshold.
Power High	The upper power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.
Alarm Thresh	
Port Number	The port number.
Power Failure Low	The lower power failure threshold.
Power Degrade High	The upper power degrade threshold.
Power Degrade Low	The lower power degrade threshold.
VOA Degrade High	The upper VOA degrade threshold.
VOA Degrade Low	The lower VOA degrade threshold.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold.
OSC Power Failure High	Allows you to set the high OSC power failure threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.

C.2.35.5 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-602 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.35.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-603 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.

Table C-603 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.35.7 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-604 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Currently Shutdown	Indicates whether the laser is currently shut down.
OSRI	Allows you to turn the optical safety remote interlock (OSRI) on or off.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.36 Slot Properties—OTU2_XP

The OTU2_XP card is a four-port, XFP-based multirate (OC-192/STM-64, 10GE, 10G FC) transponder for the ONS 15454 SONET and SDH platforms. The OTU2_XP card supports multiple configurations. The following table describes the different configurations supported by the OTU2_XP card and the ports that must be used for these configurations.

Table C-605 OTU2_XP Card Configurations and Ports

Configuration	Port 1	Port 2	Port 3	Port 4
2 x 10G transponder	Client port 1	Client port 2	Trunk port 1	Trunk port 2
2 x 10G standard regenerator (with enhanced FEC [E-FEC] on only one port)	Trunk port 1	Trunk port 2	Trunk port 1	Trunk port 2
1 x 10G E-FEC regenerator (with E-FEC on two ports)	Not used	Not used	Trunk port	Trunk port
1 x 10G splitter-protected transponder	Client port	Not used	Trunk port (working)	Trunk port (protect)

All four ports are ITU-T G.709 compliant and support 40 channels (wavelengths) at 100-GHz channel spacing in the C-band (that is, the 1530.33 nm-to-1561.42 nm wavelength range).

The OTU2_XP card can be installed in slots 1 to 6 or slots 12 to 17. The OTU2_XP card is a single-slot card with four ports. The ports support SR, IR2, LR2, and ZR XFPs.

Caution Fan-tray assembly 15454E-CC-FTA (SDH shelf)/15454-CC-FTA (SONET shelf) must be installed on a shelf where the OTU2_XP card is installed.

A new mode for 10GE LAN-to-WAN has been added for cards and ports in the Card Configuration panel. When the OTU2_XP card is provisioned in the 10GE LAN-to-WAN mode, the card takes 10GE LAN traffic as input (from client port 1) and provides 10GE WAN traffic as output (from trunk port 3).

The following table describes the configuration supported by the OTU2_XP card for the LAN-to-WAN conversion feature and the ports that must be configured.

Table C-606 OTU2_XP Card Configuration and Ports for LAN-to-WAN Feature

Configuration	Port 1-3	Port 2-4
10GE LAN-to-WAN	10GE LAN-to-WAN	Transponder
	10GE LAN-to-WAN	Regenerator

Note Port 2 supports OC192, 10GE, and 10FC rates and does not support 10G FC PM monitoring.

Prime Optical supports IB_5G, OC-192, 10G FC, and 10GE payloads on the OTU2_XP card. PM and TCA are not supported for the IB_5G payload type.

Perform the following steps to provision the payloads:

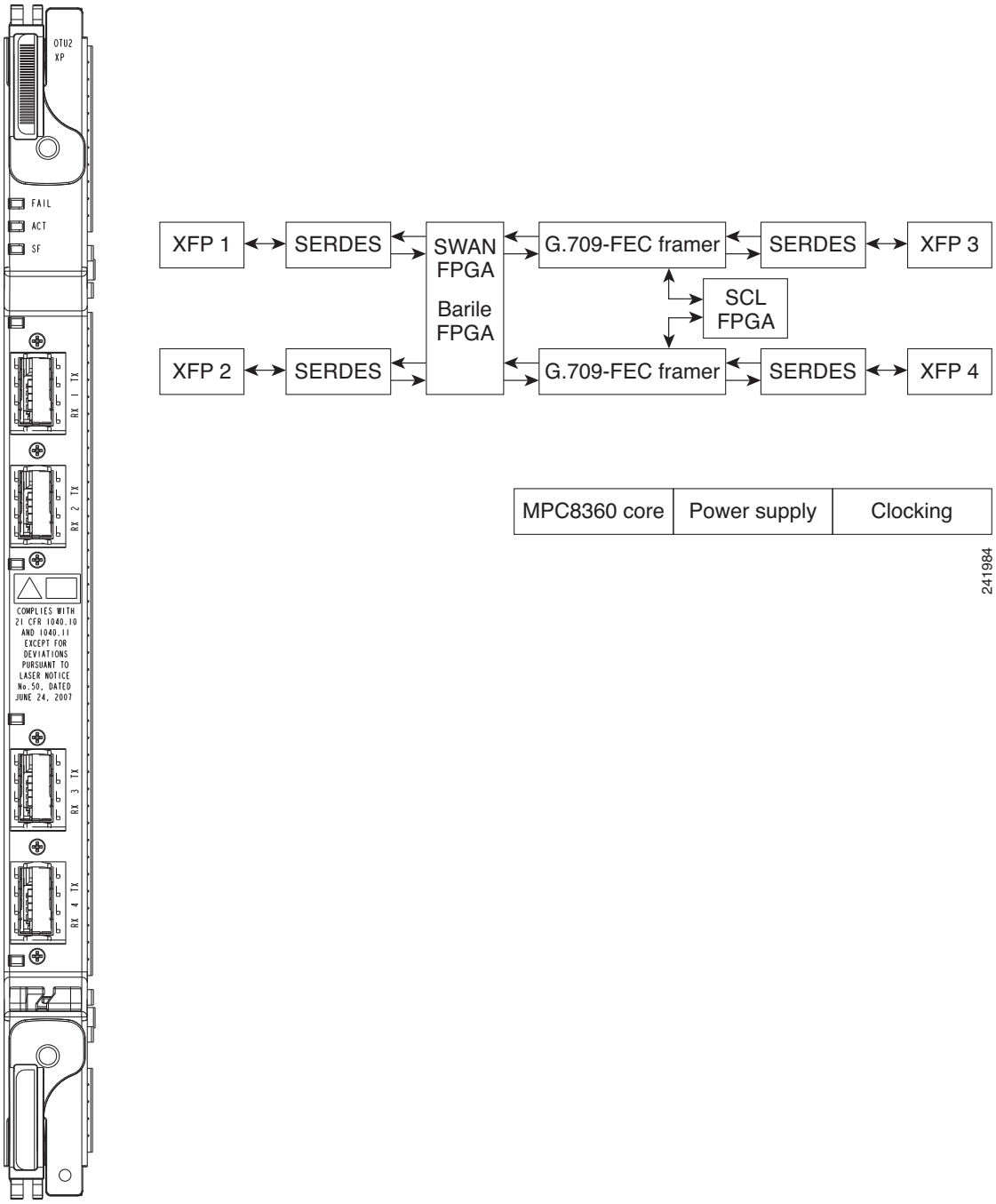
Step 1 Click the **PPM** Properties pane and create a PPM for port 1.

Step 2 Provision the rate IB_5G by selecting the rate from the **Port Rate** drop-down list.

Note By default, FEC and G.709 OTN are enabled. If they are disabled, you cannot provision the rate IB_5G.

The following figure shows the OTU2_XP faceplate and block diagram.

Figure C-46 OTU2_XP Card Faceplate and Block Diagram



For the OTU2_XP card, the slot properties pane displays the following properties: Module View, Identification, Card, PPM, Line, Path, OTN, Loopback, Auto Laser Shutdown, Optical Thresh, Alarm Behavior, Protection, and Info.

C.2.36.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Moving the mouse pointer over the graphic also displays the alarm counts.) Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.2.36.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-607 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The equipment administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.36.3 Card

The Card Properties pane allows you to view and update card information.

Table C-608 Field Descriptions for the Card Properties Pane

Field	Description

Card Mode	Choose one of the following card configuration options:
	• Transponder—Provisions the card as a 10G transponder.
	• Standard Regen—Provisions the card as a 10G standard regenerator.
	• Enhanced FEC—Provisions the card as a 10GE-FEC regenerator.
	• Mixed—Provisions the card for mixed port modes.
	• 10GE LAN to WAN—Provisions the card for 10GE LAN to WAN.
	Note 10GE LAN to WAN can be configured only on ports 1 to 3, and only if the payloads for PPM 1 and PPM 3 are provisioned.
	If you change the card mode from Transponder to 10GE LAN to WAN, you are prompted with the following message:
	`Changing the OTU2_XP card mode to "10GE LAN to WAN" will reboot the card. Do you want to continue?`
	If you change the card mode from 10GE LAN to WAN to Transponder, you are prompted with the following message:
	`Changing the OTU2_XP card from "10GE LAN to WAN" will reboot the card and delete the pluggable ports 1 and 3. Do you want to continue?`
	If you change the card mode from Transponder to Enhanced FEC, you are prompted with the following message:
	`Changing the card to EFEC mode will cause the ports 1 and 2 to be disabled. Do you want to continue?`
	Click **Yes** to continue or **No** to cancel the operation.

Port Mode 1-3	Choose Transponder or Standard Regen. **Note** Port mode is editable only when the card configuration is Mixed.
Termination Mode 1-3	Allows you to set the mode of termination. • If 10GE LAN to WAN is selected as the card configuration, the termination mode is Line and it is not editable. • If Standard or Enhanced FEC Regen is selected as the card configuration, the termination mode is Transparent and it is not editable. • If Transponder is selected as the card configuration, the termination mode defaults to Transparent. **Note** Termination mode can be configured only for SONET/SDH payload types.
Framing Type 1-3	*Display only.* Displays the framing type, which depends on the payload type that is configured in the PPM Properties pane.

Table C-608 Field Descriptions for the Card Properties Pane (continued)

Field	Description
AIS/Squelch Configuration 1-3	Allows you to configure the remote client to squelch or send an AIS signal. • If Transponder, Standard Regen, or 10GE LAN to WAN is selected as the card configuration, this parameter defaults to Squelch. • For Mixed card configuration, the AIS/Squelch Configuration depends on the port mode you selected. **Note** AIS/Squelch can be configured only for SONET/SDH payload types.
Regen Line Name 1-3	• *Display only* when transponder or 10GE LAN to WAN is selected as the card configuration. • If Standard Regen is selected as the card configuration, you can set the regeneration line name. **Note** For Mixed card configuration, the Regen Line Name depends on the port mode you selected.
ODU Transparency 1-3	Choose Transparent Standard Use or Cisco Extended Use. • If Transponder or 10GE LAN to WAN is selected as the card configuration, this parameter defaults to Cisco Extended Use. • Choose Transparent Standard Use or Cisco Extended Use if Standard Regen or Enhanced FEC is selected as the card configuration type. **Note** For Mixed card configuration, the ODU Transparency depends on the port mode you selected.
Proactive Protection Regen 1-3	Allows you to enable or disable the proactive protection regen mode.
Port Mode 2-4	Choose Transponder or Standard Regen if the card configuration is 10GE LAN to WAN. **Note** You cannot choose the same port mode for ports 1 to 3 and ports 2 to 4.
Termination Mode 2-4	• Choose Transparent, Line, or Section if the card configuration type is Transponder. • If Standard or Enhanced FEC Regen is selected as the card configuration, the termination mode is Transparent and it is not editable. • If Transponder is selected as the card configuration, the termination mode defaults to Transparent. **Note** Termination mode can be configured only for SONET/SDH payload types.
Framing Type 2-4	*Display only.* Displays the framing type, which depends on the payload type that is configured in the PPM Properties pane.
AIS/Squelch Configuration 2-4	Allows you to configure the remote client to squelch or send an AIS signal. • If Transponder is selected as the card configuration, choose squelch or AIS. • If Standard Regen is selected as the card configuration, this parameter defaults to AIS. **Note** AIS/Squelch can be configured only for SONET/SDH payload types.
Regen Line Name 2-4	• *Display only* when Transponder is selected as the card configuration. • If Standard Regen is selected as the card configuration, you can set the regeneration line name. **Note** For Mixed card configuration, the Regen Line Name depends on the port mode you selected.

Table C-608 Field Descriptions for the Card Properties Pane (continued)

Field	Description
ODU Transparency 2-4	• If Transponder is selected as the card configuration, this parameter defaults to Cisco Extended Use. • Choose Transparent Standard Use or Cisco Extended Use if Standard Regen or Enhanced FEC is selected as the card configuration. **Note** For Mixed card configuration, the ODU Transparency depends on the port mode you selected.
Proactive Protection Regen 2-4	Allows you to enable or disable the proactive protection regen mode.

C.2.36.4 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-609 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual plugin module that is installed in the slot.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the status of the plugin module: In Service (IS); Out of Service–Maintenance (OOS_MT); Unlocked; or Locked, Maintenance. **Note** You can edit the Admin State value only for actual equipment, not preprovisioned equipment.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the PPM number and port number.
Rate	Displays the port rate.

C.2.36.4.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.36.5 Line

The Line Properties pane allows you to configure line information.

If the card is installed on an ONS 15454 SONET NE, the Properties pane contains the following tabs:

- C.2.36.5.1 SONET Line Tab, page C-466
- C.2.36.5.2 Ports Tab, page C-466
- C.2.36.5.3 Section Trace Tab, page C-467

- C.2.36.5.4 Line Thresh 1 Day Tab, page C-468
- C.2.36.5.5 Line Thresh 15 Min Tab, page C-468
- C.2.36.5.6 Section Thresh 1 Day Tab, page C-469
- C.2.36.5.7 Section Thresh 15 Min Tab, page C-469
- C.2.36.5.8 Ethernet Tab, page C-470
- C.2.36.5.9 STS Thresh 1 Day Tab, page C-470
- C.2.36.5.10 STS Thresh 15 Min Tab, page C-471
- C.2.36.5.11 RMON Thresholds Tab, page C-471

If the card is installed on an ONS 15454 SDH NE, the Properties pane contains the following tabs:

- C.2.36.5.12 SDH Line Tab, page C-472
- C.2.36.5.13 Ports Tab, page C-472
- C.2.36.5.14 Section Trace Tab, page C-473
- C.2.36.5.15 RS Thresh 1 Day Tab, page C-473
- C.2.36.5.16 RS Thresh 15 Min Tab, page C-473
- C.2.36.5.17 MS Thresh 1 Day Tab, page C-474
- C.2.36.5.18 MS Thresh 15 Min Tab, page C-474
- C.2.36.5.19 VC4 Thresh 1 Day Tab, page C-474
- C.2.36.5.20 VC4 Thresh 15 Min Tab, page C-475
- C.2.36.5.21 Ethernet Tab, page C-475
- C.2.36.5.22 RMON Thresholds Tab, page C-476

C.2.36.5.1 SONET Line Tab

The SONET Line tab allows you to view and change the SONET line settings of the card.

Table C-610 Field Descriptions for the SONET Line Tab

Field	Description
Port No.	Displays the port number.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Displays the framing type.

C.2.36.5.2 Ports Tab

The Ports tab allows you to view and change the port settings.

Table C-611 Field Descriptions for the Ports Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a name for the optical port.

Table C-611 Field Descriptions for the Ports Tab (continued)

Field	Description
Admin State	Shows the administration state of the port: In Service (IS), Automatic In Service (IS, AINS), Out of Service–Disabled (OOS, DSBLD), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak (H:M)	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.36.5.3 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the card.

Table C-612 Field Descriptions for the Section Trace Tab

Field	Description
Port No.	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string; sets a new transmit string of 1 or 16 bytes.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.2.36.5.4 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day line threshold information for the card.

Table C-613 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.36.5.5 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute line threshold information for the card.

Table C-614 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.36.5.6 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the near-end 1-day section threshold information on the EC1 port.

Table C-615 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Port No.	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.36.5.7 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the 15-minute section threshold information for the card.

Table C-616 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Port No.	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.36.5.8 Ethernet Tab

The Ethernet tab allows you to view Ethernet line information. This tab is available only when the OTU2_XP card is configured with the TEN_GE payload type.

Table C-617 Field Descriptions for the Ethernet Tab

Field	Description
Port No.	Displays the port number.
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Max. Size	To permit the acceptance of jumbo-size Ethernet frames, select Jumbo (default). If you do not want to permit jumbo-size Ethernet frames, select 1548.
Incoming MAC Address	Allows you to edit the incoming MAC address.
Flow Control	Enables or disables flow control messaging with its peer port. When enabled, the port can send and receive PAUSE frames when buffer congestion occurs. When disabled, no PAUSE frames are transmitted and the PAUSE frames received are discarded. Values are: • ON—(Default) Flow control is enabled • OFF—Flow control is disabled **Note** The flow control property is available only when 10GE LAN to WAN card mode is configured.
Client Distance	Sets the fiber distance between the client of OTU2_XP card and the LAN port that is connected to the OTU2_XP client port. Values are: • 10 km (default) • 30 km **Note** The client distance property is available only when 10GE LAN to WAN card mode is configured.

C.2.36.5.9 STS Thresh 1 Day Tab

The STS Thresh 1 Day tab allows you to view and change the near-end 1-day synchronous transport signal threshold information for the card.

Table C-618 Field Descriptions for the STS Thresh 1 Day Tab

Field	Description
Near End	
STS No.	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
FC-P	Displays the failure count path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.36.5.10 STS Thresh 15 Min Tab

The STS Thresh 15 Min tab allows you to view and change the near-end 15-minute synchronous transport signal threshold information for the card.

Table C-619 Field Descriptions for the STS Thresh 15 Min Tab

Field	Description
Near End	
STS No.	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
FC-P	Displays the failure count path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.36.5.11 RMON Thresholds Tab

The RMON Thresholds tab allows you to view, create, and delete RMON threshold settings for the OTU2_XP card. This tab is available only when the OTU2_XP card is configured with the TEN_GE or 10 GFC payload type.

Table C-620 Field Descriptions for the RMON Thresholds Tab

Field	Description
Index No.	Displays the optical port number.
Slot	Displays the slot.
Port	Displays the port.
Variable	Displays the Ethernet threshold variable. The variable depends on the card type.
Alarm Type	Displays the Ethernet threshold alarm type. Values are Rising, Falling, or Rising or Falling.

Table C-620 Field Descriptions for the RMON Thresholds Tab (continued)

Field	Description
Sample Type	Displays the Ethernet threshold sample type. Values are Relative and Absolute. **Relative** restricts the threshold to using the number of occurrences in the user-set sample period. **Absolute** sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period	Displays the Ethernet threshold sample period, in seconds.
Rising Thresholds	Displays a count of the number of times an alarm entry crosses the rising threshold and the entry generates an event.
Falling Thresholds	Displays a count of the number of times an alarm entry crosses the falling threshold and the entry generates an event.
Create	Click the **Create** button to create an RMON threshold.
Delete	Select an RMON threshold from the list displayed and click the **Delete** button.

C.2.36.5.12 SDH Line Tab

The SDH Line tab allows you to view and change the SDH line settings of the card.

Table C-621 Field Descriptions for the SDH Line Tab

Field	Description
Port No.	Displays the optical port number.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.

C.2.36.5.13 Ports Tab

The Ports tab allows you to view and change the port settings.

Table C-622 Field Descriptions for the Ports Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Admin State	Shows the administration state of the port: In Service (IS), Automatic In Service (IS, AINS), Out of Service–Disabled (OOS, DSBLD), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).

C.2.36.5.14 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the card.

Table C-623 Field Descriptions for the Section Trace Tab

Field	Description
Port No.	The port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string; sets a new transmit string.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.2.36.5.15 RS Thresh 1 Day Tab

The RS Thresh 1 Day tab allows you to view and change the 1-day near-end regeneration section threshold information for the card.

Table C-624 Field Descriptions for the RS Thresh 1 Day Tab

Field	Description
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored second regenerator section.
BBE-RS	Background block error regenerator section.
UAS-RS	Unavailable seconds regenerator section.

C.2.36.5.16 RS Thresh 15 Min Tab

The RS Thresh 15 Min tab allows you to view and change the 15-minute near-end regeneration section threshold information for the card.

Table C-625 Field Descriptions for the RS Thresh 15 Min Tab

Field	Description
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored second regenerator section.
BBE-RS	Background block error regenerator section.
UAS-RS	Unavailable seconds regenerator section.

C.2.36.5.17 MS Thresh 1 Day Tab

The MS Thresh 1 Day tab allows you to view and change the 1-day multiplex section threshold information for the card.

Table C-626 Field Descriptions for the MS Thresh 1 Day Tab

Field	Description
Port No.	The port number.
EB-MS	Errored blocks multiplexer section.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored second multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.

C.2.36.5.18 MS Thresh 15 Min Tab

The MS Thresh 15 Min tab allows you to view and change the 15-minute multiplex section threshold information for the card.

Table C-627 Field Descriptions for the MS Thresh 15 Min Tab

Field	Description
Port No.	The port number.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
EB-MS	Errored blocks multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable second multiplexer section.

C.2.36.5.19 VC4 Thresh 1 Day Tab

The VC4 Thresh 1 Day tab allows you to view and update the near-end 1-day VC4 threshold settings of the port.

Table C-628 Field Descriptions for the VC4 Thresh 1 Day Tab

Field	Description
VC No.	The VC number. Displays as VC4-*x*, where *x* equals 1, 2, 3, or 4.
CV-P	Errored block/byte errors corrected–high-order path.
BBE-HP	Background block errors–high-order path.
ES-HP	Errored seconds–high-order path.
SES-HP	Severely errored seconds–high-order path.
UAS-HP	Unavailable seconds–high-order path.

C.2.36.5.20 VC4 Thresh 15 Min Tab

The VC4 Thresh 15 Min tab allows you to view and update the near-end 15-minute VC4 threshold settings of the port.

Table C-629 Field Descriptions for the VC4 Thresh 15 Min Tab

Field	Description
VC No.	The VC number. Displays as VC4-*x*, where *x* equals 1, 2, 3, or 4.
CV-P	Errored block/byte errors corrected–high-order path.
BBE-HP	Background block errors–high-order path.
ES-HP	Errored seconds–high-order path.
SES-HP	Severely errored seconds–high-order path.
UAS-HP	Unavailable seconds–high-order path.

C.2.36.5.21 Ethernet Tab

The Ethernet tab allows you to view Ethernet line information. This tab is available only when the OTU2_XP card is configured with the TEN_GE payload type.

Table C-630 Field Descriptions for the Ethernet Tab

Field	Description
Port No.	Displays the port number.
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Max. Size	To permit the acceptance of jumbo-size Ethernet frames, select Jumbo (default). If you do not want to permit jumbo-size Ethernet frames, select 1548.
Incoming MAC Address	Allows you to edit the incoming MAC address.
Flow Control	Enables or disables flow control messaging with its peer port. When enabled, the port can send and receive PAUSE frames when buffer congestion occurs. When disabled, no PAUSE frames are transmitted and the PAUSE frames received are discarded. Values are: • ON—(Default) Flow control is enabled • OFF—Flow control is disabled **Note** The flow control property is available only when 10GE LAN to WAN card mode is configured.
Client Distance	Sets the fiber distance between the client of OTU2_XP card and the LAN port that is connected to the OTU2_XP client port. Values are: • 10 km (default) • 30 km **Note** The client distance property is available only when 10GE LAN to WAN card mode is configured.

C.2.36.5.22 RMON Thresholds Tab

The RMON Thresholds tab allows you to view, create, and delete RMON threshold settings for the OTU2_XP card. This tab is available only when the OTU2_XP card is configured with the TEN_GE or 10 GFC payload type.

Table C-631 Field Descriptions for the RMON Thresholds Tab

Field	Description
Index No.	Displays the optical port number.
Slot	Displays the slot.
Port	Displays the port.
Variable	Displays the Ethernet threshold variable. The variable depends on the card type.
Alarm Type	Displays the Ethernet threshold alarm type. Values are Rising, Falling, or Rising or Falling.
Sample Type	Displays the Ethernet threshold sample type. Values are Relative and Absolute. **Relative** restricts the threshold to using the number of occurrences in the user-set sample period. **Absolute** sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period (sec)	Displays the Ethernet threshold sample period, in seconds.
Rising Thresholds (count)	Displays a count of the number of times an alarm entry crosses the rising threshold and the entry generates an event.
Falling Thresholds (count)	Displays a count of the number of times an alarm entry crosses the falling threshold and the entry generates an event.
Create	Click the **Create** button to create an RMON threshold.
Delete	Select an RMON threshold from the list displayed and click the **Delete** button.

C.2.36.6 Path

The Path Properties pane contains the following tabs:

- C.2.36.6.1 SONET Tab, page C-476
- C.2.36.6.2 J1 Path Trace Tab, page C-477

C.2.36.6.1 SONET Tab

The SONET tab allows you to view and change the SONET path settings for the OTU2_XP module.

Table C-632 Field Descriptions for the SONET Tab

Field	Descriptions
Port No.	Displays the port number.
SF BER Level	Sets the signal fail bit error rate.
SD BER Level	Sets the signal degrade bit rate.

Note The SDH tab is displayed if the card is installed on an ONS 15454 SDH NE.

C.2.36.6.2 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and update J1 path trace information.

Table C-633 Field Descriptions for the J1 Path Trace Tab

Field	Descriptions
Port No.	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

Note These properties are affected only when 10GE LAN to WAN card mode is configured.

C.2.36.7 OTN

The OTN Properties pane contains the following tabs:

- C.2.36.7.1 OTN Line Tab, page C-477
- C.2.36.7.2 G.709 Thresh 15 Min Tab, page C-478
- C.2.36.7.3 G.709 Thresh 1 Day Tab, page C-479
- C.2.36.7.4 FEC Thresh 15 Min Tab, page C-480
- C.2.36.7.5 FEC Thresh 1 Day Tab, page C-480
- C.2.36.7.6 Trail Trace Identifier Tab, page C-480

C.2.36.7.1 OTN Line Tab

The OTN Line tab allows you to view and change the OTN line settings of the card.

Table C-634 Field Descriptions for the OTN Line Tab

Field	Description
Port No.	Displays the port number.
G.709 OTN	Disables or enables the G.709 OTN feature.
FEC	Disables or enables forward error correction. **Note** OTN must be enabled before you can enable FEC.

Table C-634 Field Descriptions for the OTN Line Tab (continued)

Field	Description
No Fixed Stuff	Disables or enables fixed stuffing used in 10 GE-over-OTN G.709 mapping. When 10 GE is mapped over G.709, the overall bit rate is approximately 11.09 Gb/s. If a fixed pattern of stuffing bits is used in this mapping, the rate can be lowered to 11.04 Gb/s. 10 GE over OTN G.709 works with or without fixed stuffing. **Note** This parameter applies only to 10 GE signals in transponder card configurations. For all other card configurations, this parameter is display-only.
SF BER	The signal fail bit error rate.
SD BER	The signal degrade bit error rate.

C.2.36.7.2 G.709 Thresh 15 Min Tab

The G.709 Thresh 15 Min tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information and allows you to change these card threshold values.

Table C-635 Field Descriptions for the G.709 Thresh 15 Min Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.

Table C-635 Field Descriptions for the G.709 Thresh 15 Min Tab (continued)

Field	Description
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.36.7.3 G.709 Thresh 1 Day Tab

The G.709 Thresh 1 Day tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information and allows you to change these card threshold values.

Table C-636 Field Descriptions for the G.709 Thresh 1 Day Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.

Table C-636 Field Descriptions for the G.709 Thresh 1 Day Tab (continued)

Field	Description
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.36.7.4 FEC Thresh 15 Min Tab

The FEC Thresh 15 Min tab allows you to view and change the 15-minute FEC threshold values of the card.

Table C-637 Field Descriptions for the FEC Thresh 15 Min Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.36.7.5 FEC Thresh 1 Day Tab

The FEC Thresh 1 Day tab allows you to view and change the 1-day FEC threshold values of the card.

Table C-638 Field Descriptions for the FEC Thresh 1 Day Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.36.7.6 Trail Trace Identifier Tab

The Trail Trace Identifier tab allows you to provision the trail trace identifier for the card.

Table C-639 Field Descriptions for the Trail Trace Identifier Tab

Field	Description
Port Number	Displays port number information.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.

C.2.36.8 Loopback

The Loopback Properties pane allows you to view and update loopback information.

Table C-640 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The port state must be OOS_MT before you can configure the loopback type.

C.2.36.9 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-641 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur.	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.

Table C-641 Field Descriptions for the Auto Laser Shutdown Properties Pane (continued)

Field	Description
Rec. Pulse Int.	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Currently Shut Down	Indicates whether the laser is currently shut down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.36.10 Optical Thresh

The Optical Thresh Properties pane contains the following tabs:

- C.2.36.10.1 TCA 15 Min Tab, page C-482
- C.2.36.10.2 TCA 1 Day Tab, page C-482
- C.2.36.10.3 Alarm Thresh Tab, page C-483

C.2.36.10.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to view and change the 15-minute TCA settings of the card.

Table C-642 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.36.10.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to view and change the 1-day TCA settings of the card.

Table C-643 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.

Table C-643 Field Descriptions for the TCA 1 Day Tab (continued)

Field	Description
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.36.10.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-644 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.36.11 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-645 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.36.12 Protection

The Protection Properties pane allows you to view and update protection group information.

Table C-646 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands. For OTU2_XP cards, the card name might be shown as XP_4_10G_LINE_CARD. **Note** If you choose 10GE LAN to WAN as the card configuration, Y-cable protection is not supported.

C.2.36.13 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-647 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.37 Slot Properties—PSM

The slot properties pane displays information about the Protection Switching Module (PSM) that is selected in the NE Explorer. Use this properties pane to change the card properties.

The PSM performs splitter protection functions. During transmission, the card has a hardware splitter that duplicates the incoming signal from the two protected ports. On the receiving side, the card provides a switch to receive one of the two input signals that can be received on the COM-TX client ports.

In case of a single fiber cut, the VOA implements bidirectional switching after the splitter function. After a near-end signal loss detection, bidirectional switching is implemented with a far-end switch. The protection switching card does not require creation of a protection group to work.

The PSM provides the following features:

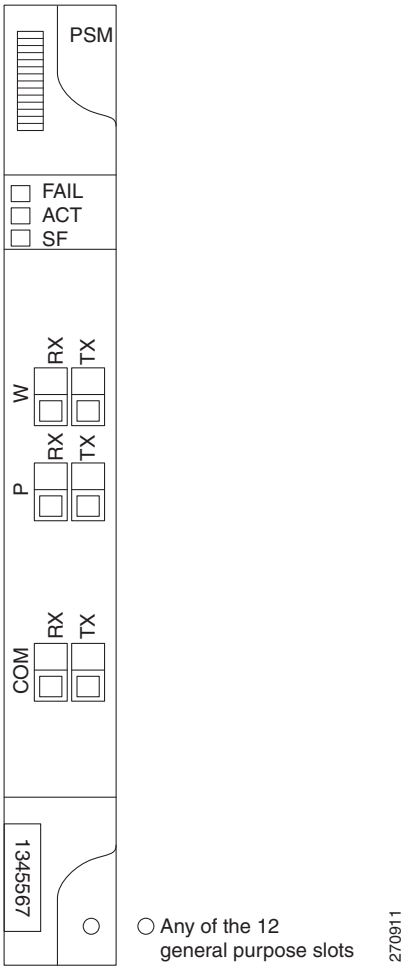
- TX section:
  - Splits input optical channels to both working and protection lines
  - Forces remote site switch by opening one of the two lines (puts the related VOA in the AVS)

- RX section:
  - Selects signals from the working or protection line, where each line is monitored through a photodiode
  - Balances the two line losses by changing the VOA attenuation value simultaneously with the changed switch state
- Bidirectional unit that operates over the C-band of the optical spectrum (wavelengths from 1529 nm to 1562.5 nm)
- Single-slot card with three LEDs on the front panel
- Six LC-PC-II optical connectors on the front panel
- Threshold crossing alerts (TCAs)
- Performance monitoring: thirty-two 15-minute intervals and two 24-hour intervals
- Equipped in any node from slots 1 to 6 and 12 to 17. It can also be equipped in a different shelf from its peer. Protection group creation is not required for management purposes.
- COM-RX, W-RX, and P-RX ports provide power measurement capability (for example, the 32WSS COM-RX port). These ports support optical PM, power failure, low power indication alarms, and related thresholds crossing alarms.
- COM-TX, W-TX, and P-TX are MSTP aggregated ports with VOAs (for example, AD_4C EXP-TX port). These ports support optical PM, power failure, low power indication alarms, and all the provisioning parameters that are associated to a VOA in attenuation control mode. All VOAs equipped by the PSM work only in controlled attenuation, including OCH protection schemes. The VOA attenuation calibration parameter can be changed in all traffic conditions.

Note VOA degrade alarms are not supported because a photodiode is available only after the VOA phase.

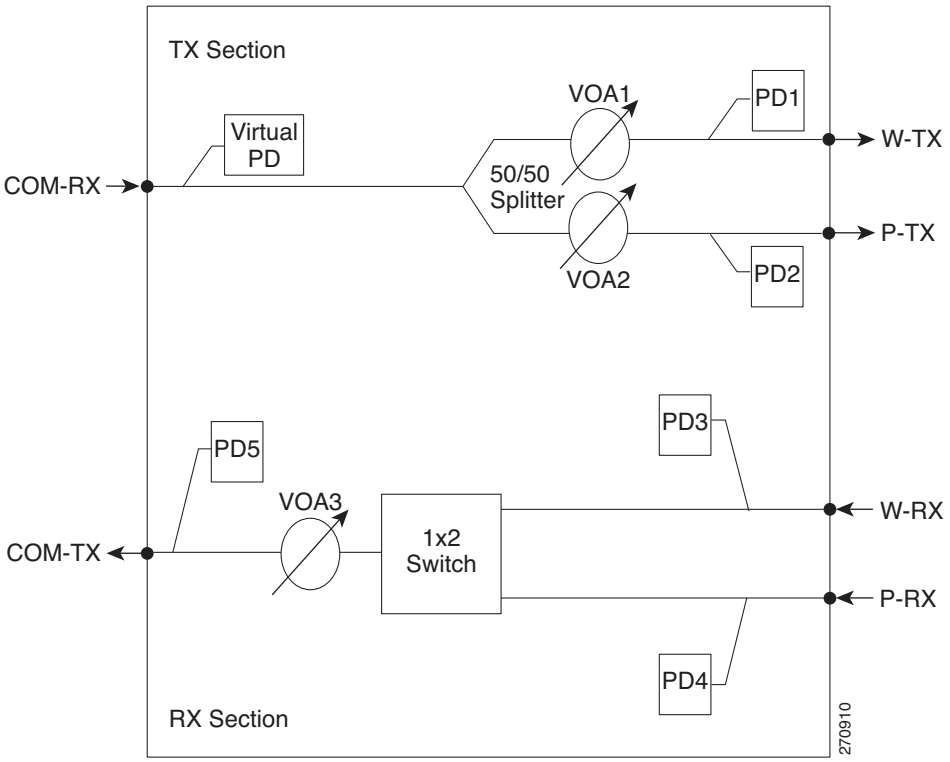
The following figure shows the PSM faceplate.

Figure C-47 PSM Faceplate



The following figure shows a simplified block diagram of the PSM.

Figure C-48 PSM Block Diagram



The optical VOA controls in a closed loop are performed by the PSM software. Under normal conditions, VOA1 and VOA2 function in an open loop at 0 dB attenuation. In a path section protection topology, during a restart of the standby path in Automatic Power Reduction (APR) mode, the corresponding VOA in the TX path works in power control mode. The optical power is limited to +8-dBm. Under normal conditions, VOA3 functions in attenuation control mode (closed loop).

For the PSM, the slot properties pane displays the following properties: Module View, Identification, Card, Optical Line, Auto Laser Shutdown, Protection, and Alarm Behavior.

C.2.37.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.37.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-648 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The equipment administration state. It can be: • IS—In Service • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.37.3 Card

The Card Properties pane allows you to select the mode of the PSM card. The modes can be Normal or Standalone.

C.2.37.4 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-649 Field Descriptions for the Optical Line Properties Pane

Field	Description
Parameters	
Port Number	The port number.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.

Table C-649 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • IS • IS, AINS • OOS, DSBLD • OOS, MT If the card mode is set to Standalone, the administrative state is In Service (IS) or Unlocked (for the ONS 15454 SDH). If the card mode is set to Normal, the administrative state is In Service, Automatic In Service (IS, AINS).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*. If the card mode is set to Standalone, the service state is IS-NR. If the card mode is set to Normal, the service state is OOS-AU, AINS.
Power	Shows the current power level per port.
AINS Soak	Auto in service soak. The determination of duration left before the traffic/termination transitions to IS state.
VOA Mode	Shows the current functional mode of the VOA: constant gain mode, constant power mode, or not in use (N/A).
VOA Attenuation Ref	Shows the attenuation value of the VOA when the VOA is set in attenuation mode. ANS and APC are the only functions that can modify this value.
VOA Attenuation Calib	Allows you to modify the attenuation value of the VOA, if necessary, when the VOA mode is set for constant attenuation.
Warning Thresh 15 Min	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power threshold.
Power High (dBm)	Allows you to set the high power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low (dBm)	Allows you to set the low power threshold.
Power High (dBm)	Allows you to set the high power threshold.
Alarm Thresh	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low (dBm)	Allows you to set the low power failure threshold.

Table C-649 Field Descriptions for the Optical Line Properties Pane (continued)

Field	Description
VOA Degrade High	The upper VOA degrade threshold.
VOA Degrade Low	The lower VOA degrade threshold.

C.2.37.5 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Note The Auto Laser Shutdown Properties pane is configurable only if the PSM card is configured in path protection mode. In other configurations, this Properties pane is empty.

Table C-650 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
OSRI	Allows you to turn the optical safety remote interlock (OSRI) on or off.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur.	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int.	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Currently Shut Down	Indicates whether the laser is currently shut down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.37.6 Protection

The Protection Properties pane allows you to view and update protection group information.

Table C-651 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.

C.2.37.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-652 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.38 Slot Properties—RAMAN-CTP and RAMAN-COP

(Cisco ONS 15454 M2 and ONS 15454 M6 only)

The single-slot RAMAN-CTP and RAMAN-COP cards support counter and copropagating RAMAN amplification on very long unregenerated spans.

The cards manage up to 96 ITU-T, 50-GHz spaced channels over the C-band of the optical spectrum (wavelengths from 1528.77 nm to 1566.72 nm). The counter-propagating RAMAN-CTP card is the master unit. The copropagating RAMAN-COP card is the slave unit and can be used only when the counter-propagating unit is present.

The RAMAN-CTP and RAMAN-COP units must be installed in adjacent slots (Slots 2 and 3, 4 and 5, or 6 and 7) in the Cisco ONS 15454 M6 chassis and Slots 2 and 3 in the Cisco ONS 15454 M2 chassis.

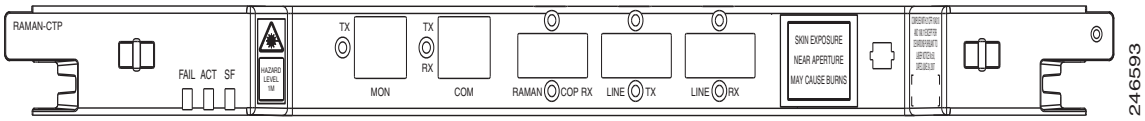
The RAMAN-CTP unit is provided with three E-2000 PS PC connectors for the LINE-TX, LINE-RX, and RAMAN-COP-RX ports and three LC-UPC-II connectors for the COM-TX, COM-RX, and MON-TX ports. The RAMAN-COP unit is provided with one E-2000 PS PC connector. The E2000 PS PC patchcord is used to connect the RAMAN-COP unit to the RAMAN-COP-RX port on the RAMAN-CTP unit.

The features of the RAMAN-CTP and RAMAN-COP units include:

- RAMAN section—1000 mW total pump power for four pumps and two wavelengths
- Embedded distributed feedback (DFB) laser at 1568.77 nm to be used for optical safety and link continuity (in RAMAN-CTP card only)
- Photodiodes to enable monitoring of RAMAN pump power
- Photodiodes to enable monitoring of the DFB laser and signal power (in RAMAN-CTP card only)

- Hardware managed automatic laser shutdown (ALS) for optical laser safety
- Hardware output signals for loss of signal (LOS) monitoring at input photodiodes
- RAMAN pump back reflection detector to check for excessive back reflection

Figure C-49 RAMAN-CTP Faceplate



The RAMAN-COP card has only one optical port located on the faceplate. RAMAN-TX is the RAMAN copropagating output port.

Figure C-50 shows the RAMAN-COP card faceplate.

Figure C-50 RAMAN-COP Faceplate

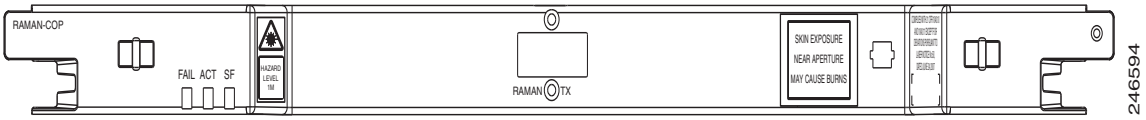
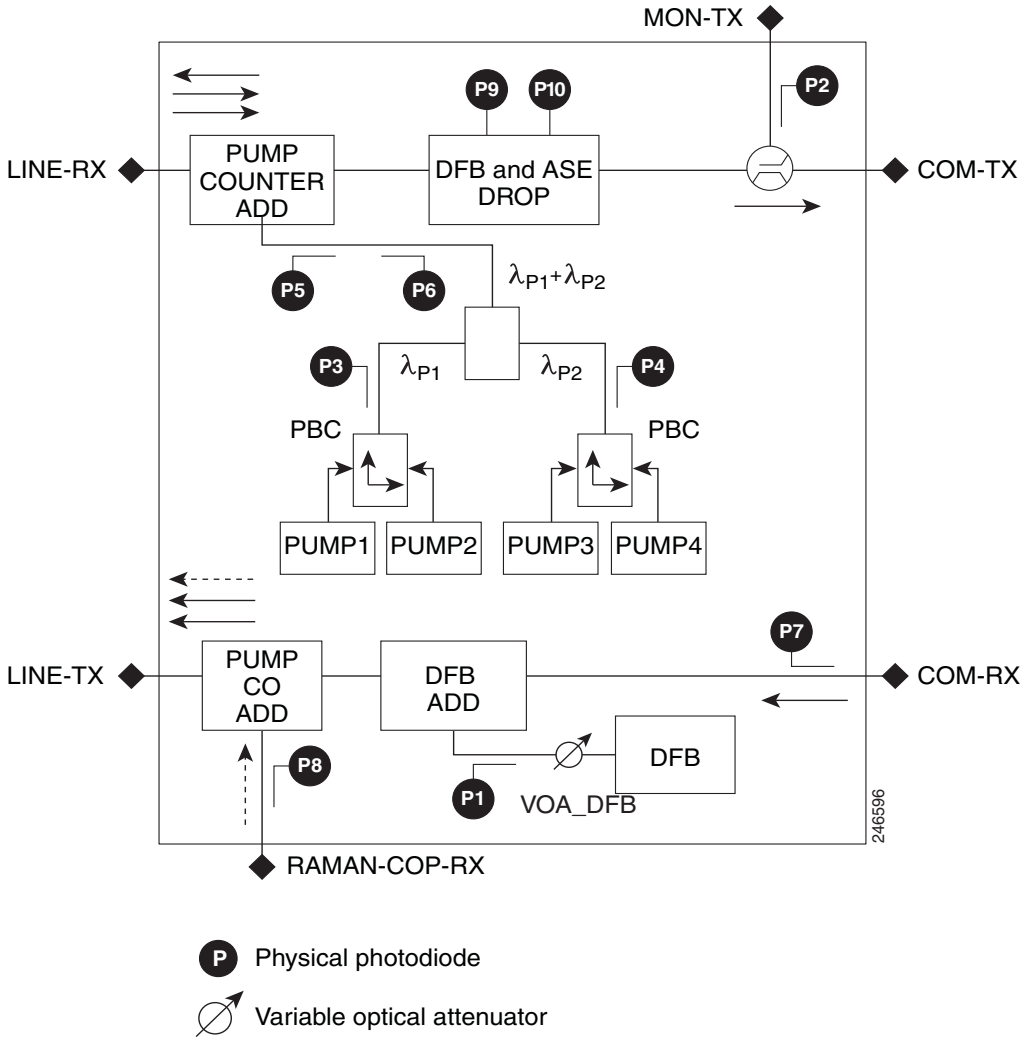


Figure C-51 shows a block diagram of how the RAMAN-CTP card functions.

Figure C-51 RAMAN-CTP Functional Block Diagram



Four Raman pump lasers (two for each wavelength) are combined internally and launched in-fiber at the LINE-RX port, thereby counter-propagating with the DWDM signal.

The two pump lasers at the same nominal central wavelength, power, and polarization are made orthogonally polarized by the polarization beam combiner (that rotates one of the laser beams) and then coupled, resulting in a depolarized beam. A DFB laser at 1568.77 nm is used for optical safety. Optical filters for DFB add and drop are present.

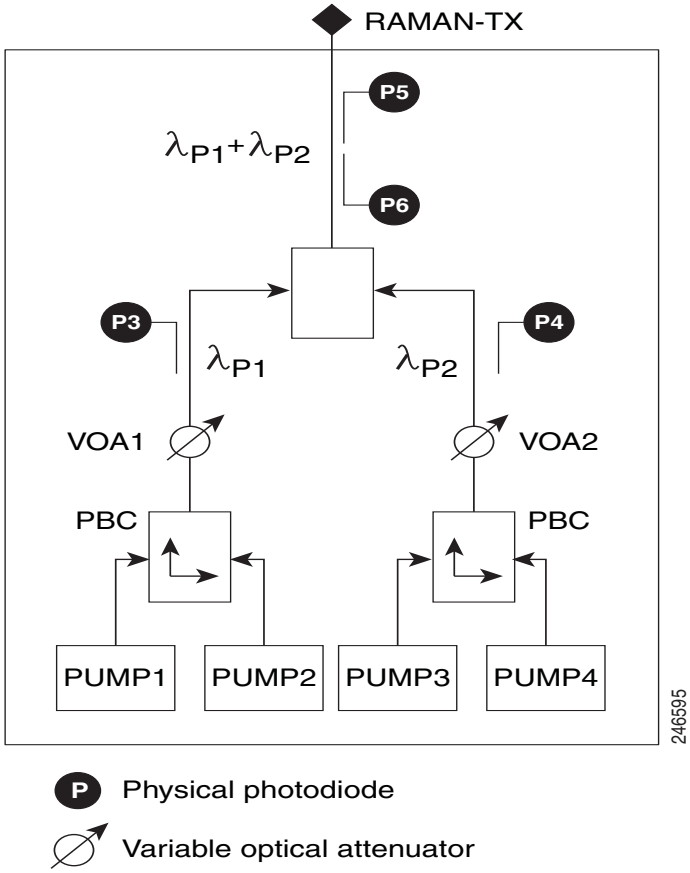
The DFB signal generated by the DFB laser is transmitted in-fiber, co-propagating with the DWDM signal. A MON-TX port monitors the DWDM signal at the COM-TX port. A total of ten photodiodes are provided, allowing monitoring of RAMAN pump (RP) power, DWDM signal power, and DFB signal power in each section of the card.

P8 measures the co-propagating RP power in-fiber (when the RAMAN-COP unit is present), while P6 detects the amount of RP power backscattered by the LINE-RX connector and transmission fiber. P1 measures the DFB signal power transmitted in-fiber while P9 and P10 measures the DFB signal and ASE power respectively, which is received from the other line site.

The insertion loss of the main optical path and the relative optical attenuation of the monitor port is stored in non-volatile memory of the card.

Figure C-52 shows a block diagram of how the RAMAN-COP card functions.

Figure C-52 15454-M-RAMAN-COP Functional Block Diagram



Four RAMAN pump lasers (two for each wavelength) are combined internally and launched in-fiber at the LINE-TX port of the counter-propagating unit, thereby co-propagating with the DWDM signal.

The two pump lasers at the same nominal central wavelength, power, and polarization are made orthogonally polarized by the polarization beam combiner (that rotates one of the laser beams) and then coupled, resulting in a depolarized beam.

A total of four photodiodes are provided, allowing the monitoring of RP power. In particular, P6 detects the amount of RP power backscattered by the LINE-RX connector and transmission fiber.

The slot properties pane displays the following properties: Identification, Module View, Card, Alarm Behavior, Auto Laser Shutdown, Installation, Inventory Protection, and Optical RAMAN Line.

C.2.38.1 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-653 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.38.2 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-654 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
Type	Displays the port type.
OSRI	Allows you to turn the optical safety remote interlock (OSRI) on or off.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Displays the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Displays the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Currently Shutdown	Indicates whether the laser is currently shut down.

C.2.38.3 Installation

The Installation Properties pane displays installation information.

Table C-655 Field Descriptions for the Installation Properties Pane

Field	Description
Username	Provides the string for user login for the setup.
Status	Displays whether Raman is tuned or not tuned.
Gain	Displays the actual Raman gain.
Actual Tilt	Displays the actual Raman tilt.
Date	Displays the date and time for the setup.
Power	Displays the Raman pump total power.

Table C-655 Field Descriptions for the Installation Properties Pane (continued)

Field	Description
Ratio	Displays the Raman pump ratio.
Fiber Cut Recovery	Displays the status of the Restore from Fiber Cut operation. Valid values are: • Not Need • Failed • Executed • Pending
Fiber Cut Date	Displays the date when the Restore from Fiber Cut operation was executed.
S1 Low	Displays the power at node B when wavelength 1 is switched on at node A and the power is low.
S1 High	Displays the power at node B when wavelength 1 is switched on at node A and the power is high.
S2 Low	Displays the power at node B when wavelength 2 is switched on at node A and the power is low.
S2 High	Displays the power at node B when wavelength 2 is switched on at node A and the power is high.

C.2.38.4 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-656 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.38.5 Optical Line

Note The Optical Line Properties pane applies to RAMAN-CTP only.

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-657 Field Descriptions for the Optical Line Properties Pane

Tab	Description
Parameters	
Port Number	The port number.
Type	The port type.
Port Name	The port name.
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity.

Table C-657 Field Descriptions for the Optical Line Properties Pane (continued)

Tab	Description
Power	Shows the current power level per port.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Warning Thresh 15 Min and Warning Thresh 1 Day	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Alarm Threshold	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.

C.2.38.6 Optical Raman Line

The Optical Raman Line Properties pane allows you to view and update optical Raman line information.

Table C-658 Field Descriptions for the Optical Raman Line

Field	Description
Parameters	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Power	Shows the current power level per port.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.

Table C-658 Field Descriptions for the Optical Raman Line (continued)

Field	Description
Ratio	Displays the RAMAN pump ratio in percentage value.
Power Set-point	Displays the RAMAN pump expected total power.
Warning Thresh 15 Min	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Output Line, Input Line, and Drop.
Power Min	Allows you to set the low power threshold.
Power Max	Allows you to set the high power threshold.
Warning Thresh 1 Day	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Output Line, Input Line, and Drop.
Power Min	Allows you to set the low power threshold.
Power Max	Allows you to set the high power threshold.
Alarm Thresh	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, Output Line, Input Line, and Drop.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.

C.2.39 Slot Properties—SMR-C

The single-slot, 40-channel, single module ROADM (SMR-C) cards integrate the following functional blocks on a single line card:

- Optical preamplifier
- Optical booster amplifier
- Optical service channel (OSC) filter
- 2x1 wavelength cross-connect (WXC) or 4x1 WXC
- Optical channel monitor (OCM)

The SMR-C cards are available in two versions:

- 40-SMR1-C—Includes a 100-GHz, 1x2 WXC unit with integrated preamplifier unit (single erbium-doped fiber amplifier [EDFA]).
- 40-SMR2-C—Includes a 100-GHz, 1x4 WXC unit with integrated preamplifier and booster amplifier units (double EDFA).

The optical amplifier units in the SMR-C cards provide the following features:

- Embedded gain flattening filter.
- Midstage access for dispersion compensation unit (applicable only for preamplifier EDFA).
- Fixed output power mode.
- Fixed gain mode.
- Nondistorting, low-frequency transfer function.
- Amplified spontaneous emissions (ASE) compensation in fixed gain and fixed output power mode.
- Fast transient suppression.
- Programmable tilt (applicable only for preamplifier EDFA).
- Full monitoring and alarm handling capability.
- Optical safety support through signal-loss detection and alarm at any input port, fast power-down control, and reduced maximum output power in safe power mode.
- EDFA section calculates the signal power by taking into account the expected ASE power contribution to the total output power. The signal output power or the signal gain can be used as feedback signals for the EDFA pump power control loop.

The 1x2 WXC unit (40-SMR1-C card) provides the following features:

- Selection of individual wavelength of the aggregated 100-GHz signal from either the EXP-RX or ADD-RX ports
- Automatic VOA shutdown (AVS) blocking state on each wavelength and port
- Per-channel power regulation based on external OCM unit
- Open-loop, path attenuation control for each wavelength and port

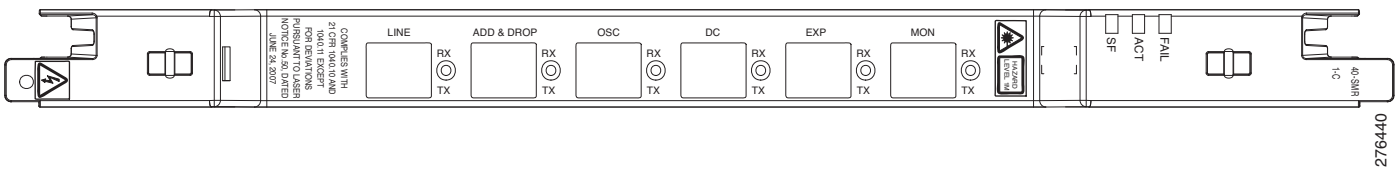
The 1x4 WXC unit (40-SMR2-C card) provides the following features:

- Selection of individual wavelength of the aggregated 100-GHz signal from either the EXP*i*-RX (where *i* = 1, 2, 3) or ADD-RX ports
- AVS blocking state on each wavelength and port
- Per-channel power regulation based on external OCM unit
- Open-loop, path attenuation control for each wavelength and port

The OCM unit provides per-channel optical power monitoring at EXP-RX, ADD-RX, DROP-TX, and LINE-TX ports.

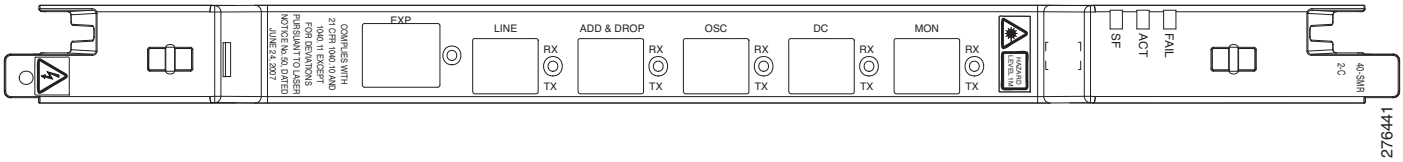
The following figure shows the faceplate of the 40-SMR1-C card.

Figure C-53 40-SMR1-C Faceplate



The following figure shows the faceplate of the 40-SMR2-C card.

Figure C-54 40-SMR2-C Faceplate



The slot properties pane displays the following properties: Module View, Identification, Optical Channel, Optical Line, Optical Amplified Line, Alarm Behavior, Auto Laser Shutdown, Inventory, Maintenance, and Wavelength Power.

C.2.39.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.39.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-659 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

Table C-659 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.39.3 Optical Channel

The Optical Channel Properties pane allows you to view and update optical channel threshold information. The Properties pane contains the following tabs:

- C.2.39.3.1 Parameters Tab, page C-501
- C.2.39.3.2 OCH Thresh 15 Min Tab, page C-502
- C.2.39.3.3 OCH Thresh 1 Day Tab, page C-502
- C.2.39.3.4 Alarm Thresh Tab, page C-503

C.2.39.3.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical channels. To view optical channels, select the wavelength from the wavelength drop-down list and click **Retrieve**.

Note Wavelengths with two asterisks (**) denote available optical channels.

Table C-660 Field Descriptions for the Parameters Tab

Field	Description
Circuit Name	Optical channel name.
State	The port administration state. It can be: • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Direction (*available in CTM R7.2 and earlier*)	Allows you to associate a card with the line direction. Use this field if you have two cards on the same shelf and must designate which one will carry the traffic flow from east-to-west. The second card will carry traffic from west-to-east.
From	Displays the port from which the circuit starts.
Power From	Displays the power of the port to which the circuit starts.
VOA Power Ref.	Shows the value of the optical output power going to a VOA when constant power mode is active. Automatic Node Setup (ANS) is the only function that can modify this value.
VOA Power Calib.	Allows you to modify the optical output power to the VOA, if necessary.
To	Displays the port to which the circuit is connected.
Power To	Displays the power of the port to which the circuit is connected.
Attenuator Value	Displays the value of an external attenuator required by DWDM network design.

Table C-660 Field Descriptions for the Parameters Tab (continued)

Field	Description
Force Channel	Allows you to start the channel by moving the VOA from Open to Closed loop. You can force VOA only when the Force Channel Status is in the Unlocked state.
Force Channel Status	Displays the channel status. The different statuses are: • Unlocked—Can force channel startup. • Locked—Cannot force channel startup as the device is under control of other functions like Optical safety. • Forced—Channel startup has already been forced.

C.2.39.3.2 OCH Thresh 15 Min Tab

The OCH Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation. To view optical channels, select both wavelength and port type from the drop-down lists and click **Retrieve**.

Note Wavelengths with two asterisks (**) denote available optical channels.

Table C-661 Field Descriptions for the OCH Thresh 15 Min Tab

Field	Description
Circuit Name	Displays the name of the circuit.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, which can be: • 40-SMR1-C—DC-TX, DC-RX, OSC-TX, OSC-RX, ADD-RX, DROP-TX, LINE-RX, EXP-TX, and EXP-RX. • 40-SMR2-C—EXP-TX 1-1, EXP-RX 1-2, EXP-TX 1-3, and EXP-TX 1-4.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.39.3.3 OCH Thresh 1 Day Tab

The OCH Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation. To view optical channels, select both wavelength and port type from the drop-down lists and click **Retrieve**.

Note Wavelengths with two asterisks (**) denote available optical channels.

Table C-662 Field Descriptions for the OCH Thresh 1 Day Tab

Field	Description
Circuit Name	Displays the name of the circuit.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, which can be: • 40-SMR1-C—DC-TX, DC-RX, OSC-TX, OSC-RX, ADD-RX, DROP-TX, LINE-RX, EXP-TX, and EXP-RX. • 40-SMR2-C—EXP-TX 1-1, EXP-RX 1-2, EXP-TX 1-3, and EXP-TX 1-4.
Power Low (dBm)	Allows you to set the low power settings.
Power High (dBm)	Allows you to set the high power settings.

C.2.39.3.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation. To view optical channels, select both wavelength and port type from the drop-down lists and click **Retrieve**.

Note Wavelengths with two asterisks (**) denote available optical channels.

Table C-663 Field Descriptions for the Alarm Thresh Tab

Field	Description
Circuit Name	Displays the name of the circuit.
Actual Wavelength	Shows the wavelength specified by the manufacturing data. This field cannot be set manually.
Port Number	Displays the identifier of the port (and specific channel information: Add, Drop, Tx, or Rx).
Type	Identifies the type of port, which can be: • 40-SMR1-C—DC-TX, DC-RX, OSC-TX, OSC-RX, ADD-RX, DROP-TX, LINE-RX, EXP-TX, and EXP-RX. • 40-SMR2-C—EXP-TX 1-1, EXP-RX 1-2, EXP-TX 1-3, and EXP-TX 1-4.
Power Failure Low (dBm)	Displays the threshold of low power failure on the channel port. The crossing of this threshold generates an LOS-P alarm.
Power Degrade High (dBm)	Allows you to set the high power settings.
Power Degrade Low (dBm)	Allows you to set the low power settings.

C.2.39.4 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information. The Properties pane contains the following tabs:

- C.2.39.4.1 Parameters Tab, page C-504
- C.2.39.4.2 Warning Thresh 15 Min Tab, page C-504

- C.2.39.4.3 Warning Thresh 1 Day Tab, page C-505
- C.2.39.4.4 Alarm Thresh Tab, page C-505

C.2.39.4.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-664 Field Descriptions for the Parameters Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port, which can be: • 40-SMR1-C—DC-TX, DC-RX, OSC-TX, OSC-RX, ADD-RX, DROP-TX, LINE-RX, EXP-TX, and EXP-RX. • 40-SMR2-C—EXP-TX 1-1, EXP-RX 1-2, EXP-TX 1-3, and EXP-TX 1-4.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • IS, AINS—In Service. The port service state changes to IS_NR. • OOS, DSBLD—Out of Service, Disabled. The port service state changes to OOS_MA, DSBLD. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT Administration State must be initiated.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Active Channels	Indicates how many channels the card/port is carrying. The value generally reflects the number of provisioned channels passing through the port.
Power	Shows the current power level per port.
VOA Mode	Shows the current functional mode of the VOA. The value is not provisionable and is read from the card.
VOA Attenuation Ref.	Shows the attenuation reference value of the VOA. The value is established by the manufacturer.
VOA Attenuation Calib.	Allows you to modify the attenuation value of the VOA, per channel, if necessary. The sum of the Power Reference and Power Calibration, for each single channel, defines the Power Set Point.
OSC Power	Displays the OSC power of the port. The values can be: • 40SMR1-C card—OSC POWER is read on ports 5, 6, 9, and 10. For the other ports, the value is N.A. • SMR2—OSC POWER is read on the ports 3, 4, and 7. For the other ports, the value is N.A.
Attenuator Value	Displays the value of an external attenuator required by DWDM network design

C.2.39.4.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-665 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port, which can be: • 40-SMR1-C—DC-TX, DC-RX, OSC-TX, OSC-RX, ADD-RX, DROP-TX, LINE-RX, EXP-TX, and EXP-RX. • 40-SMR2-C—EXP-TX 1-1, EXP-RX 1-2, EXP-TX 1-3, and EXP-TX 1-4.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.

C.2.39.4.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-666 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port, which can be: • 40-SMR1-C—DC-TX, DC-RX, OSC-TX, OSC-RX, ADD-RX, DROP-TX, LINE-RX, EXP-TX, and EXP-RX. • 40-SMR2-C—EXP-TX 1-1, EXP-RX 1-2, EXP-TX 1-3, and EXP-TX 1-4.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold.
OSC Power High	Allows you to set the high OSC power threshold.

C.2.39.4.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-667 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port, which can be: • 40-SMR1-C—DC-TX, DC-RX, OSC-TX, OSC-RX, ADD-RX, DROP-TX, LINE-RX, EXP-TX, and EXP-RX. • 40-SMR2-C—EXP-TX 1-1, EXP-RX 1-2, EXP-TX 1-3, and EXP-TX 1-4.
Power Failure Low	Allows you to set the low power failure threshold.

Table C-667 Field Descriptions for the Alarm Thresh Tab (continued)

Field	Description
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold.

C.2.39.5 Optical Amplified Line

The Optical Amplified Line Properties pane allows you to view and update optical amplified line threshold information. The Properties pane contains the following tabs:

- C.2.39.5.1 Parameters Tab, page C-506
- C.2.39.5.2 Warning Thresh 15 Min Tab, page C-507
- C.2.39.5.3 Warning Thresh 1 Day Tab, page C-507
- C.2.39.5.4 Alarm Thresh Tab, page C-508

C.2.39.5.1 Parameters Tab

The Parameters tab provides information on the status and directions specified for the optical connectors.

Table C-668 Field Descriptions for the Parameters Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port, which can be: • 40-SMR1-C—DC-TX, DC-RX, OSC-TX, OSC-RX, ADD-RX, DROP-TX, LINE-RX, EXP-TX, and EXP-RX. • 40-SMR2-C—EXP-TX 1-1, EXP-RX 1-2, EXP-TX 1-3, and EXP-TX 1-4.
Port Name	Allows you to assign the specified port a user-defined name. The port name can be up to 32 alphanumeric or special characters. The port name is blank by default.
State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Total Output Power	Shows the current power level per port.
Channel Power Ref.	Shows the channel power setpoint.

Table C-668 Field Descriptions for the Parameters Tab (continued)

Field	Description
Output Power Setpoint	Shows the total optical power going to the amplifier.
Offset	Allows you to manually set the total optical power going to the amplifiers.
Mode	Shows the working mode of the amplifier: control gain or control power.
Signal Output Power	Shows the current output power leaving the amplifier, including the ASE contribution.
Gain	The current gain of the amplifiers.
Gain Set Point	The value of the gain that the amplifier must achieve. The value is display-only or numeric depending on the mode setting. When the system is configured as metro core, this field is display-only. When the system is configured as metro access, this field is configurable.
Tilt Reference	This field is set to zero. It represents the default value for the amplifier tilt. In a future software release this value will be managed by APC.
Tilt Calibration	Allows you to manually set the amplifier tilt.
OSC Power	Displays the OSC power of the port. The values can be: • SMR1—For port 5, 6, 9, and 10. • SMR2—For port 3, 4, and 7.
DCU Insertion Loss	The dispersion compensation unit (DCU) insertion loss.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.

C.2.39.5.2 Warning Thresh 15 Min Tab

The Warning Thresh 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-669 Field Descriptions for the Warning Thresh 15 Min Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port, which can be: • 40-SMR1-C—DC-TX, DC-RX, OSC-TX, OSC-RX, ADD-RX, DROP-TX, LINE-RX, EXP-TX, and EXP-RX. • 40-SMR2-C—EXP-TX 1-1, EXP-RX 1-2, EXP-TX 1-3, and EXP-TX 1-4.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold. **Note** This field is applicable only for port 8 of 40-SMR2-C cards.
OSC Power High	Allows you to set the high OSC power threshold. **Note** This field is applicable only for port 8 of 40-SMR2-C cards.

C.2.39.5.3 Warning Thresh 1 Day Tab

The Warning Thresh 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-670 Field Descriptions for the Warning Thresh 1 Day Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port, which can be: • 40-SMR1-C—DC-TX, DC-RX, OSC-TX, OSC-RX, ADD-RX, DROP-TX, LINE-RX, EXP-TX, and EXP-RX. • 40-SMR2-C—EXP-TX 1-1, EXP-RX 1-2, EXP-TX 1-3, and EXP-TX 1-4.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
OSC Power Low	Allows you to set the low OSC power threshold. **Note** This field is applicable only for port 8 of 40-SMR2-C cards.
OSC Power High	Allows you to set the high OSC power threshold. **Note** This field is applicable only for port 8 of 40-SMR2-C cards.

C.2.39.5.4 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-671 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	The port number.
Type	Identifies the type of port, which can be: • 40-SMR1-C—DC-TX, DC-RX, OSC-TX, OSC-RX, ADD-RX, DROP-TX, LINE-RX, EXP-TX, and EXP-RX. • 40-SMR2-C—EXP-TX 1-1, EXP-RX 1-2, EXP-TX 1-3, and EXP-TX 1-4.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.
OSC Power Failure High	Allows you to set the high OSC power failure threshold.
OSC Power Failure Low	Allows you to set the low OSC power failure threshold.
OSC Power Degrade High	Allows you to set the high OSC power degrade threshold.
OSC Power Degrade Low	Allows you to set the low OSC power degrade threshold.
Pwr OSC Failure	Shows the optical power failure threshold for the OSC.

C.2.39.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-672 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.39.7 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-673 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
Type	Displays the port type. Values are: • ADD RX—Used to add channels. • DROP-TX—Used to drop channels. • EXP RX—Receives an optical signal from another SMR module in the same NE. • EXP TX—Sends an optical signal to the another SMR module in the same NE. • OSC-TX—Transmits the optical service channel to the OSCM or OSC-CSM. • OSC-RX—Receives the optical service channel from the OSCM or OSC-CSM. • LINE TX—Sends an aggregate optical signal for transmission outside of the NE. • LINE RX—Receives the optical signal from another node in the network.
OSRI	Allows you to turn the optical safety remote interlock (OSRI) on or off.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.

Table C-673 Field Descriptions for the Auto Laser Shutdown Properties Pane (continued)

Field	Description
Currently Shutdown	Indicates whether the laser is currently shut down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.39.8 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-674 Field Descriptions for the Inventory Properties Pane

Field	Description
Attribute	Displays the card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.39.9 Maintenance

The Maintenance Properties pane allows you to display the insert and return values for each wavelength.

Table C-675 Field Descriptions for the Maintenance Properties Pane

Field	Description
Insert Value	
Target Power	Displays the default target power, in dBm. The value is retrieved from the ANS parameter for the side where the card is inserted. You can edit this field with a new value as needed.
Input Port	Displays the input port number.
Wavelength	Displays the wavelength assigned to the channel. Maintenance mode is known as lambda zero. You can use this mode when you do not want to use one of the system channels. For example, maintenance can be used in a degree upgrade when the system is up and running. Also, during installation, you can use maintenance or one of the system channels, depending on your site requirements.
Return Value LINE-TX on Selected Wavelength	
Actual Power	Displays the value returned by the card. This field indicates that the power on the cross-connection was created with the selected lambda and the incoming port that is calculated on the LINE-TX port.
Refresh	Updates the actual power that is displayed in the Actual Power field.
Delete	Stops the unit from working in maintenance mode for the given port and lambda. You must click Delete when maintenance is complete. Exiting this screen without clicking Delete does not stop the maintenance mode.

C.2.39.10 Wavelength Power

The Wavelength Power Properties pane displays wavelength power data. To view optical channels, select the port type from the port drop-down list and click **Retrieve**.

Table C-676 Field Descriptions for the Wavelength Power Properties Pane

Field	Description
Wavelength	Displays the wavelength number.
Measured Power	Displays the power.
Status	Displays the status.
Used	Whether or not the wavelength is being used. Values are Yes and No.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.40 Slot Properties—T-DCU (TDC-CC and TDC-FC)

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The T-DCU is a card that compensates for chromatic dispersion (CD) of the transmission fiber. The T-DCU enables faster troubleshooting of the network. The T-DCU card provides a selectable set of discrete negative chromatic dispersion values to compensate for chromatic dispersion of the transmission line. The card operates over the entire C-band (in the range of 1529.0 nm to 1562.5 nm) and monitors the optical power at the input and the output ports. The T-DCU provides two line cards with a varied set of tunable wavelengths to compensate for CD:

- TDC-CC (Coarse T-DCU)—Provides 16 values of CD ranging from 0 to –1650 ps/nm with a granularity of 110 ps/nm in the C-band spectrum.
- TDC-FC (Fine T-DCU)—Provides 16 values of CD ranging from 0 to –675 ps/nm with a granularity of 45 ps/nm in the C-band spectrum.

The TDC-CC and TDC-FC cards have the following high-level features:

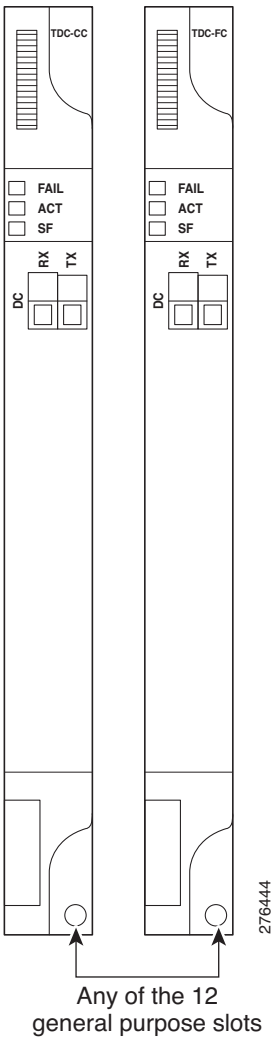
- Single slot card with three LEDs on the front panel.
- Two LC-PC-II optical connectors on the front panel.
- Operates in slots 1 to 6 and 12 to 17.
- Operates over the C-band (wavelengths from 1529 nm to 1562.5 nm) of the optical spectrum.
- Allows up to 16 provisionable CD values for chromatic dispersion compensation.
- Connects to OPT-PRE, OPT-AMP-C, OPT-RAMP-C, and OPT-RAMP-CE amplifiers and 40-SMR-1 and 40-SMR-2 cards.
- Supports performance monitoring and alarm handling for selectable thresholds.
- Allows monitoring and provisioning using CTC, SNMP, or TL1.

The TDC-CC and TDC-FC cards monitor the Optical Input Power and Optical Output Power of the fiber. The cards monitor the insertion loss from the input (DC-RX) to the output (DC-TX) port, with the help of the two photodiodes PD1 and PD2. The cards report the minimum, average, and maximum power statistics of each of the monitored ports or channels. The performance data is recorded in 15-minute and 24-hour intervals.

Note The PM data is stored on a wrap-around basis at 32 x 15-minute and 2 x 24-hour intervals.

The following figure shows the faceplate of a TDC-CC and TDC-FC card.

Figure C-55 TDC-CC and TDC-FC Faceplate



Note In the T-DCU card faceplate, the coarse T-DCU is identified with the label "TDC-CC." The fine T-DCU is identified with the label "TDC-FC."

Each card has one set of optical ports located on the faceplate.

The slot properties pane displays the following properties: Module View, Identification, Optical Line, Alarm Behavior, Card, and Inventory.

C.2.40.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.40.2 Identification

The Identification Properties pane allows you to view and update card identification information.

Table C-677 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.40.3 Optical Line

The Optical Line Properties pane allows you to view and update optical line threshold information.

Table C-678 Field Descriptions for the Optical Line Properties Pane

Tab	Description
Parameters	
Port Number	The port number.
Type	The port type.
Port Name	The port name.

Table C-678 Field Descriptions for the Optical Line Properties Pane (continued)

Tab	Description
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity.
Power	Shows the current power level per port.
Active Channels	Indicates how many channels the amplifier is carrying. The value generally reflects the number of provisioned channels.
Warning Thresh 15 Min and Warning Thresh 1 Day	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Low	Allows you to set the low power threshold.
Power High	Allows you to set the high power threshold.
Alarm Threshold	
Port Number	The port number.
Type	Identifies the type of port, such as Output Express, Input Express, Output COM, Input COM, and Drop.
Power Failure Low	Allows you to set the low power failure threshold.
Power Degrade High	Allows you to set the high power degrade threshold.
Power Degrade Low	Allows you to set the low power degrade threshold.
Gain Degrade Low	Allows you to set the low gain degrade threshold.
Gain Degrade High	Allows you to set the high gain degrade threshold.

C.2.40.4 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-679 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Port Number	Displays the card port number.
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.40.5 Card

The Card Properties pane allows you to view and update the compensation value.

C.2.40.6 Inventory

The Inventory Properties pane allows you to view the card inventory information.

Table C-680 Field Descriptions for the Inventory Properties Pane

Field	Description
PID	Displays the product ID (PID) code.
VID	Displays the version ID (VID) code.
Vendor ID	The ID of the vendor.
Part Number	The part number that is printed on the top of the card.
FW Version	The revision number of the software used by the ASIC chip installed on the card.
HW Version	The hardware version number.
Serial Number	The serial number that is unique to each card.
IL01 (LINE RX->TX)	The insertion loss between the specified ports.
IL-REF	The reference insertion loss.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.41 Slot Properties—TXP_MR_10E

The TXP_MR_10E card is a multirate transponder for the ONS 15454 platform. The card is fully backward compatible with the TXP_MR_10G card. It processes one 10-Gb/s signal (client side) into one 10-Gb/s, 100-GHz DWDM signal (trunk side) that is tunable over four wavelength channels (spaced at 100 GHz on the ITU grid) in the C-band and tunable over eight wavelength channels (spaced at 50 GHz on the ITU grid) in the L-band. There are eight versions of the C-band card, with each version covering four wavelengths, for a total coverage of 32 wavelengths. There are five versions of the L-band card, with each version covering eight wavelengths, for a total coverage of 40 wavelengths.

The TXP_MR_10E_C cards are multirate transponders for the ONS 15454 platform. The cards are fully backward compatible with the TXP_MR_10G and TXP_MR_10E cards. They process one 10-Gb/s signal (client side) into one 10-Gb/s, 100-GHz DWDM signal (trunk side). The TXP_MR_10E_C is tunable over the entire set of C-band wavelength channels (82 channels spaced at 50 GHz on the ITU grid). The advantage of these cards over previous versions (TXP_MR_10G and TXP_MR_10E) is that there is only one version of each card (one C-band version) instead of several versions needed to cover each band.

Note When an MLSE transponder module is installed on the TXP_MR_10E_C card, Prime Optical displays the card as TXP_MR_10EX.

You can install these cards in slots 1 to 6 and 12 to 17 and provision the cards in a linear configuration, BLSR/MS-SPRing, path protection/SNCP, or regenerator. The card can be used in the middle of BLSR/MS-SPRing or 1+1 spans when the card is configured for transparent termination mode.

The TXP_MR_10E card features a 1550-nm tunable laser (C-band) or a 1580-nm tunable laser (L-band) for the trunk port and a separately orderable ONS-XC-10G-S1 1310-nm or ONS-XC-10G-L2 1550-nm laser XFP module for the client port.

Note When the ONS-XC-10G-L2 XFP is installed, the TXP_MR_10E card must be installed in slots 6, 7, 12, or 13.

Prime Optical supports IB_5G payload on the TXP_MR_10E card. PM and TCA are not supported for the IB_5G payload type.

Perform the following steps to provision the payloads:

Step 1 Click the **PPM** Properties pane and create a PPM for port 1.

Step 2 Provision the rate IB_5G by selecting the rate from the **Port Rate** drop-down list.

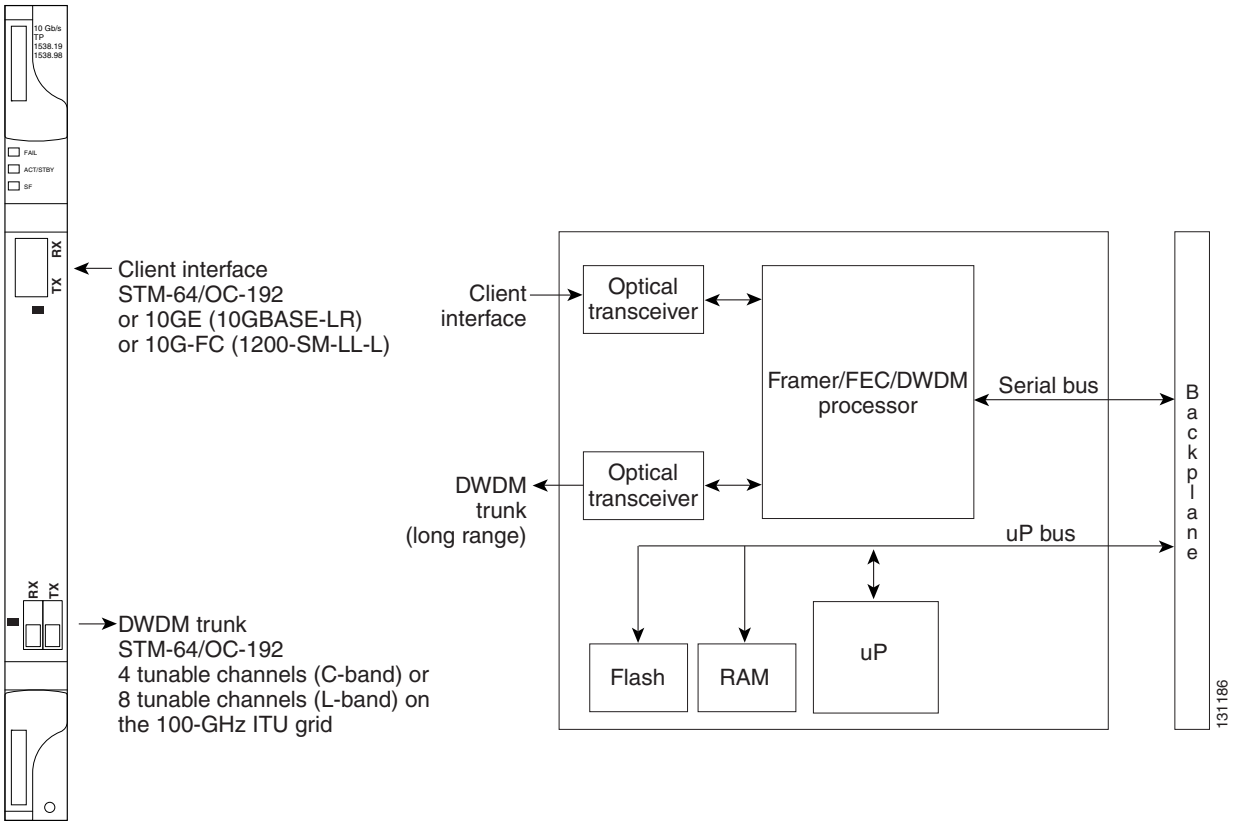
Note By default, FEC and G.709 OTN are enabled. If they are disabled, you cannot provision the rate IB_5G.

The key features of the TXP_MR_10E card are:

- A tri-rate client interface (available through the ONS-XC-10G-S1 XFP, ordered separately)
  - OC-192 (SR1)
  - 10GE (10GBASE-LR)
  - 10G-FC (1200-SM-LL-L)
- OC-192 to ITU-T G.709 OTU2 provisionable synchronous and asynchronous mapping

On its faceplate, the TXP_MR_10E card contains two transmit and receive connector pairs, one for the trunk port and one for the client port. Each connector pair is labeled.

Figure C-56 TXP_MR_10E Faceplate and Block Diagram



For the card selected, the slot properties pane displays the following properties: Module View, Identification, Card, PPM, Line, OTN, Loopback, Auto Laser Shutdown, Optical Thresh, Alarm Behavior, Protection, and Info.

Note The properties shown depend on the NE configuration.

C.2.41.1 Module View

The Module View displays a graphic that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.41.2 Identification

The Identification Properties pane allows you to view and update identification information.

Table C-681 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The equipment administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Suppress Alarms	When checked, all alarms are suppressed for the port.

C.2.41.3 Card

The Card Properties pane allows you to view and update card information.

Table C-682 Field Descriptions for the Card Properties Pane

Field	Description
Termination Mode	Allows you to set the mode of termination.
AIS/Squelch Configuration	Allows you to configure the remote client to squelch or send an AIS signal.
Regeneration Peer Slot	Allows you to select like cards so that you can configure a regeneration peer group.
Regeneration Group Name	(Optional) Allows you to set the name of the regeneration group.

C.2.41.4 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-683 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual plugin module that is installed in the slot.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the status of the plugin module: In Service (IS); Out of Service–Maintenance (OOS_MT); Unlocked; or Locked, Maintenance. **Note** You can edit the Admin State value only for actual equipment, not preprovisioned equipment.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the PPM number and port number.
Rate	Displays the port rate.

C.2.41.4.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.41.5 Line

The Line Properties pane allows you to configure line information.

If the card is installed on an ONS 15454 SONET NE, the Properties pane contains the following tabs:

- C.2.41.5.1 10G FibCh. Line Config Tab, page C-520
- C.2.41.5.2 10GE Line Config Tab, page C-521
- C.2.41.5.3 Section Trace Tab, page C-523
- C.2.41.5.4 SONET Line Tab, page C-523
- C.2.41.5.5 Section Thresh 15 Min Tab, page C-524
- C.2.41.5.6 Section Thresh 1 Day Tab, page C-525
- C.2.41.5.7 Line Thresh 15 Min Tab, page C-525
- C.2.41.5.8 Line Thresh 1 Day Tab, page C-526
- C.2.41.5.9 Wavelength Trunk Settings Tab, page C-526
- C.2.41.5.10 Error Decorrelator Settings Tab, page C-527
- C.2.41.5.11 RMON Thresholds Tab, page C-527

If the card is installed on an ONS 15454 SDH NE, the Properties pane contains the following tabs:

- C.2.41.5.12 10G FibCh. Line Config Tab, page C-528
- C.2.41.5.13 10GE Line Config Tab, page C-529
- C.2.41.5.14 Section Trace Tab, page C-530
- C.2.41.5.15 SDH Line Tab, page C-531
- C.2.41.5.16 RS Thresh 15 Min Tab, page C-532
- C.2.41.5.17 RS Thresh 1 Day Tab, page C-533
- C.2.41.5.18 MS Thresh 15 Min Tab, page C-533
- C.2.41.5.19 MS Thresh 1 Day Tab, page C-533
- C.2.41.5.20 Wavelength Trunk Settings Tab, page C-534
- C.2.41.5.21 Error Decorrelator Settings Tab, page C-534
- C.2.41.5.22 RMON Thresholds Tab, page C-535

Note The following information is the same if the payload is SDH on an ONS 15454 SONET NE.

C.2.41.5.1 10G FibCh. Line Config Tab

The 10G FibCh. Line Config tab allows you to provision the 10G FiberChannel PPM parameters of a TXP_MR_10E card.

Table C-684 Field Descriptions for the 10G FibCh. Line Config Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

Table C-684 Field Descriptions for the 10G FibCh. Line Config Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.41.5.2 10GE Line Config Tab

The 10GE Line Config tab allows you to provision the 10GE PPM parameters of a TXP_MR_10E card.

Table C-685 Field Descriptions for the 10GE Line Config Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Administration State	The port administration state.

Table C-685 Field Descriptions for the 10GE Line Config Tab (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.
Incoming MAC Address	Allows you to edit the incoming MAC address.
Max. Size	To permit the acceptance of jumbo-size Ethernet frames, select Jumbo (default). If you do not want to permit jumbo-size Ethernet frames, select 1548.

C.2.41.5.3 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the card.

Table C-686 Field Descriptions for the Section Trace Tab

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is either 1 or 16 bytes.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.2.41.5.4 SONET Line Tab

The SONET Line tab allows you to view and change the SONET line settings of the card.

Table C-687 Field Descriptions for the SONET Line Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Send Do Not Use	When checked, sends a do not use (DUS) message on the S1 byte.
Provides Sync	When checked, the card is provisioned as an NE timing reference.
Enable Sync Msg	When checked, enables synchronization status messages, which allow the node to choose the best timing source.
Type	Displays the type of port.

Table C-687 Field Descriptions for the SONET Line Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.41.5.5 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the 15-minute section threshold information for the card.

Table C-688 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.

Table C-688 Field Descriptions for the Section Thresh 15 Min Tab (continued)

Field	Description
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.41.5.6 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the 1-day section threshold information for the card.

Table C-689 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.41.5.7 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute line threshold information for the card.

Table C-690 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.

Table C-690 Field Descriptions for the Line Thresh 15 Min Tab (continued)

Field	Description
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.41.5.8 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day line threshold information for the card.

Table C-691 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.41.5.9 Wavelength Trunk Settings Tab

The Wavelength Trunk Settings tab allows you to change the wavelength and band settings for the card.

Table C-692 Field Descriptions for the Wavelength Trunk Settings Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.

Table C-692 Field Descriptions for the Wavelength Trunk Settings Tab (continued)

Field	Description
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). When the card is plugged in, the selection is disabled and the correct value of the band is displayed. When the card is preprovisioned, you can select either L- or C-band.

C.2.41.5.10 Error Decorrelator Settings Tab

Note This tab appears only when the MLSE transponder module is installed.

The Error Decorrelator Settings tab allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

Table C-693 Field Descriptions for the Error Decorrelator Settings Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Error Decorrelator	Allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

C.2.41.5.11 RMON Thresholds Tab

The RMON Thresholds tab allows you to view RMON thresholds for the MXP_MR_10DME-C and MXP_MR_10DME-L cards.

Table C-694 Field Descriptions for the RMON Thresholds Tab

Field	Description
Index No.	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period (sec)	Displays the sample period, in seconds.
Rising Thresholds (count)	Displays the number of occurrences for the rising threshold.

Table C-694 Field Descriptions for the RMON Thresholds Tab (continued)

Field	Description
Falling Thresholds (count)	Displays the number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold.
Create	Click the **Create** button to create a threshold for the POS ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.2.41.5.12 10G FibCh. Line Config Tab

The 10G FibCh. Line Config tab allows you to provision the 10G FiberChannel PPM parameters of a TXP_MR_10E card.

Table C-695 Field Descriptions for the 10G FibCh. Line Config Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

Table C-695 Field Descriptions for the 10G FibCh. Line Config Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.41.5.13 10GE Line Config Tab

The 10GE Line Config tab allows you to provision the 10GE PPM parameters of a TXP_MR_10E card.

Table C-696 Field Descriptions for the 10GE Line Config Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Administration State	The port administration state.

Table C-696 Field Descriptions for the 10GE Line Config Tab (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.41.5.14 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the card.

Table C-697 Field Descriptions for the Section Trace Tab

Field	Description
Port Number	The port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string; sets a new transmit string.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.2.41.5.15 SDH Line Tab

The SDH Line tab allows you to view and change the SDH line settings of the card.

Table C-698 Field Descriptions for the SDH Line Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
State	Displays the port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • unlocked—Puts the port in service. The port service state changes to unlocked-enabled. • unlocked,automaticInService—Puts the port in automatic in-service. The port service state changes to unlocked-disabled,automaticInService. • locked-disabled—Removes the port from service and disables it. The port service state changes to locked-enabled,disabled. • locked,maintenance—Removes the port from service for maintenance. The port service state changes to locked-enabled,maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.

Table C-698 Field Descriptions for the SDH Line Tab (continued)

Field	Description
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.41.5.16 RS Thresh 15 Min Tab

The RS Thresh 15 Min tab allows you to view and change the 15-minute regeneration section threshold for the card.

Table C-699 Field Descriptions for the RS Thresh 15 Min Tab

Field	Description
Port Number	The port number.
EB-RS	Errored blocks regenerator section.

Table C-699 Field Descriptions for the RS Thresh 15 Min Tab (continued)

Field	Description
ES-RS	Errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
SES-RS	Severely errored seconds regenerator section.
UAS-RS	Unavailable seconds regenerator section.

C.2.41.5.17 RS Thresh 1 Day Tab

The RS Thresh 1 Day tab allows you to view and change the 1-day regeneration section threshold for the card.

Table C-700 Field Descriptions for the RS Thresh 1 Day Tab

Field	Description
Port Number	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored second regenerator section.
UAS-RS	Unavailable seconds regenerator section.

C.2.41.5.18 MS Thresh 15 Min Tab

The MS Thresh 15 Min tab allows you to view and change the 15-minute multiplex section threshold for the card.

Table C-701 Field Descriptions for the MS Thresh 15 Min Tab

Field	Description
Port Number	The port number.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
EB-MS	Errored blocks multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable second multiplexer section.

C.2.41.5.19 MS Thresh 1 Day Tab

The MS Thresh 1 Day tab allows you to view and change the 1-day multiplex section threshold for the card.

Table C-702 Field Descriptions for the MS Thresh 1 Day Tab

Field	Description
Port Number	The port number.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored second multiplexer section.
EB-MS	Errored blocks multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.

C.2.41.5.20 Wavelength Trunk Settings Tab

The Wavelength Trunk Settings tab allows you to change the wavelength and band settings for the card.

Table C-703 Field Descriptions for the Wavelength Trunk Settings Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). When the card is plugged in, the selection is disabled and the correct value of the band is displayed. When the card is preprovisioned, you can select either L- or C-band.

C.2.41.5.21 Error Decorrelator Settings Tab

Note This Properties pane appears only when the MLSE transponder module is installed.

The Error Decorrelator Settings tab allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

Table C-704 Field Descriptions for the Error Decorrelator Settings Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Error Decorrelator	Allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

C.2.41.5.22 RMON Thresholds Tab

The RMON Thresholds tab allows you to view RMON thresholds for the MXP_MR_10DME-C and MXP_MR_10DME-L cards.

Table C-705 Field Descriptions for the RMON Thresholds Tab

Field	Description
Index No.	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period (sec)	Displays the sample period, in seconds.
Rising Thresholds (count)	Displays the number of occurrences for the rising threshold.
Falling Thresholds (count)	Displays the number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold.
Create	Click the **Create** button to create a threshold for the POS ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.2.41.6 OTN

The OTN Properties pane allows you to change the line optical transport network (OTN) settings for the card. The Properties pane contains the following tabs:

- C.2.41.6.1 OTN Line Tab, page C-535
- C.2.41.6.2 G.709 Thresh 15 Min Tab, page C-536
- C.2.41.6.3 G.709 Thresh 1 Day Tab, page C-537
- C.2.41.6.4 FEC Thresh 15 Min Tab, page C-538
- C.2.41.6.5 FEC Thresh 1 Day Tab, page C-538
- C.2.41.6.6 Trail Trace Identifier Tab, page C-538

C.2.41.6.1 OTN Line Tab

The OTN Line tab allows you to view and change the OTN line settings of the card.

Table C-706 Field Descriptions for the OTN Line Tab

Field	Description
G.709 OTN	Disables or enables the G.709 OTN feature.
FEC	Disables or enables forward error correction. **Note** OTN must be enabled before you can enable FEC.
Asynch/Synch Mapping	The card can perform multiplexing per ITU-T G.709. The ODUK (client SONET/SDH payload) can be mapped to the optical channel (OTUK) either asynchronously (asynch mapping) or synchronously (synch mapping) with this setting.
SF BER	The signal fail bit error rate.
SD BER	The signal degrade bit error rate.

C.2.41.6.2 G.709 Thresh 15 Min Tab

The G.709 Thresh 15 Min tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 15 minutes.

Table C-707 Field Descriptions for the G.709 Thresh 15 Min Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.

Table C-707 Field Descriptions for the G.709 Thresh 15 Min Tab (continued)

Field	Description
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.41.6.3 G.709 Thresh 1 Day Tab

The G.709 Thresh 1 Day tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 24 hours.

Table C-708 Field Descriptions for the G.709 Thresh 1 Day Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.

Table C-708 Field Descriptions for the G.709 Thresh 1 Day Tab (continued)

Field	Description
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.41.6.4 FEC Thresh 15 Min Tab

The FEC Thresh 15 Min tab allows you to view and change the 15-minute FEC threshold values of the card.

Table C-709 Field Descriptions for the FEC Thresh 15 Min Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.41.6.5 FEC Thresh 1 Day Tab

The FEC Thresh 1 Day tab allows you to view and change the 1-day FEC threshold values of the card.

Table C-710 Field Descriptions for the FEC Thresh 1 Day Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.41.6.6 Trail Trace Identifier Tab

The Trail Trace Identifier tab allows you to provision the trail trace identifier for the card.

Table C-711 Field Descriptions for the Trail Trace Identifier Tab

Field	Description
Port Number	Displays port number information.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms.
Current Transmit String	Displays the current transmit string.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.

C.2.41.7 Loopback

The Loopback Properties pane allows you to view and update loopback information.

Table C-712 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).

C.2.41.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-713 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.

Table C-713 Field Descriptions for the Auto Laser Shutdown Properties Pane (continued)

Field	Description
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.41.9 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane contains the following tabs:

- C.2.41.9.1 TCA 15 Min Tab, page C-540
- C.2.41.9.2 TCA 1 Day Tab, page C-540
- C.2.41.9.3 Alarm Thresh Tab, page C-541

C.2.41.9.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to view and change the 15-minute TCA settings of the card.

Table C-714 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.41.9.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to view and change the 1-day TCA settings of the card.

Table C-715 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.

Table C-715 Field Descriptions for the TCA 1 Day Tab (continued)

Field	Description
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.41.9.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-716 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port Number	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.41.10 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update alarm profile information.

Table C-717 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
DWDM	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
Payload	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.

Table C-717 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.41.11 Protection

The Protection Properties pane allows you to view and update protection group information.

Table C-718 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.

C.2.41.12 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-719 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.42 Slot Properties—TXP_MR_10E_C

The TXP_MR_10E_C cards are multirate transponders for the ONS 15454 platform. The cards are fully backward compatible with the TXP_MR_10G and TXP_MR_10E cards. They processes one 10-Gb/s signal (client side) into one 10-Gb/s, 100-GHz DWDM signal (trunk side). The TXP_MR_10E_C is tunable over the entire set of C-band wavelength channels (82 channels spaced at 50 GHz on the ITU grid).

The advantage of these cards over previous versions (TXP_MR_10G and TXP_MR_10E) is that there is only one version of each card (one C-band version) instead of several versions needed to cover each band.

You can install TXP_MR_10E_C cards in slots 1 to 6 and 12 to 17 and provision the cards in a linear configuration, BLSR/MS-SPRing, path protection/SNCP, or regenerator. The cards can be used in the middle of BLSR/MS-SPRing or 1+1 spans when the cards are configured for transparent termination mode.

The TXP_MR_10E_C card features a universal transponder 2 (UT2) 1550-nm tunable laser (C-band) for the trunk port and a separately orderable ONS-XC-10G-S1 1310-nm or ONS-XC-10G-L2 1550-nm laser XFP module for the client port.

Note When the ONS-XC-10G-L2 XFP is installed, the TXP_MR_10E_C card must be installed in a high-speed slot (slot 6, 7, 12, or 13).

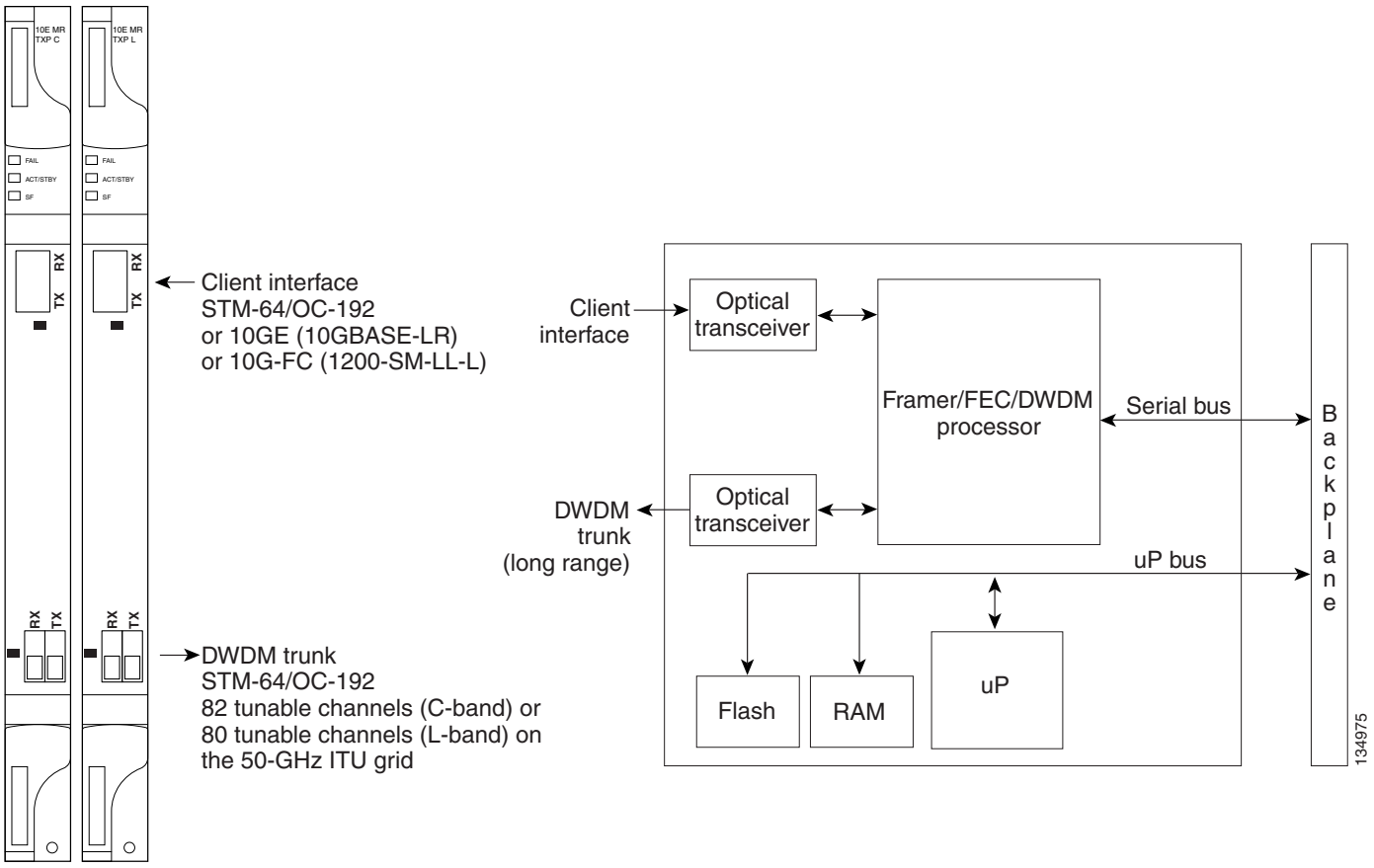
The key features of the TXP_MR_10E_C card are:

- A tri-rate client interface (available through the ONS-XC-10G-S1 XFP, ordered separately):
  - OC-192 (SR1)
  - 10GE (10GBASE-LR)
  - 10G-FC (1200-SM-LL-L)
- A UT2 module tunable through the entire C-band. The channels are spaced at 50 GHz on the ITU grid.
- OC-192 to ITU-T G.709 OTU2 provisionable synchronous and asynchronous mapping.

On its faceplate, the TXP_MR_10E_C card contains two transmit and receive connector pairs, one for the trunk port and one for the client port. Each connector pair is labeled.

The following figure shows the card faceplates.

Figure C-57 TXP_MR_10E_C and TXP_MR_10E_L Faceplates



For the card selected, the slot properties pane displays the following properties: Module View, Identification, Card, PPM, Line, OTN, Loopback, Auto Laser Shutdown, Optical Thresh, Alarm Behavior, Protection, and Info.

Note The properties shown depend on the NE configuration.

C.2.42.1 Module View

The Module View displays a graphic that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.42.2 Identification

The Identification Properties pane allows you to view and update identification information.

Table C-720 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The equipment administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Suppress Alarms	When checked, all alarms are suppressed for the port.

C.2.42.3 Card

The Card Properties pane allows you to view and update card information.

Table C-721 Field Descriptions for the Card Properties Pane

Field	Description
Termination Mode	Allows you to set the mode of termination.
AIS/Squelch Configuration	Allows you to configure the remote client to squelch or send an AIS signal.
Regeneration Peer Slot	Allows you to select like cards so that you can configure a regeneration peer group.
Regeneration Group Name	(Optional) Allows you to set the name of the regeneration group.

C.2.42.4 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-722 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual plugin module that is installed in the slot.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the status of the plugin module: In Service (IS); Out of Service–Maintenance (OOS_MT); Unlocked; or Locked, Maintenance. **Note** You can edit the Admin State value only for actual equipment, not preprovisioned equipment.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the PPM number and port number.
Rate	Displays the port rate.

C.2.42.4.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.42.5 Line

The Line Properties pane allows you to configure line information.

If the card is installed on an ONS 15454 SONET NE, the Properties pane contains the following tabs:

- C.2.42.5.1 Section Trace Tab, page C-547
- C.2.42.5.2 SONET Line Tab, page C-547
- C.2.42.5.3 Section Thresh 15 Min Tab, page C-548
- C.2.42.5.4 Section Thresh 1 Day Tab, page C-549
- C.2.42.5.5 Line Thresh 15 Min Tab, page C-549
- C.2.42.5.6 Line Thresh 1 Day Tab, page C-550
- C.2.42.5.7 Wavelength Trunk Settings Tab, page C-550
- C.2.42.5.8 Error Decorrelator Settings Tab, page C-551

If the card is installed on an ONS 15454 SDH NE, the Properties pane contains the following tabs:

- C.2.42.5.9 10G FibCh. Line Config Tab, page C-551
- C.2.42.5.10 10GE Line Config Tab, page C-552
- C.2.42.5.11 Section Trace Tab, page C-553

- C.2.42.5.12 SDH Line Tab, page C-554
- C.2.42.5.13 RS Thresh 15 Min Tab, page C-555
- C.2.42.5.14 RS Thresh 1 Day Tab, page C-556
- C.2.42.5.14 RS Thresh 1 Day Tab, page C-556
- C.2.42.5.15 MS Thresh 15 Min Tab, page C-556
- C.2.42.5.16 MS Thresh 1 Day Tab, page C-556
- C.2.42.5.17 Wavelength Trunk Settings Tab, page C-557
- C.2.42.5.18 Error Decorrelator Settings Tab, page C-557
- C.2.42.5.19 RMON Thresholds Tab, page C-558

Note The following information is the same if the payload is SDH on an ONS 15454 SONET NE.

C.2.42.5.1 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the card. Select a port and click the **Modify** button to edit the trace.

Table C-723 Field Descriptions for the Section Trace Tab

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is either 1 or 16 bytes.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.2.42.5.2 SONET Line Tab

The SONET Line tab allows you to view and change the SONET line settings of the card.

Table C-724 Field Descriptions for the SONET Line Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance

Table C-724 Field Descriptions for the SONET Line Tab (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Displays the port type.
Provides Sync	When checked, the card is provisioned as an NE timing reference.
Enable Sync Msg	When checked, enables synchronization status messages, which allow the node to choose the best timing source.
Send Do Not Use	When checked, sends a do not use (DUS) message on the S1 byte.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.42.5.3 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the near-end 15-minute section threshold information for the card.

Table C-725 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.

Table C-725 Field Descriptions for the Section Thresh 15 Min Tab (continued)

Field	Description
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.42.5.4 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the near-end 1-day section threshold information for the card.

Table C-726 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.42.5.5 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near-end 15-minute line threshold information for the card.

Table C-727 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.

Table C-727 Field Descriptions for the Line Thresh 15 Min Tab (continued)

Field	Description
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.42.5.6 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day line threshold information for the card.

Table C-728 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.42.5.7 Wavelength Trunk Settings Tab

The Wavelength Trunk Settings tab allows you to change the wavelength and band settings for the card.

Table C-729 Field Descriptions for the Wavelength Trunk Settings Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.

Table C-729 Field Descriptions for the Wavelength Trunk Settings Tab (continued)

Field	Description
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). When the card is plugged in, the selection is disabled and the correct value of the band is displayed. When the card is preprovisioned, you can select either L- or C-band.

C.2.42.5.8 Error Decorrelator Settings Tab

The Error Decorrelator Settings tab allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

Table C-730 Field Descriptions for the Error Decorrelator Settings Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Error Decorrelator	Allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

C.2.42.5.9 10G FibCh. Line Config Tab

The 10G FibCh. Line Config tab allows you to provision the 10G FiberChannel PPM parameters of a card.

Table C-731 Field Descriptions for the 10G FibCh. Line Config Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

Table C-731 Field Descriptions for the 10G FibCh. Line Config Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.42.5.10 10GE Line Config Tab

The 10GE Line Config tab allows you to provision the 10GE PPM parameters.

Table C-732 Field Descriptions for the 10GE Line Config Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Administration State	The port administration state.

Table C-732 Field Descriptions for the 10GE Line Config Tab (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.42.5.11 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the card.

Table C-733 Field Descriptions for the Section Trace Tab

Field	Description
Port Number	The port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string; sets a new transmit string.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.2.42.5.12 SDH Line Tab

The SDH Line tab allows you to view and change the SDH line settings of the card.

Table C-734 Field Descriptions for the SDH Line Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.

Table C-734 Field Descriptions for the SDH Line Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.42.5.13 RS Thresh 15 Min Tab

The RS Thresh 15 Min tab allows you to view and change the 15-minute regeneration section threshold for the card.

Table C-735 Field Descriptions for the RS Thresh 15 Min Tab

Field	Description
Port Number	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.

Table C-735 Field Descriptions for the RS Thresh 15 Min Tab (continued)

Field	Description
SES-RS	Severely errored seconds regenerator section.
UAS-RS	Unavailable seconds regenerator section.

C.2.42.5.14 RS Thresh 1 Day Tab

The RS Thresh 1 Day tab allows you to view and change the 1-day regeneration section threshold for the card.

Table C-736 Field Descriptions for the RS Thresh 1 Day Tab

Field	Description
Port Number	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored second regenerator section.
UAS-RS	Unavailable seconds regenerator section.

C.2.42.5.15 MS Thresh 15 Min Tab

The MS Thresh 15 Min tab allows you to view and change the 15-minute multiplex section threshold for the card.

Table C-737 Field Descriptions for the MS Thresh 15 Min Tab

Field	Description
Port Number	The port number.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
EB-MS	Errored blocks multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable second multiplexer section.

C.2.42.5.16 MS Thresh 1 Day Tab

The MS Thresh 1 Day tab allows you to view and change the 1-day multiplex section threshold for the card.

Table C-738 Field Descriptions for the MS Thresh 1 Day Tab

Field	Description
Port Number	The port number.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored second multiplexer section.

Table C-738 Field Descriptions for the MS Thresh 1 Day Tab (continued)

Field	Description
EB-MS	Errored blocks multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.

C.2.42.5.17 Wavelength Trunk Settings Tab

The Wavelength Trunk Settings tab allows you to change the wavelength and band settings for the card.

Table C-739 Field Descriptions for the Wavelength Trunk Settings Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). When the card is plugged in, the selection is disabled and the correct value of the band is displayed. When the card is preprovisioned, you can select either L- or C-band.

C.2.42.5.18 Error Decorrelator Settings Tab

Note This Properties pane appears only when the MLSE transponder module is installed.

The Error Decorrelator Settings tab allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

Table C-740 Field Descriptions for the Error Decorrelator Settings Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a port name.
Error Decorrelator	Allows you to enable or disable Prime Optical from retrieving the error decorrelator value.

C.2.42.5.19 RMON Thresholds Tab

The RMON Thresholds tab allows you to view RMON thresholds for the MXP_MR_10DME-C and MXP_MR_10DME-L cards.

Table C-741 Field Descriptions for the RMON Thresholds Tab

Field	Description
Index No.	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period (sec)	Displays the sample period, in seconds.
Rising Thresholds (count)	Displays the number of occurrences for the rising threshold.
Falling Thresholds (count)	Displays the number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold.
Create	Click the **Create** button to create a threshold for the POS ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.2.42.6 OTN

The OTN Properties pane allows you to change the line optical transport network (OTN) settings for multirate transponder cards. If you provisioned the payloads DVB-ASI or ISC1, all other subtabs except OTN Line are blank.

Note OTN is supported only for trunk ports.

Table C-742 Field Descriptions for the OTN Properties Pane

Field	Description
OTN Line	
Port No.	The port number.
G.709 OTN	Disables or enables the G.709 OTN feature. If you provisioned the new payloads, the field displays the current status of the G.709 OTN feature: enabled or disabled.

Table C-742 Field Descriptions for the OTN Properties Pane (continued)

Field	Description
FEC	Disables or enables forward error correction. If you provisioned the new payloads, this field displays the status of forward error correction: enabled or disabled. **Note** OTN must be enabled before you can enable FEC.
Asynch/Synch Mapping	
SF BER	The signal fail bit error rate.
SD BER	The signal degrade bit error rate.
G.709 Thresh 15 Min	
SM (OTUK) Near End, Far End	
Port No.	The port number.
BBE-SM	Background block errors.
ES-SM	Errored seconds.
SES-SM	Severely errored seconds.
UAS-SM	Unavailable seconds.
FC-SM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End, Far End	
Port No.	The port number.
BBE-PM	Background block errors.
ES-PM	Errored seconds.
SES-PM	Severely errored seconds.
UAS-PM	Unavailable seconds.
FC-PM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
G.709 Thresh 1 Day	
SM (OTUK) Near End, Far End	
Port No.	The port number.
BBE-SM	Background block errors.
ES-SM	Errored seconds.
SES-SM	Severely errored seconds.
UAS-SM	Unavailable seconds.
FC-SM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End, Far End	
Port No.	The port number.
BBE-PM	Background block errors.
ES-PM	Errored seconds.

Table C-742 Field Descriptions for the OTN Properties Pane (continued)

Field	Description
SES-PM	Severely errored seconds.
UAS-PM	Unavailable seconds.
FC-PM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
FEC Thresh 15 Minutes	
Port Number	Displays the port number.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.
FEC Thresh 1 Day	
Port Number	Displays the port number.
Bit Errors Corrected	Displays the bit errors corrected in one-day intervals.
Uncorrectable Words	Displays the uncorrectable words in one-day intervals.
Trail Trace Identifier	
Port No.	The port number.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch alarms.
Current Transmit String	Displays the current transmit string.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.

C.2.42.7 Loopback

The Loopback Properties pane allows you to view and update card loopback information.

Table C-743 Field Descriptions for the Loopback Properties Pane

Field	Description
Port No.	Displays the port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance

Table C-743 Field Descriptions for the Loopback Properties Pane (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.2.42.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown (ALS) parameters.

Table C-744 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.42.9 Optical Threshold

The Optical Threshold Properties pane allows you to view and update optical threshold information.

Table C-745 Field Descriptions for the Optical Threshold Properties Pane

Field	Description
TCA 15 Min	
Port Number	Displays the port number.
Laser Bias High	Displays the upper laser bias threshold.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.

Table C-745 Field Descriptions for the Optical Threshold Properties Pane (continued)

Field	Description
Reset to Defaults button	Resets the value of the port parameters to the default value.
TCA 1 Day	
Port Number	Displays the port number.
Laser Bias High	Displays the upper laser bias threshold.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Alarm Threshold	
Port Number	Displays the port number.
Laser Bias High	Displays the upper laser bias threshold.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.42.10 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-746 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
DWDM/Payload	
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.42.11 Protection

The Protection Properties pane allows you to view and update card protection group information.

Note When using protection groups, you can provision only the working port.

Table C-747 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups. Y-cable (TXP_MR_2.5G) and splitter (TXPP_MR_2.5G) protection groups are supported.
Protection Group Details	Displays details about the selected protection groups, such as which port is the protected port and which port is the working port. Also allows you to execute switch commands.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

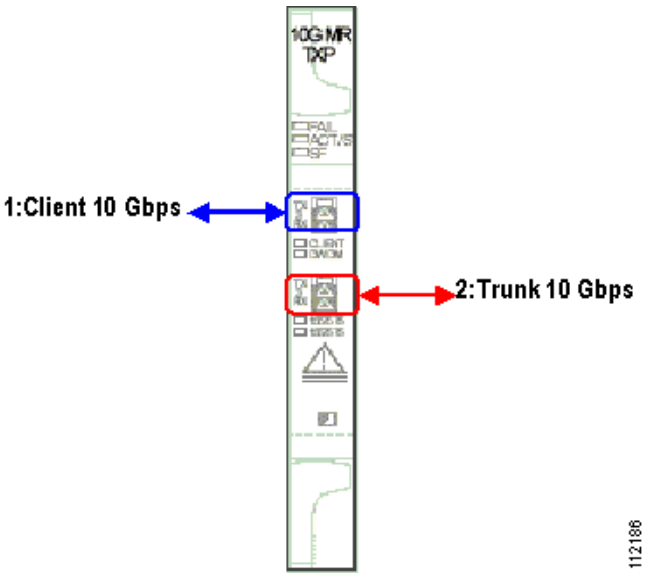
C.2.43 Slot Properties—TXP_MR_10G

The slot properties pane displays information about the Cisco ONS 15454 SONET and ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The 10-Gb/s Transponder–100-GHz–Tunable xx.xx-xx.xx card (TXP_MR_10G) processes one 10-Gb/s signal (client side) into one 10-Gb/s, 100-GHz DWDM signal (trunk side). It provides one 10-Gb/s port per card that can be provisioned for an STM64/OC-192 short reach (1310 nm) signal, compliant with ITU-T G.707, G.709, ITU-T G.691, Telcordia GR-253-CORE, or a 10 GE BASE-LR, compliant to IEEE 802.3.

The following figure shows the card faceplate.

Figure C-58 TXP_MR_10G Module



For the TXP_MR_10G module, the slot properties pane displays the following properties: Module View, Identification, Card, PPM, OTN, Loopback, Auto Laser Shutdown, Optical Thresh, Alarm Behavior, SONET Line, SDH Line, Ether Line, and Protection. The properties shown depend on the NE configuration.

C.2.43.1 Module View

The Module View displays a graphic of the TXP_MR_10G that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.43.2 Identification

The Identification Properties pane allows you to view and update TXP_MR_10G identification information.

Table C-748 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.

Table C-748 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Vendor ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.43.3 Card

The Card Properties pane allows you to view and update card information.

Table C-749 Field Descriptions for the Card Properties Pane

Field	Description
Termination Mode	Allows you to set the mode of termination.
Regeneration Peer Slot	Allows you to select like cards so that you can configure a regeneration peer group.
Regeneration Group Name	(Optional) Allows you to set the name of the regeneration group.

C.2.43.4 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM for TXP_MR_10G cards.

Table C-750 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual plugin module that is installed in the slot.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the status of the plugin module: In Service (IS); Out of Service–Maintenance (OOS_MT); Unlocked; or Locked, Maintenance. **Note** You can edit the Admin State value only for actual equipment, not preprovisioned equipment.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the PPM number and port number.
Rate	Displays the port rate.

C.2.43.5 OTN

The OTN Properties pane allows you to change the line optical transport network (OTN) settings for TXP_MR_10G cards.

Table C-751 Field Descriptions for the OTN Properties Pane

Field	Description
G.709 Thresh 15 Min	
SM (OTUK) Near End, Far End	
Port No.	The port number.
BBE-SM	Background block errors.
ES-SM	Errored seconds.
SES-SM	Severely errored seconds.
UAS-SM	Unavailable seconds.
FC-SM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End, Far End	
Port No.	The port number.
BBE-PM	Background block errors.
ES-PM	Errored seconds.
SES-PM	Severely errored seconds.
UAS-PM	Unavailable seconds.
FC-PM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
G.709 Thresh 1 Day	
SM (OTUK) Near End, Far End	
Port No.	The port number.
BBE-SM	Background block errors.
ES-SM	Errored seconds.
SES-SM	Severely errored seconds.
UAS-SM	Unavailable seconds.
FC-SM	Failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End, Far End	
Port No.	The port number.
BBE-PM	Background block errors.
ES-PM	Errored seconds.
SES-PM	Severely errored seconds.
UAS-PM	Unavailable seconds.
FC-PM	Failure count.

Table C-751 Field Descriptions for the OTN Properties Pane (continued)

Field	Description
Reset to Defaults button	Resets the value of the port parameters to the default value.
FEC Thresh 15 Minutes	
Port Number	Displays the port number.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.
FEC Thresh 1 Day	
Port Number	Displays the port number.
Bit Errors Corrected	Displays the bit errors corrected in one-day intervals.
Uncorrectable Words	Displays the uncorrectable words in one-day intervals.
Trail Trace Identifier	
Port No.	The port number.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms.
Current Transmit String	Displays the current transmit string.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.
OTN Line	
Port No.	The port number.
G.709 OTN	Disables or enables the G.709 OTN feature.
FEC	Disables or enables forward error correction. **Note** OTN must be enabled before you can enable FEC.
SF BER	The signal fail bit error rate.
SD BER	The signal degrade bit error rate.

C.2.43.6 Loopback

The Loopback Properties pane allows you to view and update TXP_MR_10G loopback information.

Table C-752 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Port Name	Displays the name of the port.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.

Table C-752 Field Descriptions for the Loopback Properties Pane (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.2.43.7 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update the automatic laser shutdown parameters.

Table C-753 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port Number	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the recovery laser pulse duration, in seconds. The range is from 60 to 200 seconds.
Rec. Pulse Int. (sec)	Allows you to set the recovery laser pulse interval, in seconds. The range is from 100 to 2000 seconds for client ports and from 200 to 2000 seconds for trunk ports.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.43.8 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings.

Table C-754 Field Descriptions for the Optical Thresh Properties Pane

Field	Description
Warning 15 Min	
Port Number	Displays the port number.
Tx Power High	Displays the upper transmit power threshold.
Tx Power Low	Displays the lower transmit power threshold.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Laser Bias High	Displays the upper laser bias threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Warning 1 Day	
Port Number	Displays the port number.

Table C-754 Field Descriptions for the Optical Thresh Properties Pane (continued)

Field	Description
Tx Power High	Displays the upper transmit power threshold.
Tx Power Low	Displays the lower transmit power threshold.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Laser Bias High	Displays the upper laser bias threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Alarm Threshold	
Port Number	Displays the port number.
Tx Power High	Displays the upper transmit power threshold.
Tx Power Low	Displays the lower transmit power threshold.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Laser Bias High	Displays the upper laser bias threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.43.9 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update TXP_MR_10G alarm profile information.

Table C-755 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
DWDM	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
Payload	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.

Table C-755 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
GFP	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.43.10 SONET Line

The SONET Line Properties pane allows you to configure SONET line information. If the card is installed on an ONS 15454 SONET NE, the Properties pane contains the following tabs and fields. If the card is installed on an ONS 15454 SDH NE, see C.2.43.11 SDH Line, page C-572.

Note The following information is the same if the payload is SDH on an ONS 15454 SONET NE.

Table C-756 Field Descriptions for the SONET Line Properties Pane

Field	Description
Section Threshold 15 Minutes	
Port Number	The port number.
CV-S	Coding violations section.
ES-S	Errored seconds section.
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Section Threshold 1 Day	
Port Number	The port number.
CV-S	Coding violations section.
ES-S	Errored seconds sections section.
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Line Threshold 15 Minutes	
Port Number	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.

Table C-756 Field Descriptions for the SONET Line Properties Pane (continued)

Field	Description
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Line Threshold 1 Day	
Port Number	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Wavelength Trunk Settings	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). For this single-band card, the band value is fixed to *C*, and this value cannot be altered.
Section Trace	
Port Number	The port number.
Trace Mode	Allows you to set the trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string; sets a new transmit string.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
Modify	Allows you to change the section trace settings for TXP_MR_10G cards. Select a trace and click the **Modify** button to open the Modify Trace window.
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.

Table C-756 Field Descriptions for the SONET Line Properties Pane (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.

C.2.43.11 SDH Line

The SDH Line Properties pane allows you to configure SDH line information. If the card is installed on an ONS 15454 SDH NE, the Properties pane contains the following tabs and fields. If the card is installed on an ONS 15454 SONET NE, see the SONET Line section.

Note The following information is the same if the payload is SONET on an ONS 15454 SDH NE.

Table C-757 Field Descriptions for the SDH Line Properties Pane

Field	Description
Section Trace	
Port Number	The port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string; sets a new transmit string.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.

Table C-757 Field Descriptions for the SDH Line Properties Pane (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
RS Threshold 15 Minutes - Near End	
Port Number	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
BBE-RS	Background block error regenerator section.
SES-RS	Severely errored second regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
RS Threshold 1 Day - Near End	
Port Number	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
SES-RS	Severely errored seconds regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
MS Threshold 15 Minutes - Near End, Far End	
Port Number	The port number.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
EB-MS	Errored blocks multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
MS Threshold 1 Day - Near End, Far End	

Table C-757 Field Descriptions for the SDH Line Properties Pane (continued)

Field	Description
Port Number	The port number.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
EB-MS	Errored blocks multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Wavelength Trunk Settings	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths, depending on the type of card and the band selected. Refer to the *Other Information* field in the Equipment Inventory table for details of wavelengths supported. See 11.3.1.3 Equipment Inventory Table for CTC-Based NEs, page 11-13.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). For this single-band card, the band value is fixed to *C*, and this value cannot be altered.

C.2.43.12 Ether Line

The Ether Line Properties pane allows you to configure Ethernet line information.

Table C-758 Field Descriptions for the Ether Line Properties Pane

Field	Description
Line Config	
Port Number	The port number.
Port Name	Allows you to enter a port name.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Incoming MAC Address	Allows you to edit the incoming MAC address.
Max Frame	To permit the acceptance of jumbo-size Ethernet frames, select Jumbo (default). If you do not want to permit jumbo-size Ethernet frames, select 1548.
Thresholds	
Index Number	Displays the index number.
Slot	Displays the slot.
Port	Displays the port.

Table C-758 Field Descriptions for the Ether Line Properties Pane (continued)

Field	Description
Variable	Displays the Ethernet threshold variable. The variable depends on the card type.
Alarm Type	Displays the Ethernet threshold alarm type. Values are Rising, Falling, or Rising and Falling.
Sample Type	Displays the Ethernet threshold sample type. Values are Relative and Absolute. **Relative** restricts the threshold to using the number of occurrences in the user-set sample period. **Absolute** sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period	Displays the Ethernet threshold sample period, in seconds.
Rising Thresh	Displays a count of the number of times an alarm entry crosses the rising threshold and the entry generates an event.
Falling Thresh	Displays a count of the number of times an alarm entry crosses the falling threshold and the entry generates an event.

C.2.43.13 Protection

The Protection Properties pane allows you to view and update TXP_MR_10G protection group information.

Table C-759 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups and allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock-out switching, or lock-on switching.

C.2.43.14 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the TXP_MR_10G card.

Table C-760 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.2.44 Slot Properties—PTF_10GE_4

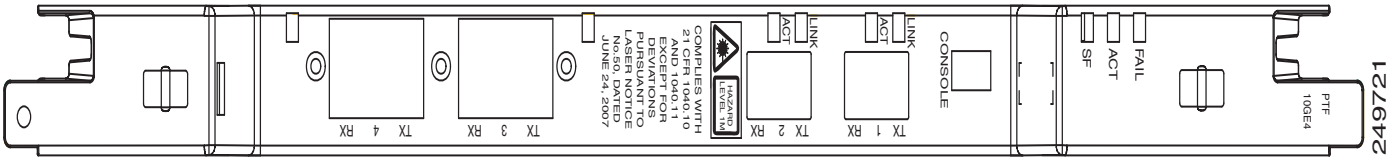
The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The PTF_10GE_4 card is a single-slot card with two 10 GE SFP+ ports and two 10 GE XFP ports. The XFP ports on the PTF_10GE_4 card support the OTN protocol. The SFP+ ports on the PTF_10GE_4 card can serve as normal ports or InterConnect (IC) ports.

On the CPT 600 shelf, install the redundant PTF_10GE_4 cards in slots 4 and 5. There can be up to two PTF_10GE_4 cards on the CPT 600 shelf. The two PTF_10GE_4 cards on the CPT 600 shelf can both be in active mode with both cards carrying the traffic. On the CPT 200 shelf, install the fabric card in slot 2 or 3.

The following figure shows the PTF_10GE_4 faceplate.

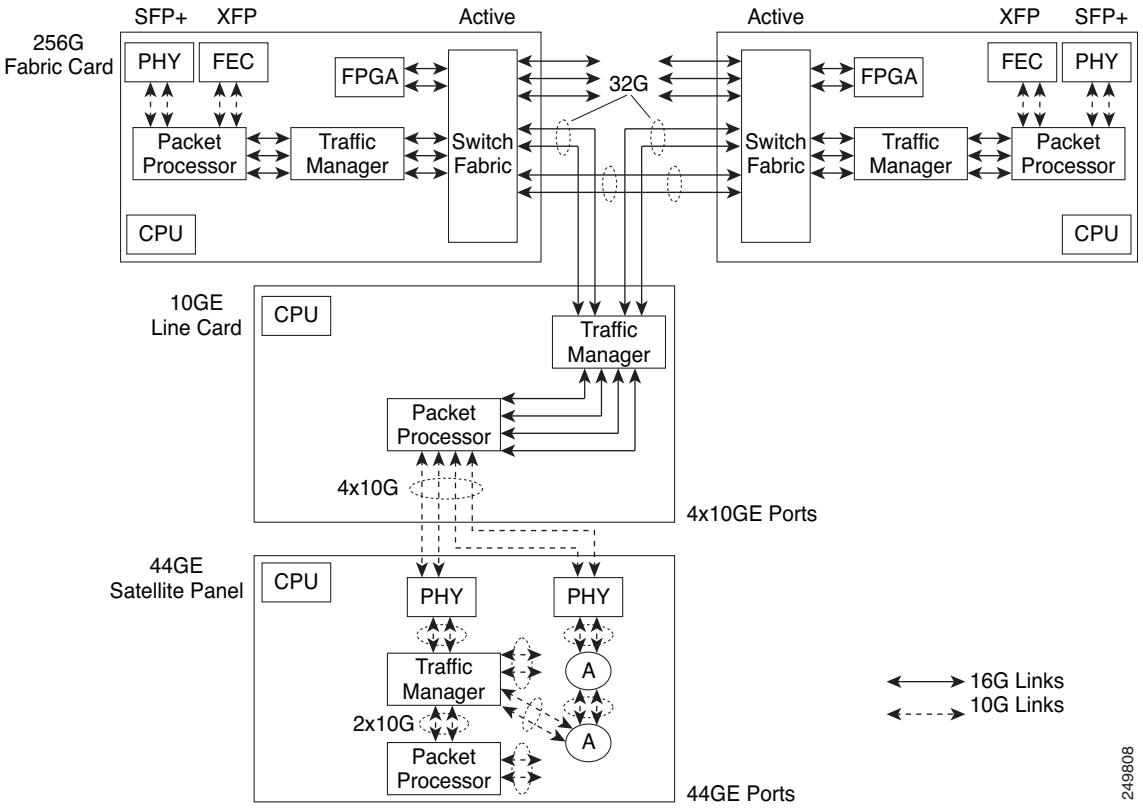
Figure C-59 PTF_10GE_4 Card Faceplate



For the PTF_10GE_4 card, the slot properties pane displays the following properties: Identification, Module View, Alarm Behavior, Ether Ports, Info, Loopback, Optical Thresh, OTN, PPM, and RMON Thresholds.

The following figure shows the CPT System block diagram.

Figure C-60 CPT System Block Diagram



C.2.44.1 Identification

The Identification Properties pane allows you to view and update PTF_10GE_4 identification information.

Table C-761 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
HW Revision	Displays the hardware version number of the card.
Serial No.	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.

Table C-761 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Admin State	The port administration state. It can be: • IS—In Service • OOS, MT—Out of Service, Maintenance
Service State	*Display only.* Sets the service state that indicates the operational state of the channel group. The Service State can be: • IS-NR—In Service–Normal. • OOS-MA, DSBLD—Out of Service and Management, Disabled.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. You can choose an alarm profile for the card from the drop-down list. Values are Default and Inherited. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.44.2 Module View

The Module View displays a graphic of the PTF_10GE_4 card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).
Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.44.3 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-762 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
DWDM	
Port No.	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.
Payload	
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.

Table C-762 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.2.44.4 Ether Ports

The Ether Ports Properties pane contains the following tabs:

- C.2.44.4.1 Ports Tab, page C-579
- C.2.44.4.2 Ethernet Tab, page C-580
- C.2.44.4.3 Layer 2 Protocols, page C-581

C.2.44.4.1 Ports Tab

Table C-763 Field Descriptions for the Ports Tab

Field	Description
Port No.	Displays the port number.
Port Name	Displays the name of the port.
Admin State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak (H:M)	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS state.

Table C-763 Field Descriptions for the Ports Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • EW • LW • SW • LRM • ER • LR • SR (short reach, up to 2 km distance) • ZR • IR 2 • LR 2 • DWDM • CWDM40km
Wavelength	Allows you to provision the wavelength frequency.

C.2.44.4.2 Ethernet Tab

The Ethernet tab allows you to view Ethernet line information.

Table C-764 Field Descriptions for the Ethernet Tab

Field	Description
Port	Displays the port number.
MTU	Displays the maximum transfer unit, which is the largest acceptable packet size configured for that port. The maximum setting is 9000 and the default size is 1500. The MTU value is 0 until the packet-over-SONET (POS) port is used in creating a circuit.
Link State	Displays the physical port state. Possible values are Up and Down.
Expected Speed	Displays the expected speed. Possible values are 10 Mbps, 100 Mbps, and Auto. If expected speed is set to Auto, you cannot enable selective autonegotiation.
Expected Duplex	Displays the port's expected duplex setting. Possible values are Full, Half, and Auto. If expected duplex is set to Auto, you cannot enable selective autonegotiation.
Flow Control	Displays the negotiated flow control mode. Possible values are None, Symmetrical, and Asymmetrical.
Interconnect Mode	—
Operating Speed	Displays the actual operating speed.
Operating Duplex	Displays the expected duplex setting of the port.

Table C-764 Field Descriptions for the Ethernet Tab (continued)

Field	Description
Operating Flow Control	Displays the value of the flow control.
Carrier Delays (ms)	—

C.2.44.4.3 Layer 2 Protocols

The Layer 2 Protocols tab allows you to view and modify actions for Layer 2 protocols.

Table C-765 Field Descriptions for the Layer 2 Protocols Tab

Field	Description
Port	Displays the port number.
CDP	Displays the Layer 2 action configured for CDP. To modify the action, click the cell and select the action from the drop-down list.
DOT1X	Displays the Layer 2 action configured for DOT1X. To modify the action, click the cell and select the action from the drop-down list.
DTP	Displays the Layer 2 action configured for DTP. To modify the action, click the cell and select the action from the drop-down list.
LACP	Displays the Layer 2 action configured for LACP. To modify the action, click the cell and select the action from the drop-down list.
PAGP	Displays the Layer 2 action configured for PAGP. To modify the action, click the cell and select the action from the drop-down list.
VTP	Displays the Layer 2 action configured for VTP. To modify the action, click the cell and select the action from the drop-down list.
STP	Displays the Layer 2 action configured for STP. To modify the action, click the cell and select the action from the drop-down list.

C.2.44.5 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-766 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

C.2.44.6 Loopback

The Loopback Properties pane allows you to view and update PTF_10GE_4 loopback information.

Table C-767 Field Descriptions for the Loopback Properties Pane

Field	Description
Port No.	Displays the port number.
Port Name	Displays the name of the port.
Admin State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.2.44.7 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane contains the following tabs:

- C.2.44.7.1 TCA 15 Min Tab, page C-582
- C.2.44.7.2 TCA 1 Day Tab, page C-583
- C.2.44.7.3 Alarm Thresh Tab, page C-583

C.2.44.7.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-768 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port No.	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.44.7.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-769 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port No.	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.44.7.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-770 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port No.	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.44.8 OTN

The OTN Properties pane contains the following tabs:

- C.2.44.8.1 OTN Line Tab, page C-583
- C.2.44.8.2 G.709 Thresh 15 Min Tab, page C-584
- C.2.44.8.3 G.709 Thresh 1 Day Tab, page C-585
- C.2.44.8.4 FEC Thresh 15 Min Tab, page C-586
- C.2.44.8.5 FEC Thresh 1 Day Tab, page C-586
- C.2.44.8.6 Trail Trace Identifier Tab, page C-586

C.2.44.8.1 OTN Line Tab

The OTN Line tab allows you to view and change the OTN line settings of the card.

Table C-771 Field Descriptions for the OTN Line Tab

Field	Description
Port No.	Displays the port number. If you set the payload as OTU2 in the PPM Properties pane, a new port is added to the OTN Line tab.
G.709 OTN	Disables or enables the G.709 OTN feature.
FEC	Disables or enables forward error correction. **Note** OTN must be enabled before you can enable FEC.
SF BER	The signal fail bit error rate.
SD BER	The signal degrade bit error rate.

C.2.44.8.2 G.709 Thresh 15 Min Tab

The G.709 Thresh 15 Min tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information and allows you to change these card threshold values.

Table C-772 Field Descriptions for the G.709 Thresh 15 Min Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.

Table C-772 Field Descriptions for the G.709 Thresh 15 Min Tab (continued)

Field	Description
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.44.8.3 G.709 Thresh 1 Day Tab

The G.709 Thresh 1 Day tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information and allows you to change these card threshold values.

Table C-773 Field Descriptions for the G.709 Thresh 1 Day Tab

Field	Description
SM (OTUK) Near End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port Number	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.

Table C-773 Field Descriptions for the G.709 Thresh 1 Day Tab (continued)

Field	Description
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port Number	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.44.8.4 FEC Thresh 15 Min Tab

The FEC Thresh 15 Min tab allows you to view and change the 15-minute FEC threshold values of the card.

Table C-774 Field Descriptions for the FEC Thresh 15 Min Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.44.8.5 FEC Thresh 1 Day Tab

The FEC Thresh 1 Day tab allows you to view and change the 1-day FEC threshold values of the card.

Table C-775 Field Descriptions for the FEC Thresh 1 Day Tab

Field	Description
Port Number	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.

C.2.44.8.6 Trail Trace Identifier Tab

The Trail Trace Identifier tab allows you to provision the trail trace identifier for the card.

Table C-776 Field Descriptions for the Trail Trace Identifier Tab

Field	Description
Modify button	Allows you to open the Modify Trace dialog box, where you can change the section trace information for applicable cards. For more information, see 7.2.21 Modifying Traces, page 7-177.
Port Number	Displays port number information.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.

C.2.44.9 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-777 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules (PPM)	
PPM No.	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the equipment type that the slot is provisioned for.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the identifier of the plugin module and the port number.
Rate	Displays the rate of the port inside the pluggable entity.

C.2.44.9.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.44.10 RMON Thresholds

The RMON Thresholds Properties pane allows you to view RMON thresholds for the PTF_10GE_4 card.

Table C-778 Field Descriptions for the RMON Thresholds

Field	Description
Index No.	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Thresholds	Displays the number of occurrences for the rising threshold.
Falling Thresholds	Displays the number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold.
Create	Allows you to create an RMON threshold. Click the **Create** button to create a threshold for the POS ports. **Note** You can select a Channel Group when you create a threshold. For more information, see 6.5.4 Creating RMON Thresholds, page 6-11.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.2.45 Slot Properties—AR_MXP, AR_XP and AR_XPE

The Any-Rate Muxponder (AR_MXP) and Any-Rate Xponder (AR_XP) cards are supported on ONS 15454, ONS 15454 M2, and ONS 15454 M6 platforms. The AR_MXP card supports a bandwidth of up to 10 Gbps, and the AR_XP card supports a bandwidth of up to 20 Gbps. The AR_MXP and AR_XP cards aggregate a mix of client SAN services (FICON, ESCON, ISC3-STP, and Fiber Channel), Ethernet (GE, FE), OCn (OC3/STM-1, OC12/STM-4, and OC48/STM-16), OTU1, and video (SD-SDI, HD-SDI, and 3G-SDI) into one 10.0 Gbps signal on the trunk side.

The cards support aggregation of the following signal types:

- SONET/SDH:
  - STM-1/OC-3
  - STM-4/OC-12
  - STM-16/OC-48

- OTN:
  - OTU-1
  - OTU-2 (OTU1E/OTU2E)
- Ethernet:
  - Fast Ethernet (FE)
  - Gigabit Ethernet (GE)
- SAN:
  - Enterprise Systems Connection (ESCON)
  - 1-Gigabit Fiber Channel or fiber connectivity (FICON)
  - 2-Gigabit Fiber Channel or FICON
  - 4-Gigabit Fiber Channel or FICON
  - 8-Gigabit Fiber Channel or FICON
  - 1-Gigabit ISC3-STP
  - 2-Gigabit ISC3-STP
- Video:
  - SD-SDI (270 Mb/s)
  - HD-SDI (1.485 Gb/s)
  - Third-generation SDI (3G-SDI) (2.970 Gb/s)

The AR_MXP and AR_XP cards pass all SONET/SDH overhead bytes transparently.

Caution The AR_MXP and AR_XP cards can be damaged if dropped. Handle them with care.

Table C-779 shows the input data rate for each client interface, and the encapsulation method. The digital wrapper function (ITU-T G.709 compliant) formats the DWDM wavelength so that it can be used to set up GCCs for data communications, enable FEC, or facilitate PM. The AR_MXP and AR_XP cards work with the OTN devices defined in ITU-T G.709. The client can be OTU1 with standard G.975 FEC or disabled FEC. The cards provide standard 4 x OTU1-to-OTU2 multiplexing. The OTU2 card is equipped with standard G.709 FEC, E-FEC I.4, E-FEC I.7, and disabled FEC. The cards support ODU1-to-OTU1 or OTU2 multiplexing, an industry standard method for asynchronously mapping a SONET/SDH payload into a digitally wrapped envelope.

Table C-779 AR_MXP and AR_XP Client Interface Data Rates and Encapsulation

Client Interface	Input Data Rate	GFP Encapsulation
OC3/STM1	155 Mb/s	—
OC12/STM4	622 Mb/s	—
OC48/STM16	2.488 Gb/s	—
FE	100 Mb/s	GFP-F
GE	1.125 Gb/s	GFP-F
1GFC	1.06 Gb/s	GFP-T
2GFC	2.125 Gb/s	GFP-T

Table C-779 AR_MXP and AR_XP Client Interface Data Rates and Encapsulation (continued)

Client Interface	Input Data Rate	GFP Encapsulation
4GFC	4.25 Gb/s	GFP-T
8GFC	8.5 Gb/s	GFP-T
OTU1	2.66 Gb/s	—
OTU2	11.09 Gb/s	—
ESCON	200 Mb/s	GFP-T
1G ISC3-STP	1.06 Gb/s	GFP-T
2G ISC3-STP	2.125 Gb/s	GFP-T
HD-SDI	1.485 Gb/s	GFP-F
SD-SDI	270 Mb/s	GFP-F
3G-SDI	2.970 Gb/s	GFP-F

The AR_MXP and AR_XP cards support the following operating modes:

- Multiple Operating Modes—The AR_MXP or AR_XP cards can be configured into multiple operating modes. The cards are equipped with pluggables for client and trunk options, and offer a large variety of configurations.
- Operating Mode-to-Client Payload Mapping—Each operating mode supports a specific set of client payloads.

A single AR_MXP or AR_XP card can be configured into multiple operating modes. Criteria for selecting a particular operating mode are defined by the network-level design. CTP helps you to choose the appropriate operating mode, each of which is divided into two categories based on trunk rate:

  - Low rate (< 5G)
  - High rate (> 5G)

When you configure the operating modes, make sure that:

  - The OCHCC circuit is created.
  - The same operating mode is configured at both ends.
  - For MXP_DME, MXPP_DME, MXP_MR, MXPP_MR, MXP-4x2.5-10G, and MXPP-4x2.5-10G operating modes, the port numbers are the same on both ends.
  - ODU and TS match on both ends.
  - For Y-cable protection, the ports are 1:1 protected at both ends.
  - If Auto port is selected, autosensing is enabled at both ends.
  - If Auto port is selected, the supported payload is configured.

Table C-780 and Table C-781 lists the supported payloads for each operating mode.

Table C-780 AR_MXP and AR_XP Card Supported Client-Payload Mapping—SONET/SDH, Ethernet, OTU1, and FC

Card Mode	Rate	SONET/SDH			Ethernet			OTU1	FC				
		OC3/STM1	OC12/STM4	OC48/STM16	FE	GE	10GE/OTU2	OTU1	FICON 1G/FC1G	FICON 2G/FC2G	FICON 4G/FC4G	FICON 8G/FC8G	ESCON
TXP_MR	LOW	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes
	HIGH	No	No	No	No	No	Yes	No	No	No	No	Yes	No
TXPP_MR	LOW	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No	Yes
	HIGH	No	No	No	No	No	No	No	No	No	No	No	No
MXP_DME	HIGH	No	No	No	No	Yes	No	No	Yes	Yes	Yes	No	No
MXPP_DME	HIGH	No	No	No	No	Yes	No	No	Yes	Yes	Yes	No	No
MXP_MR	LOW	Yes	Yes	No	Yes	Yes	No	No	Yes	No	No	No	Yes
	HIGH	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes
MXPP_MR	LOW	Yes	Yes	No	Yes	Yes	No	No	Yes	No	No	No	Yes
	HIGH	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes
MXP-4x2.5-10G	HIGH	No	No	Yes	No	No	No	Yes	No	No	No	No	No
MXPP-4x2.5-10G	HIGH	No	No	Yes	No	No	No	Yes	No	No	No	No	No
MXP-VD-10G	HIGH	No	No	No	No	No	No	No	No	No	No	No	No
REGEN	HIGH	No	No	No	No	No	Yes	No	No	No	No	No	No
	LOW	No	No	No	No	No	No	Yes	No	No	No	No	No

Table C-781 AR_MXP and AR_XP Card Supported Client-Payload Mapping—ISC and Video

Card Mode	Rate	ISC			Video		
		ISC-1	ISC3_STP_1G	ISC3_STP_2G	SD-SDI	HD-SDI	3G-SDI
TXP_MR	LOW	No	Yes	Yes	No	No	No
	HIGH	No	No	No	No	No	No
TXPP_MR	LOW	No	Yes	Yes	No	No	No
	HIGH	No	No	No	No	No	No
MXP_DME	HIGH	No	No	No	No	No	No
MXPP_DME	HIGH	No	No	No	No	No	No
MXP_MR	LOW	No	No	No	No	No	No
	HIGH	No	No	No	Yes	Yes	No

Table C-781 AR_MXP and AR_XP Card Supported Client-Payload Mapping—ISC and Video (continued)

Card Mode	Rate	ISC			Video		
		ISC-1	ISC3_STP_1G	ISC3_STP_2G	SD-SDI	HD-SDI	3G-SDI
MXPP_MR	LOW	No	No	No	No	No	No
	HIGH	No	No	No	Yes	Yes	No
MXP-4x2.5-10G	HIGH	No	No	No	No	No	No
MXPP-4x2.5-10G	HIGH	No	No	No	No	No	No
MXP-VD-10G	HIGH	No	No	No	No	No	Yes
REGEN	HIGH	No	No	No	No	No	No
	LOW	No	No	No	No	No	No

The AR_MXP and AR_XP cards support the following key features:

- Autosensing—The AR_MXP and AR_XP cards support autosensing of client payloads. The line card analyzes the received client signal and configures the payload on the client port automatically without user intervention.

  The autosensing feature is supported on the Gigabit Ethernet, OC-3/STM-1, OC-12/STM-4, and OC-48/STM-16 payloads. The following operating card modes support the autosensing feature:

  - TXP (low rate)
  - TXPP (low rate)
  - MXP_MR (low and high rate)
  - MXPP_MR (high rate)

  Prime Optical supports the configuration of all provisioning parameters supported by the autosensing payload. However, creation and deletion of circuits are the only configurations supported on the autosensing payload.

- Video multiplexing—The AR_XP card supports the capability to multiplex SD-SDI, HD-SDI, and 3G-SDI signals over the OTU2 trunk interface, allowing for maximum wavelength bandwidth, full transparency for uncompressed signals, and reduced latency. This feature is not supported on the AR_MXP card.
- Regenerator mode—You can regenerate 10-Gigabit Ethernet over OTU2e signals with standard G.975 FEC, disabled FEC, I.4, or I.7 EFEC mode. You can configure ODU transparency between the Cisco Extended Use or Transparent Standard Use and REGEN card mode.
- High-speed GCCs—The AR_MXP and AR_XP cards support the provisioning of GCC channel on OTN (OTU1/OTU2)-enabled client and trunk ports. You can create a maximum of 5 GCC channels on the Cisco ONS 15454 shelf and 10 GCC channels on the Cisco ONS 15454 M2 or Cisco ONS 15454 M6 shelf. The high-speed GCC enables you to create the GCC when both the NE and FE line cards are on the Cisco ONS 15454 M2, or Cisco ONS 15454 M6 shelf. You can select the legacy GCC on the Cisco ONS 15454 shelf on one side and the Cisco ONS 15454, Cisco ONS 15454 M2, or Cisco ONS 15454 M6 shelf on the other side.
- Y-cable and splitter protection—Y-cable protection between the same card type is supported only on ports with the same port number and signal rate. Y-cable protection is provided at the client port level. When using the AR_MXP or AR_XP card on a storage ISL link, use it with a Cisco MDS

storage switch to avoid a 15-to-20-second traffic hit. With Brocade Condor-based platforms, you can avoid this 15-to-20-second traffic hit by increasing the bouncing timer to 100 ms for the front-end port. Splitter protection is provided at the trunk-port level.

Note AR_MXP and AR_XP cards support Y-cable protection only when the card is provisioned in an unprotected card mode.

- Licensing—The AR_MXP and AR_XP cards offer you unprecedented flexibility. The cards support a wide range of applications and configurations. To help you take advantage of such flexibility and lower capital expenditures (CapEx) on your network, Cisco provides a licensing model for AR_MXP and AR_XP cards. For more information on licensing, see the *Cisco ONS 15454 DWDM Licensing Configuration Guide*.

Figure C-61 shows the AR_MXP and AR_XP faceplates.

The AR_MXP and AR_XP cards have eight SFP ports and two XFP ports. The client ports are SFP (2.5 G)- or XFP (10 G)-based ports. The trunk ports are SFP (2.5 G)- or XFP (10 G)-based ports.

You can tune the AR_MXP or AR_XP card to any wavelength over the C-band by inserting the required DWDM SFP or XFP on client or trunk ports. The AR_MXP or AR_XP card supports pluggable SFPs or XFPs on the client and trunk ports. For optical termination, each XFP/SFP uses two LC connectors, which are labeled TX and RX on the faceplate.

Figure C-61 AR_MXP and AR_XP Faceplates

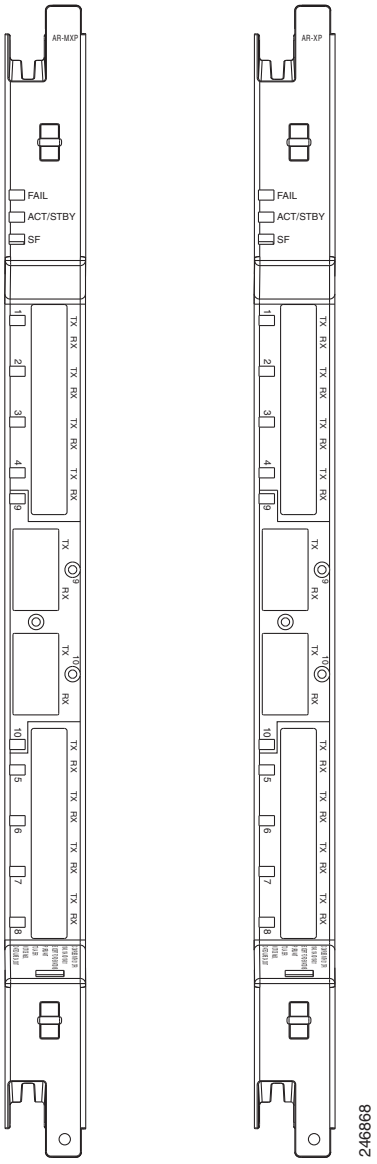
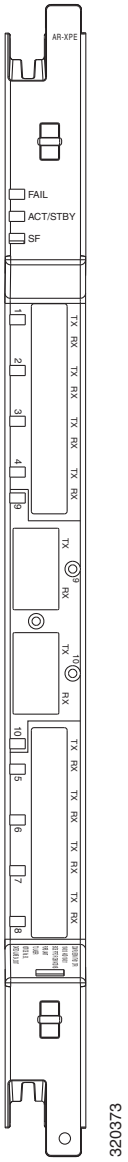


Figure C-62 AR_XPE Faceplate



Caution Using direct fiber loopbacks causes irreparable damage to AR_MXP and AR_XP cards. You must use a fiber attenuator ranging 15-25 dB when working with the cards in a loopback on the trunk port.

You can install AR_MXP and AR_XP cards in Slot 1 to Slot 6 and Slot 12 to Slot 17 of the Cisco ONS 15454 chassis, Slot 2 to Slot 7 of the Cisco ONS 15454 M6 chassis, and Slot 2 and Slot 3 of the Cisco ONS 15454 M2 chassis. The AR_MXP and AR_XP cards' client port interoperates with all existing TXP or MXP (OTU2 trunk) cards. The AR_MXP card enables you to configure eight SFP clients and one XFP trunk or only two XFP ports. The AR_XP card enables you to configure all SFP and XFP ports without limitations.

The slot properties pane displays the following properties: Module View, Identification, Card, Alarm Behavior, Auto Laser Shutdown, Info, Line, Loopback, Optical Thresholds, OTN, PPM, and Protection.

C.2.45.1 Module View

The Module View displays a graphic of the AR_MXP and AR_XP that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its ports. Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.45.2 Identification

The Identification Properties pane allows you to view and update AR_MXP and AR_XP identification information.

Table C-782 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State, Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.45.3 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update alarm profiles assigned to ports and PPM on AR_XP and AR_MXP cards.

Table C-783 Field Descriptions for the Alarm Behavior Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Force Profile	When clicked, forces all ports and PPM to the alarm profile in the selected row of the table.
Port/PPM Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.

C.2.45.4 Auto Laser Shutdown Tab

The Auto Laser Shutdown tab allows you to view and update optical card auto laser shutdown (ALS) parameters.

Table C-784 Field Descriptions for the Auto Laser Shutdown Tab

Field	Description
Port Number	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.45.5 Card

The Card mode tab allows you to view the operating modes and the ODU interfaces that are provisioned. The Properties pane displays the following subtabs:

- C.2.45.5.1 Operating Modes, page C-598
- C.2.45.5.2 ODU Interfaces, page C-598

C.2.45.5.1 Operating Modes

A single AR_MXP, AR_XP or AR_XPE card can be configured into multiple operating modes.

Table C-785 Field Descriptions for the Operating Mode Tab

Field	Description
Card Mode	Displays the card mode.
Rate	Displays the port rate.
Client Trunk Mapping	Displays the client trunk ports mapping.
Trunk Ports	Displays the trunk ports involved in the card mode.
Client Ports	Displays the client ports involved in the card mode.
Bandwidth Used	Bandwidth used by provisioned payload for the operating mode.
Bandwidth Utilization of Provisioned Configurations	
Bandwidth Utilization	Total bandwidth used by operating modes.

ODU Utilization	Click the **ODU Utilization** button. The ODU Utilization dialog box shows the graphical representation of how payloads are encapsulated into the ODU layer of the OTN frame. The payloads positioned into the frame are displayed in green.
	When the card mode selected has zero bandwidth, the following error message is displayed:
	`Bandwidth is not allocated for the current configuration mode.`
	`Bandwidth is allocated after PPM payloads are provisioned. If the configuration mode is set to MXP_MR, bandwidth is only allocated after a circuit is created.`
	When the card mode selected is RGN or MXP_VD_10G, the following error message is displayed:
	`ODU utilization is not supported for the selected mode.`
	Click **Cancel** to cancel the operation.
	For AR_XPE card, clicking the ODU Utilization button displays the graphical representation of how payloads are encapsulated into the ODU layer of the OTN frame. These details are displayed only when ONE_GE or FC1G payloads have been provisioned for that card mode. You cannot edit the ODU utilization dialog box. The ODU-1 Time Slot allocation for each payload is displayed in green. For 1GE and FC1G payload types, the ODU-0 Time Slot allocation is displayed in green.

C.2.45.5.2 ODU Interfaces

When 1GE and 1GFC payloads are provisioned, the ODU Interface tab shows the mapping of ODU0 objects with the corresponding Client and Trunk ports.

Note The ODU Interfaces tab is enabled for AR_XPE cards only.

Table C-786 Field Descriptions for the ODU Interfaces Tab

Field	Description
ODU Objects	Physical representation of the ODU involved on the provisioned operating mode.
Trunk Ports	Displays the trunk ports number which maps to the virtual ODU0 object.
ODU1	Displays the ODU1 frame number which contains the corresponding ODU0 frame.
ODU0	Displays the ODU0 frame number within a ODU1 frame.
Client Ports	Displays the client ports that have been provisioned for each operating mode.

C.2.45.6 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-787 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.45.7 Line

The Line Properties pane allows you to configure line information. If the card is installed on an ONS 15454 SONET NE, the Line Properties pane contains the following tabs:

- C.2.45.7.1 Ports Tab, page C-600
- C.2.45.7.2 SONET Line Tab, page C-601
- C.2.45.7.3 Auto Ports Tab, page C-603
- C.2.45.7.4 Section Thresh 15 Min Tab, page C-603
- C.2.45.7.5 Section Thresh 1 Day Tab, page C-603
- C.2.45.7.6 Line Thresh 15 Min Tab, page C-604
- C.2.45.7.7 Line Thresh 1 Day Tab, page C-604
- C.2.45.7.8 Section Trace Tab, page C-605
- C.2.45.7.9 RMON Thresholds, page C-605
- C.2.45.7.10 Ethernet Line Tab, page C-606

If the card is installed on an ONS 15454 SDH NE, the Properties pane contains the following tabs:

- C.2.45.7.11 Ports Tab, page C-607
- C.2.45.7.12 SDH Line Tab, page C-607
- C.2.45.7.13 Auto Ports Tab, page C-609
- C.2.45.7.14 RS Thresh 15 Min Tab, page C-610
- C.2.45.7.15 RS Thresh 1 Day Tab, page C-610

- C.2.45.7.16 MS Thresh 15 Min Tab, page C-610
- C.2.45.7.17 MS Thresh 1 Day Tab, page C-611
- C.2.45.7.18 Section Trace Tab, page C-611
- C.2.45.7.19 RMON Thresholds, page C-612
- C.2.45.7.20 Ethernet Line Tab, page C-612

C.2.45.7.1 Ports Tab

The ports tab allows you to view and change the port settings.

Table C-788 Field Descriptions for the Ports Tab

Field	Description
Port Number	Displays the PPM and port number.
Port Name	Displays the name of the port.
Administration State	**Note** The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS state.
AIS/Squelch Configuration	Allows you to configure the remote client to squelch or send an AIS signal.
Termination Mode	Sets the mode of operation. (This option is available only for SONET/SDH payloads).
Video Type	Video.

Table C-788 Field Descriptions for the Ports Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • Autoprovision—The system automatically provisions the reach from the pluggable port module (PPM) reach value on the hardware. • I1—Intermediate reach • S1—Short reach, up to a 15-km distance • S2—Short reach, up to a 40-km distance • L1—Long reach, up to a 40-km distance • L2—Long reach, up to a 80-km distance • L3—Long reach, up to a 80-km distance • CWDM— CWDM reach • MM—Multimode reach • ULH—Ultra-long haul (ULH) • DWDM—DWDM reach
Wavelength	Allows you to provision the wavelength frequency: • First tunable wavelength • Further wavelengths: – 850 nm through 1561.83 nm – 100-GHz ITU spacing – CWDM spacing

C.2.45.7.2 SONET Line Tab

The SONET Line tab allows you to view and change the SONET line settings of the card.

Table C-789 Field Descriptions for the SONET Line Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance

Table C-789 Field Descriptions for the SONET Line Tab (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Type	Defines the port.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
SyncMsgIn	Sets the EnableSync card parameter. Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Admin SSM In	Overrides the synchronization status message (SSM) synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • Autoprovision—The system automatically provisions the reach from the pluggable port module (PPM) reach value on the hardware. • I1—Intermediate reach • S1—Short reach, up to 15-km distance • S2—Short reach, up to 40-km distance • L1—Long reach, up to 40-km distance • L2—Long reach, up to 80-km distance • L3—Long reach, up to 80-km distance • CWDM—CWDM reach • MM—Multimode reach • ULH—Ultra-long haul (ULH) • DWDM—DWDM reach
Wavelength	Allows you to provision the wavelength frequency. • First tunable wavelength • Further wavelengths: – 850 nm through 1561.83 nm – 100-GHz ITU spacing – CWDM spacing

C.2.45.7.3 Auto Ports Tab

The Auto Ports tab allows you to enables autosensing for AR_MXP or AR_XP cards.

Table C-790 Field Descriptions for the Auto Ports Tab

Field	Description
Port No.	The port number.
Auto Sensing	If checked, enables autosensing.
Actual Port Type	Displays the autosensing signal type.

C.2.45.7.4 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change 15-minute near-end section thresholds for the AR_MXP or AR_XP cards.

Table C-791 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.7.5 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change 1-day near-end section thresholds for the AR_MXP or AR_XP cards.

Table C-792 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.7.6 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change 15-minute near- and far-end line thresholds for the AR_MXP or AR_XP cards.

Table C-793 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.7.7 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change 1-day near- and far-end line thresholds for the AR_MXP or AR_XP cards.

Table C-794 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	The port number.

Table C-794 Field Descriptions for the Line Thresh 1 Day Tab (continued)

Field	Description
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.7.8 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for AR_MXP or AR_XP cards.

Table C-795 Field Descriptions for the Section Trace Tab

Field	Description
Modify button	Allows you to open the Modify Trace dialog box, where you can change the section trace information for applicable cards. See 7.2.21 Modifying Traces, page 7-177 for more information.
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
Default button	Resets the value of the port parameters to the default value.

C.2.45.7.9 RMON Thresholds

The RMON Thresholds Properties pane allows you to view RMON thresholds for the AR_MXP or AR_XP cards.

Table C-796 Field Descriptions for the RMON Thresholds Properties Pane

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Add button	Click **Add** to add the RMON thresholds.
Remove button	Click **Remove** button to delete the threshold. It is possible to delete more than one RMON threshold.
Index No.	Displays the selected interface number. Click the Index No. field to sort the data.
Slot	Displays the selected card.
Port	Displays the port on the selected card.

Table C-796 Field Descriptions for the RMON Thresholds Properties Pane (continued)

Field	Description
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Thresholds	Displays the number of occurrences for the rising threshold.
Falling Thresholds	Displays the number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold.
Create	Allows you to create an RMON threshold. Click the **Create** button to create a threshold for the POS ports. **Note** You can select a Channel Group when you create a threshold. For more information, see 6.5.4 Creating RMON Thresholds, page 6-11.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.2.45.7.10 Ethernet Line Tab

The Ethernet Line tab allows you to view Ethernet line information.

Table C-797 Field Descriptions for the Ethernet Line Tab

Field	Description
Port Number	Displays the PPM and port number.
Port Name	Displays the name of the port.
ProvidesSync	Sets the ProvidesSync card parameter. If checked, the card is provisioned as a network element (NE) timing reference.
SyncMsgIn	Sets the EnableSync card parameter. Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Admin SSM In	Overrides the synchronization status message (SSM) and the synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU.
Termination Mode	Sets the mode of operation. (This option is available only for SONET/SDH payloads).
Video Type	Video.
Send DoNotUse	When checked, sends a DUS message on the S1 byte.
MTU	Sets the maximum size of the Ethernet frames accepted by the port. The port must be in OOS/locked state.
Speed	Sets the expected speed of the ports.
Duplex	(Display only) Displays expected duplex capability of ports.
Auto negotiation	If checked, enables autonegotiation on the same port.
ESMC Enable	Enables the timing to be taken from the Ethernet port.

C.2.45.7.11 Ports Tab

The Ports tab allows you to view and change the port settings for SDH platform.

Table C-798 Field Descriptions for the Ports Tab

Field	Description
Port Number	Displays the PPM and port number.
Port Name	Displays the name of the port.
Administration State	**Note** The port administrative state. It can be: • unlocked—Puts the port in service. The port service state changes to unlocked-enabled. • unlocked, automaticInService—Puts the port in automatic in-service. The port service state changes to unlocked-disabled, automaticInService. • locked-disabled—Removes the port from service and disables it. The port service state changes to locked-enabled, disabled. • locked, maintenance—Removes the port from service for maintenance. The port service state changes to locked-enabled, maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS state.
AIS/Squelch Configuration	Allows you to configure the remote client to squelch or send an AIS signal.
Termination Mode	Sets the mode of operation. (This option is not applicable on 10x10G_LC, 100G_LC_C, or CFP_LC cards).
Video Type	Video. (This option is not applicable on 10x10G_LC, 100G_LC_C, or CFP_LC cards).
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. **Note** The reach distance options depend on the card selected.
Wavelength	Allows you to provision the wavelength: • First tunable wavelength: the system automatically provision the first wavelength supported by the PPM • 850nm, 1310nm and 1550nm wavelengths • DWDM wavelengths: ranging from 1528.77nm to 1566.72nm at 50GHz ITU spacing • CWDM wavelengths: 1470nm, 1490nm, 1510nm, 1530nm, 1570nm, and 1590nm

C.2.45.7.12 SDH Line Tab

The SDH Line tab allows you to view and change the SDH line settings of the card.

Table C-799 Field Descriptions for the SDH Line Tab

Field	Description
Port No.	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Admin SSM In	Overrides the synchronization status message (SSM) and the synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU.

Table C-799 Field Descriptions for the SDH Line Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

C.2.45.7.13 Auto Ports Tab

The Auto Ports tab allows you to enable autosensing for AR_MXP or AR_XP cards.

Table C-800 Field Descriptions for the Auto Ports Tab

Field	Description
Port No.	The port number.
Auto Sensing	If checked, enables autosensing.
Actual Port Type	Displays the autosensing signal type.

C.2.45.7.14 RS Thresh 15 Min Tab

The RS Thresh 15 Min tab allows you to view and change the 15-minute regeneration section threshold for the card.

Table C-801 Field Descriptions for the RS Thresh 15 Min Tab

Field	Description
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.7.15 RS Thresh 1 Day Tab

The RS Thresh 1 Day tab allows you to view and change the 1-day regeneration section threshold for the card.

Table C-802 Field Descriptions for the RS Thresh 1 Day Tab

Field	Description
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.7.16 MS Thresh 15 Min Tab

The MS Thresh 15 Min tab allows you to view and change the 15-minute near- and far-end multiplex section threshold for the card.

Table C-803 Field Descriptions for the MS Thresh 15 Min Tab

Field	Description
Port No.	The port number.
EB-MS	Errored blocks multiplexer section.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
BBE-MS	Background block errors multiplexer section.

Table C-803 Field Descriptions for the MS Thresh 15 Min Tab (continued)

Field	Description
UAS-MS	Unavailable seconds multiplexer section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.7.17 MS Thresh 1 Day Tab

The MS Thresh 1 Day tab allows you to view and change the 1-day near- and far-end multiplex section threshold for the card.

Table C-804 Field Descriptions for the MS Thresh 1 Day Tab

Field	Description
Port Number	The port number.
EB-MS	Errored blocks multiplexer section.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.7.18 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the AR_MXP or AR_XP cards.

Table C-805 Field Descriptions for the Section Trace Tab

Field	Description
Modify button	Allows you to open the Modify Trace dialog box, where you can change the section trace information for applicable cards. See 7.2.21 Modifying Traces, page 7-177 for more information.
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
Default button	Resets the value of the port parameters to the default value.

C.2.45.7.19 RMON Thresholds

The RMON Thresholds Properties pane allows you to view RMON thresholds for the AR_MXP or AR_XP cards.

Table C-806 Field Descriptions for the RMON Thresholds Properties Pane

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Add button	Click **Add** to add the RMON thresholds.
Remove button	Click **Remove** button to delete the threshold. It is possible to delete more than one RMON threshold.
Index No.	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, the falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Thresholds	Displays the number of occurrences for the rising threshold.
Falling Thresholds	Displays the number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold.
Create	Allows you to create an RMON threshold. Click the **Create** button to create a threshold for the POS ports. **Note** You can select a Channel Group when you create a threshold. For more information, see 6.5.4 Creating RMON Thresholds, page 6-11.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.2.45.7.20 Ethernet Line Tab

The Ethernet Line tab allows you to view Ethernet line information.

Table C-807 Field Descriptions for the Ethernet Line Tab

Field	Description
Port Number	Displays the port number.
Port Name	Displays the name of the port.
ProvidesSync	Sets the ProvidesSync card parameter. If checked, the card is provisioned as a network element (NE) timing reference.
SyncMsgIn	Sets the EnableSync card parameter. Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.

Table C-807 Field Descriptions for the Ethernet Line Tab (continued)

Field	Description
Admin SSM In	Overrides the synchronization status message (SSM) and the synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU.
Termination Mode	Sets the mode of operation. (This option is available only for SONET/SDH payloads).
Video Type	Video.
Send DoNotUse	When checked, sends a DUS message on the S1 byte.
MTU	Sets the maximum size of the Ethernet frames accepted by the port. The port must be in OOS/locked state.
Speed	Sets the expected speed of the ports.
Duplex	(Display only) Displays expected duplex capability of ports.
Auto negotiation	If checked, enables autonegotiation on the same port.
ESMC Enable	Enables the timing to be taken from the Ethernet port.

C.2.45.8 Loopback

The Loopback Properties pane allows you to view and update AR_MXP and AR_XP loopback information.

Table C-808 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number (1 to 10).
Port Name	Allows you to add a name for the optical port.
Admin State	Allows you to select the administration state of the port: In Service (IS), Out of Service (OOS), or Out of Service-Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State, Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.2.45.9 Optical Thresholds

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane displays the following tabs:

- C.2.45.9.1 Alarm Thresholds Tab, page C-613
- C.2.45.9.2 TCA 15 Min Tab, page C-614
- C.2.45.9.3 TCA 1 Day Tab, page C-614

C.2.45.9.1 Alarm Thresholds Tab

The Alarm Thresholds tab allows you to select thresholds for alarm generation.

Table C-809 Field Descriptions for the Alarm Thresholds Tab

Field	Description
Port No.	The port number.
Laser Bias High	Displays the upper laser bias threshold.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.9.2 TCA 15 Min Tab

The TCA 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-810 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port No.	The port number.
Laser Bias High	Displays the upper laser bias threshold.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.9.3 TCA 1 Day Tab

The TCA 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-811 Field Descriptions for the TCA 1 Day Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Port No.	The port number.
Laser Bias High	Displays the upper laser bias threshold.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.

Table C-811 Field Descriptions for the TCA 1 Day Tab (continued)

Field	Description
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.10 OTN

The OTN Properties pane allows you to change the line optical transport network (OTN) settings for AR_MXP and AR_XP cards. The Properties pane displays the following tabs:

- C.2.45.10.1 OTN Line Tab, page C-615
- C.2.45.10.2 G.709 Thresh 15 Min Tab, page C-616
- C.2.45.10.3 G.709 Thresh 1 Day Tab, page C-617
- C.2.45.10.4 FEC Thresh 15 Min Tab, page C-618
- C.2.45.10.5 FEC Thresh 1 Day Tab, page C-618
- C.2.45.10.6 Trail Trace Identifier Tab, page C-619
- C.2.45.10.7 Proactive Protection Regen Tab, page C-619

C.2.45.10.1 OTN Line Tab

The OTN Line tab allows you to view and change the OTN line settings of the card.

Table C-812 Field Descriptions for the OTN Line Tab

Field	Description
Port No.	The port number.
G.709 OTN	Displays the G.709 OTN feature.
FEC	Displays the forward error correction.
SF BER	The signal fail bit error rate.
SD BER	The signal degrade bit error rate.
Asynch/Synch Mapping	The card can perform multiplexing per ITU-T G.709. The ODUK (client SONET/SDH payload) can be mapped to the optical channel (OTUK) either asynchronously (asynch mapping) or synchronously (synch mapping) with this setting.
OTU Mapping	The client payload mapping to the trunk. **Note** ODU1E and ODU2E mapping is supported only if the card mode is TXP_MR and client payload is 10GE.
ProvidesSync	If checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Allows you to set the EnableSync card parameter. Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.

Table C-812 Field Descriptions for the OTN Line Tab (continued)

Field	Description
Admin SSM In	Overrides the synchronization status message (SSM) and the synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU.
SendDoNotUse	If checked, sends a DUS message on the S1 byte.
ODU Transparency	The ODU overhead byte configuration. • If Transponder is selected as the card configuration, this parameter defaults to Cisco Extended Use. • Choose Transparent Standard Use or Cisco Extended Use if Standard Regen or Enhanced FEC is selected as the card configuration. **Note** For Mixed card configuration, the ODU Transparency depends on the port mode you selected.

C.2.45.10.2 G.709 Thresh 15 Min Tab

The G.709 Thresh 15 Min tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 15 minutes.

Table C-813 Field Descriptions for the G.709 Thresh 15 Min Tab

Field	Description
SM (OTUK) Near End	
Port No.	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port No.	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port No.	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.

Table C-813 Field Descriptions for the G.709 Thresh 15 Min Tab (continued)

Field	Description
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port No.	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.10.3 G.709 Thresh 1 Day Tab

The G.709 Thresh 1 Day tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 24 hours.

Table C-814 Field Descriptions for the G.709 Thresh 1 Day Tab

Field	Description
SM (OTUK) Near End	
Port No.	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port No.	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	

Table C-814 Field Descriptions for the G.709 Thresh 1 Day Tab (continued)

Field	Description
Port No.	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port No.	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.10.4 FEC Thresh 15 Min Tab

The FEC Thresh 15 Min tab allows you to view and change the 15-minute FEC threshold values of the card.

Table C-815 Field Descriptions for the FEC Thresh 15 Min Tab

Field	Description
Port No.	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.10.5 FEC Thresh 1 Day Tab

The FEC Thresh 1 Day tab allows you to view and change the 1-day FEC threshold values of the card.

Table C-816 Field Descriptions for the FEC Thresh 1 Day Tab

Field	Description
Port No.	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in one-day intervals.
Uncorrectable Words	Displays the uncorrectable words in one-day intervals.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.45.10.6 Trail Trace Identifier Tab

The Trail Trace Identifier tab allows you to provision the trail trace identifier for the card.

Table C-817 Field Descriptions for the Trail Trace Identifier Tab

Field	Description
Modify button	Allows you to open the Modify Trace dialog box, where you can change the section trace information for applicable cards. For more information, see 7.2.21 Modifying Traces, page 7-177.
Port No.	Displays port number information.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.

C.2.45.10.7 Proactive Protection Regen Tab

The Proactive Protection Regen tab allows you to provision proactive protection regen for the card.

Note Proactive protection regen is supported only when the AR_MXP or AR_XP card is in high-rate REGEN card mode.

Table C-818 Field Descriptions for the Proactive Protection Regen Tab

Field	Description
Port No.	Displays port number information.
Trigger Threshold	Sets the maximum BER threshold to trigger proactive protection.
Trigger Window (ms)	Sets the duration for which BER is monitored before triggering the proactive protection. The trigger window value must be a multiple of: • 10 ms for trigger thresholds between 1E-3 and 6E-6 • 100 ms for trigger threshold between 5E-6 to 1E-7 Trigger window must be less than or equal to 10000 ms.
Revert Threshold	Sets the revert threshold value of BER. **Note** Revert Threshold settings must be less than the Trigger Threshold values.

Table C-818 Field Descriptions for the Proactive Protection Regen Tab (continued)

Field	Description
Revert Window (ms)	Sets the duration for which BER is monitored for settings that are less than the revert threshold value before which proactive protection provided to the router is removed. Revert Window value must be at least 2000ms and a multiple of: • 10ms for a revert threshold of 1E-4 to 6E-7 • 100ms for a revert threshold of 5E-7 to 5E-8. The revert window must be less than or equal to 10000ms.
Enable Proactive Protection	Allows you to enable or disable proactive protection. Possible values are: • Enable • Disable The enable proactive protection is disabled by default.

C.2.45.11 PPM

The PPM Properties pane allows you to view and provision the ports inside the PPM.

Table C-819 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules (PPM)	
PPM No.	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual card that is installed in the slot. Values are single mode or multimode.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service (only when PPM is pre-provisioned) • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the port number for the PPM in the Pluggable Port Modules area.
Rate	Displays the port rate for the PPM in the Pluggable Port Modules area.

C.2.45.11.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.2.45.12 Protection

The Protection Properties pane allows you to view and update protection group information.

Table C-820 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups, such as which port is the protected port and which port is the working port. Also allows you to execute switch commands.

C.2.46 Slot Properties—10x10G_LC, 100G_LC_C, and CFP_LC

The 10x10G_LC, 100G_LC_C, and CFP_LC cards are supported on ONS 15454 M2, and ONS 15454 M6 platforms. The slot properties pane displays information about the Cisco ONS 15454 M2 or ONS 15454 M6 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties. The single-slot 10x10G_LC and 100G_LC_C cards and the double-slot CFP_LC cards are connected to the backplane.

The 100G-LC-C, 10x10G-LC, and CFP-LC cards support the following key features:

- Operating Modes—The 100G-LC-C, 10x10G-LC, and CFP-LC cards can be configured into multiple operating modes. The cards can be equipped with pluggables for client and trunk options, and offer a large variety of configurations. When you configure the 100G-LC-C, 10x10G-LC, or CFP-LC card into multiple operational modes, make sure that the following tasks are completed:
  - The card must be preprovisioned and the modes must be configured. None of the modes are provisioned on the card by default. All operating modes are created on the card level. These are card-specific provisioning, which decides the behavior of a particular card.
  - Depending on the card mode selected, the supported payload for that particular card mode must be provisioned on the PPMs.
  - The payloads can be provisioned after configuring the operational mode on the card.

Each operating mode can be configured using the specific set of cards and client payloads. Table C-821 describes how each mode can be configured, the supported payloads, and the valid port pair for a specific operating mode.

Table C-821 Operating Modes and Supported Payloads for 100G-LC-C, 10x10G-LC, and CFP-LC Cards

Card (provisioning executed on this card)	Operational Mode	Peer Card (connected through backplane)	Supported Client Payloads	Valid Card Slot	Valid Peer Card Slot
100G-LC-C	TXP-100G (Standalone 100GE Transponder)	—	100GE, OTU4	M2—Slots 2 and 3 M6—Slots 2 to 7	—
	RGN-100G (100G Regenerator)	100G-LC-C card	— Regeneration of any 100 G configuration	M2—Slot-2 M2-—Slot-3 M6—Slot-2 M6—Slot-3 M6—Slot-4 M6—Slot-5 M6—Slot-6 M6—Slot-7	M2—Slot-3 M2—Slot-2 M6—Slot-3 M6—Slot-2 M6—Slot-5 M6—Slot-4 M6—Slot-7 M6—Slot-6
10x10G-LC	MXP-10x10G (10x10G Muxponder)	100G-LC-C card	OC192/STM-64, 10GE-LAN Phy, 10GE-WAN Phy (using OC192), OTU2, OTU2e, 8G FC, 10G FC, FICON	M2—Slot-2 M2-—Slot-3 M6—Slot-2 M6—Slot-3 M6—Slot-4 M6—Slot-5 M6—Slot-6 M6—Slot-7	M2—Slot-3 M2—Slot-2 M6—Slot-3 M6—Slot-2 M6—Slot-5 M6—Slot-4 M6—Slot-7 M6—Slot-6
	RGN-10G (5x10G Regenerator)	—	10GE-LAN Phy, OTU2, OC192/STM64, 10GE-WAN Phy, OTU2, OTU2e, 8G FC/FICON, 10G FC/FICON	M2—Slots 2 and 3 M6—Slots 2 to 7	—
	TXP-10G (5x10G Transponder)	—	10GE-LAN Phy, OTU2e, OC192/STM64, 10GE-WAN Phy, OTU2, OTU2e, 8G FC/FICON, 10G FC/FICON	M2—Slots 2 and 3 M6—Slots 2 to 7	—
	LOW-LATENCY	—	TEN_GE, FC10G	—	—
	FANOUT	—	TEN_GE, OTU2	—	—

Table C-821 Operating Modes and Supported Payloads for 100G-LC-C, 10x10G-LC, and CFP-LC Cards

Card (provisioning executed on this card)	Operational Mode	Peer Card (connected through backplane)	Supported Client Payloads	Valid Card Slot	Valid Peer Card Slot
CFP-LC	2x40G Muxponder	100G-LC-C card	OTU3/40GE-LAN Phy	M6—Slot-3 M6—Slot-5	M6—Slot 2 or 5 M6—Slot 4 or 7
	CFP-TXP (100G Transponder)—One port	100G-LC-C card	OTU4, 100GE	M6—Slot-3 M6—Slot-5	M6—Slot 2 or 5 M6—Slot 4 or 7
	CFP-TXP (100G Transponder)—Two ports	Two 100G-LC-C cards	OTU4, 100GE	M6—Slot-3 M6—Slot-5	M6—Slot 2 or 5 M6—Slot 4 or 7

Note 100G_LC_C card refers to the 15454-M 100G-LC-C card, 10x10G-LC refers to the 15454-M-10x10G LC card, and CFP-LC refers to the 15454-M-CFP-LC card.

- GCCs—The 100G_LC_C, 10x10G_LC, and CFP_LC cards support the provisioning of GCC channel on both client and trunk: OTU2, OTU3 and OTU4 ports. You can create a maximum of 1 GCC channel for 100G and 10 GCC channels for 10X10G card on the Cisco ONS 15454 M2 or Cisco ONS 15454 M6 shelf. The high-speed GCC enables you to create the GCC when both the NE and FE line cards are on the Cisco ONS 15454 M2 or Cisco ONS 15454 M6 shelf. You can select the legacy GCC on the Cisco ONS 15454 shelf on one side and the Cisco ONS 15454, Cisco ONS 15454 M2, or Cisco ONS 15454 M6 shelf on the other side. The 100G-LC-C, 10x10G-LC, and CFP-LC cards work with the OTN devices defined in ITU-T G.709. The Digital Wrapper function (ITU-T G.709-compliant) formats the DWDM wavelength so that it can be used to set up GCCs for data communications, enable FEC, or facilitate performance monitoring. The GCC rate for the card is as follows:
  - 10x10G_LC—192 k and 1200 k
  - 100G_LC_C—192 k (virtual port only), 400 k, and 1200 k
  - CFP_LC—192 k

  For more information on GCC, see 6.5.9 Create, Edit, and Delete GCC.
- Y-cable protection—Y-cable protection between the same card type is supported only on ports with the same port number and signal rate. The Y-cable protection scheme is aimed to protect the client signal. Two TXP (or MXP) cards on a single DWDM shelf are required to implement this type of protection mechanism. The two client ports of the two TXP (or MXP) cards are configured in Y-cable Protection Group.

  The protection mechanism is based on the following:
  - TXP_10G—10x10G_LC only for 10GE and 8GFC payloads in standalone configuration.
  - MXP_10x10G—10x10G_LC and 100G_LC_C cards only for 10GE and 8GFC payloads in a peer configuration.
  - CFP_MXP—CFP_LC and 100G_LC_C cards only for 40GE payload in a peer configuration.
  - CFP_TXP—CFP_LC and 100G_LC_C only for 100GE payload in a peer configuration.

  For more information on Protection, see B.9.1.6 Protection.

- Signal Types—The 100G_LC_C, 10x10G_LC, and CFP_LC cards supports the following client signal types:

  For 100G_LC_C card:

  - 100 Gigabit Ethernet and OTU4
  - OTU4 from BP OTL4.10 (interconnect with 100G-LC-C and CFP client)
  - 100 Gigabit Ethernet from BP CAUI (interconnect with CFP client)
  - 3 x OTU3e(255/227) from BP OTL3.4 (interconnect with 10 x10G client)
  - 2 x OTU3 from BP OTL3.4 (interconnect with CFP client)
  - 2 x 40 Gigabit Ethernet from BP XLAUI (interconnect with CFP client)

  For 10x10G_LC card:

  - OC-192/STM-64 (9.95328 Gbps)
  - 10 Gigabit Ethernet WAN PHY (9.95328 Gbps)
  - 10 Gigabit Ethernet LAN PHY (10.3125 Gbps)
  - 10 G FC (10.518 Gbps)
  - 8 G FC
  - OTU-2
  - G.709 overclocked to transport 10 Gigabit Ethernet as defined by ITU-T G. Sup43 Clause 7.2 (11.0491 Gbps)

  For CFP_LC card:

  - 100 Gigabit Ethernet
  - 40 Gigabit Ethernet
  - OTU-3
  - OTU-4

The following figure shows the 10x10G_LC card faceplate.

The following figure shows the 100G_LC_C card faceplate.

The following figure shows the CFP_LC card faceplate.

For the 10x10G_LC, 100G_LC_C, and CFP_LC module, the slot properties pane displays the following properties: Module View, Identification, Card, Alarm Behavior, Auto Laser Shutdown, Backplane Loopback, Info, Line, Loopback, Optical Thresholds, OTN, and PPM.

C.2.46.1 Module View

The Module View displays a graphic of the 10x10G_LC, 100G_LC_C, and CFP_LC that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its ports. Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.2.46.2 Identification

The Identification Properties pane allows you to view and update 10x10G_LC, 100G_LC_C, and CFP_LC identification information.

Table C-822 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administrative State	The card administrative state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State, Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.2.46.3 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update alarm profiles assigned to ports and PPM on 10x10G_LC, 100G_LC_C, and CFP_LC.

Table C-823 Field Descriptions for the Alarm Behavior Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Force Profile	When clicked, forces all ports and PPM to the alarm profile in the selected row of the table.
Port/PPM Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.

C.2.46.4 Auto Laser Shutdown Tab

The Auto Laser Shutdown tab allows you to view and update optical card auto laser shutdown (ALS) parameters for 10x10G_LC, 100G_LC_C, and CFP_LC.

Table C-824 Field Descriptions for the Auto Laser Shutdown Tab

Field	Description
Port Number	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shut Down or Not Shut Down.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shut Down.

C.2.46.5 Backplane Loopback Tab

The Backplane Loopback tab allows you to view and configure the loopback on the backplane connections on 10x10G_LC, 100G_LC_C, and CFP_LC.

Table C-825 Field Descriptions for the Backplane Loopback Tab

Field	Description
Admin State	The card administrative state. It can be: • IS, AINS—Automatic In Service • OOS, MT—Out of Service, Maintenance • IS—In Service
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State, Status_Attribute*.
Loopback	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.2.46.6 Card

The Card mode tab allows you to view the operating modes that are provisioned.

Table C-826 Field Descriptions for the Card Mode Tab

Field	Description
Card Mode	Displays the operating mode that has been provisioned on the card.
Client Ports	Displays the client ports that have been provisioned for the selected card configuration.
Trunk Ports	Displays the trunk ports that have been provisioned for the selected card configuration.
Peer Card	Displays the shelf and slot number of the peer card that is set up for a specific card configuration. If the peer card is not set up, “None” or “N/A” is displayed for the operating modes that requires no peer card for configuration.
Create	Displays the Operating Mode Configuration creation dialog box to configure a new card mode. Click the **Create** button to create a new operating configuration mode. For more details on creating configurations, see 6.5.7 Creating Configurations.
Delete	Click the **Delete** button to delete the selected card configuration. **Note** The Delete button is enabled only when at least one operating mode is configured.

Table C-826 Field Descriptions for the Card Mode Tab (continued)

Field	Description
Add Peer Card	Allows addition of another 100_LC_C card to the CFP_TXP card configuration with only one peer card configured. The Add Peer button will be enabled only if the CFP card is configured with CFP-TXP card mode with one peer card. For more information on adding peer cards, see 6.5.8 Adding a Peer Card. **Note** This field is unavailable when CFP_LC is configured in Muxponder mode.
Remove Peer Card	Allows deletion of an existing 100_LC_C peer card from a CFP_TXP when it is configured with two 100G_LC_C peer cards. The Remove Peer button will be enabled only if the CFP card is configured with CFP-TXP card mode with two peer cards. Click the **Remove Peer** button to open the dialog showing the available peer cards and the mapped port with corresponding radio buttons. Choose a peer card to remove. **Note** This field is unavailable when CFP_LC is configured in Muxponder mode.

C.2.46.7 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-827 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of the attribute value.

C.2.46.8 Line

The Line Properties pane allows you to configure line information. If the card is installed on an ONS 15454 SONET NE, the Line Properties pane contains the following tabs:

- C.2.46.8.1 Ports Tab, page C-629
- C.2.46.8.2 SONET Line Tab, page C-630
- C.2.46.8.3 Section Thresh 15 Min Tab, page C-631
- C.2.46.8.4 Section Thresh 1 Day Tab, page C-631
- C.2.46.8.5 Line Thresh 15 Min Tab, page C-632
- C.2.46.8.6 Line Thresh 1 Day Tab, page C-632
- C.2.46.8.7 Section Trace Tab, page C-633
- C.2.46.8.8 Ethernet Tab, page C-633
- C.2.46.8.9 RMON Thresholds, page C-635

If the card is installed on an ONS 15454 SDH NE, the Properties pane contains the following tabs:

- C.2.46.8.10 Ports Tab, page C-636
- C.2.46.8.11 SDH Line Tab, page C-637

- C.2.46.8.12 RS Thresh 15 Min Tab, page C-638
- C.2.46.8.13 RS Thresh 1 Day Tab, page C-639
- C.2.46.8.14 MS Thresh 15 Min Tab, page C-639
- C.2.46.8.15 MS Thresh 1 Day Tab, page C-639
- C.2.46.8.16 Section Trace Tab, page C-640
- C.2.46.8.17 Ethernet Tab, page C-640
- C.2.46.8.18 RMON Thresholds, page C-642

Note The Section Trace, SONET Line, Section Thresholds, Line Thresholds, SDH Line, RS Thresholds, and MS Thresholds tabs are displayed for 10x10G_LC cards only when you create an OC192 payload.

C.2.46.8.1 Ports Tab

The ports tab allows you to view and change the port settings.

Table C-828 Field Descriptions for the Ports Tab

Field	Description
Port Number	Displays the PPM and port number.
Port Name	Displays the name of the port.
Administration State	**Note** The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS state.
AIS/Squelch Configuration	Allows you to configure the remote client to squelch or send an AIS signal.
Video Type	Video. (This option is not applicable on 10x10G_LC, 100G_LC_C, or CFP_LC cards).
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. **Note** The reach distance options depend on the card and pluggables selected.

Table C-828 Field Descriptions for the Ports Tab (continued)

Field	Description
Wavelength	Allows you to provision the wavelength: • First tunable wavelength: the system automatically provision the first wavelength supported by the PPM • 850nm, 1310nm and 1550nm wavelengths • DWDM wavelengths: ranging from 1528.77nm to 1566.72nm at 50GHz ITU spacing • CWDM wavelengths: 1470nm, 1490nm, 1510nm, 1530nm, 1570nm, and 1590nm
Overclock	Allows you to enable or disable overclock mode. Enable overclock mode to set the data rate to FC 10G for PPM.
Mapping Mode	Sets the mapping mode.

C.2.46.8.2 SONET Line Tab

The SONET Line tab allows you to view and change the SONET line settings of the 10x10G_LC card.

Table C-829 Field Descriptions for the SONET Line Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Type	Defines the port.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
SyncMsgIn	Sets the EnableSync card parameter. Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Admin SSM In	Overrides the synchronization status message (SSM) synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU.

Table C-829 Field Descriptions for the SONET Line Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR-MM • SR1 • IR2 • LR2 • DWDM—DWDM reach
Wavelength	Allows you to provision the wavelengths: • First tunable wavelength: the system automatically provision the first wavelength supported by the PPM • 850nm, 1310nm, and 1530nm wavelengths • DWDM wavelengths: ranging from 1528.77nm to 1566.72nm at 50GHz ITU spacing • CWDM wavelengths: 1470nm, 1490nm, 1510nm, 1530nm, 1570nm, and 1590nm.
Send DoNotUse	When checked, sends a DUS message on the S1 byte.

C.2.46.8.3 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change 15-minute near-end section thresholds of the 10x10G_LC card.

Table C-830 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.8.4 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change 1-day near-end section thresholds of the 10x10G_LC card.

Table C-831 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.8.5 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change 15-minute near- and far-end line thresholds of the 10x10G_LC card.

Table C-832 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.8.6 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change 1-day near- and far-end line thresholds of the 10x10G_LC card.

Table C-833 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.
Far End	
Port No.	The port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.8.7 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for 10x10G_LC card.

Table C-834 Field Descriptions for the Section Trace Tab

Field	Description
Modify button	Allows you to open the Modify Trace dialog box, where you can change the section trace information for applicable cards. See 7.2.21 Modifying Traces, page 7-177 for more information.
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
Default button	Resets the value of the port parameters to the default value.

C.2.46.8.8 Ethernet Tab

The Ethernet tab allows you to view the Ethernet line information.

Note The Ethernet tab is displayed depending on the following criteria:

- For 10x10G_LC card—When the payload is TEN_GE.
- For 100G_LC_C card—When the payload is ONEHUNDRED_GE provisioned on 100G_LC_C in standalone operating mode or FORTY_GE/ONEHUNDRED_GE provisioned on the CFP_LC peer card.

Table C-835 Field Descriptions for the Ethernet Tab

Field	Description
Port Number	Displays the PPM and port number.
Port Name	Displays the name of the port.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS state.
Video Type	Video. (This option is not applicable on 10x10G_LC, 100G_LC_C, or CFP_LC cards).
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • TEN_GE payload – TEN_GE SR – TEN_GE LR – TEN_GE ER – TEN_GE ZR – DWDM • FORTY_GE payload – 40GBASE-FR – 40GBASE-LR4 • ONEHUNDRED_GE payload – 100GBASE_SR10

Table C-835 Field Descriptions for the Ethernet Tab (continued)

Field	Description
Wavelength	Allows you to provision the wavelength: • First tunable wavelength: the system automatically provision the first wavelength supported by the PPM • 850nm, 1310nm, and 1530nm wavelengths • DWDM wavelengths: ranging from 1528.77nm to 1566.72nm at 50GHz ITU spacing • CWDM wavelengths: 1470nm, 1490nm, 1510nm, 1530nm, 1570nm, and 1590nm.
Termination Mode	Sets the mode of operation. (This option is not applicable on 10x10G_LC, 100G_LC_C, or CFP_LC cards).
MTU	Maximum transmission unit (MTU). The largest acceptable packet size configured for that port. The default value is 1548.
Incoming MAC Address	Allows you to edit the incoming MAC address.
Mapping	Displays the client trunk ports mapping. Available options are: • GFB • CBR • Transparent

C.2.46.8.9 RMON Thresholds

The RMON Thresholds Properties pane allows you to view RMON thresholds for the 10x10G_LC and 100G_LC_C cards.

Note The RMON thresholds tab is displayed depending on the following criteria:

- For 10x10G_LC card when a data payload is provisioned (TEN_GE, 8GFC, 10GFC).
- For 100G_LC_C card when the payload is ONEHUNDRED_GE provisioned on 100G_LC_C in standalone operating mode or FORTY_GE/ONEHUNDRED_GE provisioned on the CFP_LC peer card.

Table C-836 Field Descriptions for the RMON Thresholds Properties Pane

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Add button	Click **Add** to add the RMON thresholds.
Remove button	Click **Remove** button to delete the threshold. It is possible to delete more than one RMON threshold.
Index No.	The number which is automatically assigned by the system to the RMON Threshold. Click the Index No. field to sort the data.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.

Table C-836 Field Descriptions for the RMON Thresholds Properties Pane (continued)

Field	Description
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Thresholds	Displays the number of occurrences for the rising threshold.
Falling Thresholds	Displays the number of occurrences for the falling threshold. The falling threshold must be lower than the rising threshold.
Create	Allows you to create an RMON threshold. Click the **Create** button to create a threshold for the ports. **Note** You can select a Channel Group when you create a threshold. For more information, see 6.5.4 Creating RMON Thresholds, page 6-11.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.2.46.8.10 Ports Tab

The ports tab allows you to view and change the port settings.

Table C-837 Field Descriptions for the Ports Tab

Field	Description
Port Number	Displays the PPM and port number.
Port Name	Displays the name of the port.
Administration State	**Note** The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS state.
AIS/Squelch Configuration	Allows you to configure the remote client to squelch or send an AIS signal.
Video Type	Video.

Table C-837 Field Descriptions for the Ports Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • Autoprovision—The system automatically provisions the reach from the pluggable port module (PPM) reach value on the hardware. • I1—Intermediate reach • S1—Short reach, up to a 15-km distance • S2—Short reach, up to a 40-km distance • L1—Long reach, up to a 40-km distance • L2—Long reach, up to a 80-km distance • L3—Long reach, up to a 80-km distance • CWDM— CWDM reach • MM—Multimode reach • ULH—Ultra-long haul (ULH) • DWDM—DWDM reach
Wavelength	Allows you to provision the wavelength frequency: • First tunable wavelength • Further wavelengths: – 850 nm through 1561.83 nm – 100-GHz ITU spacing – CWDM spacing
Overclock	Allows you to enable or disable overclock mode. Enable overclock mode to set the data rate to FC 10G for PPM.
Mapping Mode	Sets the mapping mode.

C.2.46.8.11 SDH Line Tab

The SDH Line tab allows you to view and change the SDH line settings of the 10x10G_LC card.

Table C-838 Field Descriptions for the SDH Line Tab

Field	Description
Port No.	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Administration State	The port administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

Table C-838 Field Descriptions for the SDH Line Tab (continued)

Field	Description
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
ALS Mode	Allows you to select the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Admin SSM In	Overrides the synchronization status message (SSM) and the synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • SR-MM (short reach, up to 2 km distance) • I1 • S2 • L2 • DWDM
Wavelength	Allows you to provision the wavelength frequency.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.

C.2.46.8.12 RS Thresh 15 Min Tab

The RS Thresh 15 Min tab allows you to view and change the 15-minute regeneration section threshold for the 10x10G_LC card.

Table C-839 Field Descriptions for the RS Thresh 15 Min Tab

Field	Description
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.8.13 RS Thresh 1 Day Tab

The RS Thresh 1 Day tab allows you to view and change the 1-day regeneration section threshold for the 10x10G_LC card.

Table C-840 Field Descriptions for the RS Thresh 1 Day Tab

Field	Description
Port No.	The port number.
EB-RS	Errored blocks regenerator section.
ES-RS	Errored seconds regenerator section.
SES-RS	Severely errored seconds regenerator section.
BBE-RS	Background block errors regenerator section.
UAS-RS	Unavailable seconds regenerator section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.8.14 MS Thresh 15 Min Tab

The MS Thresh 15 Min tab allows you to view and change the 15-minute near- and far-end multiplex section threshold for the 10x10G_LC card.

Table C-841 Field Descriptions for the MS Thresh 15 Min Tab

Field	Description
Port No.	The port number.
EB-MS	Errored blocks multiplexer section.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
BBE-MS	Background block errors multiplexer section.
UAS-MS	Unavailable seconds multiplexer section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.8.15 MS Thresh 1 Day Tab

The MS Thresh 1 Day tab allows you to view and change the 1-day near- and far-end multiplex section threshold for the 10x10G_LC card.

Table C-842 Field Descriptions for the MS Thresh 1 Day Tab

Field	Description
Port Number	The port number.
EB-MS	Errored blocks multiplexer section.
ES-MS	Errored seconds multiplexer section.
SES-MS	Severely errored seconds multiplexer section.
BBE-MS	Background block errors multiplexer section.

Table C-842 Field Descriptions for the MS Thresh 1 Day Tab (continued)

Field	Description
UAS-MS	Unavailable seconds multiplexer section.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.8.16 Section Trace Tab

The Section Trace tab allows you to change the section trace settings for the 10x10G_LC card.

Table C-843 Field Descriptions for the Section Trace Tab

Field	Description
Modify button	Allows you to open the Modify Trace dialog box, where you can change the section trace information for applicable cards. See 7.2.21 Modifying Traces, page 7-177 for more information.
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.
Default button	Resets the value of the port parameters to the default value.

C.2.46.8.17 Ethernet Tab

The Ethernet tab allows you to view Ethernet line information.

Note The Ethernet tab is displayed on the following criteria:

- For 10x10G_LC card when the payload is TEN_GE.
- For 100G_LC_C card when the payload is ONEHUNDRED_GE provisioned on 100G_LC_C in standalone operating mode or FORTY_GE/ONEHUNDRED_GE provisioned on the CFP_LC peer card.

Table C-844 Field Descriptions for the Ethernet Tab

Field	Description
Port Number	Displays the PPM and port number.
Port Name	Displays the name of the port.

Table C-844 Field Descriptions for the Ethernet Tab (continued)

Field	Description
Administration State	The port administration state. It can be: • unlocked—Puts the port in service. The port service state changes to unlocked-enabled. • unlocked, automaticInService—Puts the port in automatic in-service. The port service state changes to unlocked-disabled, automaticInService. • locked-disabled—Removes the port from service and disables it. The port service state changes to locked-enabled, disabled. • locked, maintenance—Removes the port from service for maintenance. The port service state changes to locked-enabled, maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format Administrative_State-Operational_State, Status_Attribute.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
AINS Soak (H:M)	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS state.
Video Type	Video.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** Note The reach distance options that appear in the drop-down list depend on the card selected. • EW • LW • SW • LRM • ER • LR • SR (short reach, up to 2 km distance) • ZR • IR 2 • LR 2 • DWDM • CWDM40km
Wavelength	Allows you to provision the wavelength frequency.
Termination Mode	Sets the mode of operation. (This option is available only for SONET/SDH payloads).
MTU	Maximum transmission unit (MTU). The largest acceptable packet size configured for that port. The default value is 1548.
Incoming MAC Address	Allows you to edit the incoming MAC address.
Mapping	Displays the client trunk ports mapping.

C.2.46.8.18 RMON Thresholds

The RMON Thresholds Properties pane allows you to view RMON thresholds for the 10x10G_LC and 100G_LC_C cards.

Note The RMON Thresholds tab is displayed depending on the following criteria:

- For 10x10G_LC card when a data payload is provisioned (TEN_GE, 8GFC, 10GFC).
- For 100G_LC_C card when the payload is ONEHUNDRED_GE provisioned on 100G_LC_C in standalone operating mode or FORTY_GE/ONEHUNDRED_GE provisioned on the CFP_LC peer card.

Table C-845 Field Descriptions for the RMON Thresholds Properties Pane

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Add button	Click **Add** to add the RMON thresholds.
Remove button	Click **Remove** button to delete the threshold. It is possible to delete more than one RMON threshold.
Index No.	The number which is automatically assigned by the system to the RMON Threshold.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Thresholds	Displays the number of occurrences for the rising threshold.
Falling Thresholds	Displays the number of occurrences for the falling threshold. The falling threshold must be lower than the rising threshold.
Create	Allows you to create an RMON threshold. Click the **Create** button to create a threshold for the ports. **Note** You can select a Channel Group when you create a threshold. For more information, see 6.5.4 Creating RMON Thresholds, page 6-11.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.2.46.9 Loopback

The Loopback Properties pane allows you to view and update 10x10G_LC and 100G_LC_C loopback information.

Table C-846 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number (1 to 10).
Port Name	Displays the name of the port.
Admin State	Allows you to select the administration state of the port: In Service (IS), Out of Service (OOS), or Out of Service-Maintenance (OOS_MT), In Service (IS), and Automatic In Service (AINS).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State, Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.2.46.10 Optical Thresholds

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane displays the following tabs:

- C.2.46.10.1 Alarm Thresholds Tab, page C-643
- C.2.46.10.2 TCA 15 Min Tab, page C-643
- C.2.46.10.3 TCA 1 Day Tab, page C-644

C.2.46.10.1 Alarm Thresholds Tab

The Alarm Thresholds tab allows you to select thresholds for alarm generation.

Table C-847 Field Descriptions for the Alarm Thresholds Tab

Field	Description
Filter button	Click the Filter button to filter the data displayed in the table.
Port No.	The port number.
Laser Bias High	Displays the upper laser bias threshold.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Tx Power High	Displays the upper transmit power threshold.
Tx Power Low	Displays the lower transmit power threshold.
CD High	Displays the Chromatic Dispersion upper threshold. **Note** This is supported only on 100G_LC card trunk port.
CD Low	Displays the Chromatic Dispersion lower threshold. **Note** This is supported only on 100G_LC card trunk port.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.10.2 TCA 15 Min Tab

The TCA 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-848 Field Descriptions for the TCA 15 Min Tab

Field	Description
Filter button	Click the Filter button to filter the data displayed in the table.
Port No.	The port number.
Laser Bias High	Displays the upper laser bias threshold.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
OSNR Power High	Displays the upper Optical Signal To Noise Ratio threshold. **Note** This is supported only on 100G_LC card trunk port.
OSNR Power Low	Displays the lower Optical Signal To Noise Ratio threshold. **Note** This is supported only on 100G_LC card trunk port.
PMD High	Displays the upper Polarization Mode Dispersion threshold. **Note** This is supported only on 100G_LC card trunk port.
PMD Low	Displays the lower Polarization Mode Dispersion threshold. **Note** This is supported only on 100G_LC card trunk port.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.10.3 TCA 1 Day Tab

The TCA 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-849 Field Descriptions for the TCA 1 Day Tab

Field	Description
Filter button	Click the Filter button to filter the data displayed in the table.
Port No.	The port number.
Laser Bias High	Displays the upper laser bias threshold.
Rx Power High	Displays the upper receive power threshold.
Rx Power Low	Displays the lower receive power threshold.
Tx Power High	Displays the upper transmit power threshold. **Note** Tx Power High is not supported on trunk ports.
Tx Power Low	Displays the lower transmit power threshold. **Note** Tx Power Low is not supported on trunk ports.
OSNR Power High	Displays the upper Optical Signal To Noise Ratio threshold. **Note** This is supported only on 100G_LC card trunk port.

Table C-849 Field Descriptions for the TCA 1 Day Tab (continued)

Field	Description
OSNR Power Low	Displays the lower Optical Signal To Noise Ratio threshold. **Note** This is supported only on 100G_LC card trunk port.
PMD High	Displays the upper Polarization Mode Dispersion threshold. **Note** This is supported only on 100G_LC card trunk port.
PMD Low	Displays the lower Polarization Mode Dispersion threshold. **Note** This is supported only on 100G_LC card trunk port.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.11 OTN

The OTN Properties pane allows you to change the line optical transport network (OTN) settings for 10x10G_LC and 100G_LC_C. The Properties pane displays the following tabs:

- C.2.46.11.1 OTN Line Tab, page C-645
- C.2.46.11.2 G.709 Thresh 15 Min Tab, page C-646
- C.2.46.11.3 G.709 Thresh 1 Day Tab, page C-647
- C.2.46.11.4 FEC Thresh 15 Min Tab, page C-648
- C.2.46.11.5 FEC Thresh 1 Day Tab, page C-648
- C.2.46.11.6 Trail Trace Identifier Tab, page C-648

C.2.46.11.1 OTN Line Tab

The OTN Line tab allows you to view and change the OTN line settings of the card.

Table C-850 Field Descriptions for the OTN Line Tab

Field	Description
Port No.	The port number.
G.709 OTN	Displays the G.709 OTN feature.
FEC	Displays the forward error correction.
SF BER	The signal fail bit error rate.
SD BER	The signal degrade bit error rate.
ProvidesSync	If checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Allows you to set EnableSync card parameter. Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Admin SSM In	Overrides the synchronization status message (SSM) and the synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU.

C.2.46.11.2 G.709 Thresh 15 Min Tab

The G.709 Thresh 15 Min tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 15 minutes.

Table C-851 Field Descriptions for the G.709 Thresh 15 Min Tab

Field	Description
Filter button	Click the Filter button to filter the data displayed in the table.
SM (OTUK) Near End	
Port No.	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port No.	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port No.	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	
Port No.	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.

Table C-851 Field Descriptions for the G.709 Thresh 15 Min Tab (continued)

Field	Description
Filter button	Click the Filter button to filter the data displayed in the table.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.11.3 G.709 Thresh 1 Day Tab

The G.709 Thresh 1 Day tab displays near- and far-end SM optical channel transport unit (OTUK), and near- and far-end PM optical channel data unit (ODUK) threshold information received during the past 24 hours.

Table C-852 Field Descriptions for the G.709 Thresh 1 Day Tab

Field	Description
Filter button	Click the Filter button to filter the data displayed in the table.
SM (OTUK) Near End	
Port No.	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
SM (OTUK) Far End	
Port No.	Displays the optical port number.
BBE-SM	Displays the background block errors.
ES-SM	Displays the errored seconds.
SES-SM	Displays the severely errored seconds.
UAS-SM	Displays the unavailable seconds.
FC-SM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Near End	
Port No.	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.
PM (ODUK) Far End	

Table C-852 Field Descriptions for the G.709 Thresh 1 Day Tab (continued)

Field	Description
Filter button	Click the Filter button to filter the data displayed in the table.
Port No.	Displays the optical port number.
BBE-PM	Displays the background block errors.
ES-PM	Displays the errored seconds.
SES-PM	Displays the severely errored seconds.
UAS-PM	Displays the unavailable seconds.
FC-PM	Displays the failure count.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.11.4 FEC Thresh 15 Min Tab

The FEC Thresh 15 Min tab allows you to view and change the 15-minute FEC threshold values of the card.

Table C-853 Field Descriptions for the FEC Thresh 15 Min Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Port No.	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in 15-minute intervals.
Uncorrectable Words	Displays the uncorrectable words in 15-minute intervals.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.11.5 FEC Thresh 1 Day Tab

The FEC Thresh 1 Day tab allows you to view and change the 1-day FEC threshold values of the card.

Table C-854 Field Descriptions for the FEC Thresh 1 Day Tab

Field	Description
Filter button	Click the **Filter** button to filter the data displayed in the table.
Port No.	Displays port number information.
Bit Errors Corrected	Displays the bit errors corrected in one-day intervals.
Uncorrectable Words	Displays the uncorrectable words in one-day intervals.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.2.46.11.6 Trail Trace Identifier Tab

The Trail Trace Identifier tab allows you to provision the trail trace identifier for the card.

Table C-855 Field Descriptions for the Trail Trace Identifier Tab

Field	Description
Filter button	Click the Filter button to filter the data displayed in the table.
Modify button	Allows you to open the Modify Trace dialog box, where you can change the section trace information for applicable cards. For more information, see 7.2.21 Modifying Traces, page 7-177.
Port No.	Displays port number information.
Level	Displays the trail trace identifier level (Section or Path).
Trace Mode	Allows you to set the trace mode (Off or Manual).
Disable FDI on TTIM	Allows you to disable forward defect indication (FDI) for trail trace identifier mismatch (TTIM) alarms.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string.
Current Received String	Displays the current received string.

C.2.46.11.7 Proactive Protection Regen Tab

The Proactive Protection Regen tab allows you to provision proactive protection regen for the card.

Note Proactive protection regen is supported only when the 100GC_LC card is in high-rate REGEN or TXP card mode.

Table C-856 Field Descriptions for the Proactive Protection Regen Tab

Field	Description
Port No.	Displays port number information.
Trigger Threshold	Sets the maximum BER threshold to trigger proactive protection.
Trigger Window (ms)	Sets the duration for which BER is monitored before triggering the proactive protection. The trigger window value must be a multiple of: • 10 ms for trigger thresholds between 1E-3 and 6E-6 • 100 ms for trigger threshold between 5E-6 to 1E-7 Trigger window must be less than or equal to 10000 ms.
Revert Threshold	Sets the revert threshold value of BER. **Note** Revert Threshold settings must be less than the Trigger Threshold values.

Table C-856 Field Descriptions for the Proactive Protection Regen Tab (continued)

Field	Description
Revert Window (ms)	Sets the duration for which BER is monitored for settings that are less than the revert threshold value before which proactive protection provided to the router is removed. Revert Window value must be at least 2000ms and a multiple of: • 10ms for a revert threshold of 1E-4 to 6E-7 • 100ms for a revert threshold of 5E-7 to 5E-8. The revert window must be less than or equal to 10000ms.
Enable Proactive Protection	Allows you to enable or disable proactive protection.

C.2.46.12 PPM

The PPM Properties pane allows you to view and provision the ports inside the PPM for the 100G_LC_C card.

Table C-857 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules (PPM)	
PPM No.	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual pluggable unit that is installed on the card.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service (only when PPM is pre-provisioned) • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the port number for the PPM in the Pluggable Port Modules area.
Rate	Displays the port rate for the PPM in the Pluggable Port Modules area.

C.2.46.12.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box for more information.

Note To create sublanes for the CFP_LC card, see Table C-53.

C.3 Electrical Cards

This section describes the following electrical cards supported within Prime Optical:

- C.3.1 Slot Properties—DS-1-14, page C-651
- C.3.2 Slot Properties—DS1-28/DS3-EC1-3, page C-658
- C.3.3 Slot Properties—DS1-84/DS3-EC1-3, page C-683
- C.3.4 Slot Properties—DS-1N, page C-707
- C.3.5 Slot Properties—DS-3-12, page C-711
- C.3.6 Slot Properties—DS-3E, page C-715
- C.3.7 Slot Properties—DS-3i, page C-719
- C.3.8 Slot Properties—DS-3i-N-12, page C-724
- C.3.9 Slot Properties—DS-3XM-6, page C-729
- C.3.10 Slot Properties—DS-N, page C-736
- C.3.11 Slot Properties—DS1_E1_56, page C-737
- C.3.12 Slot Properties—DS3_EC1_48, page C-746
- C.3.13 Slot Properties—DS3XM-12, page C-761
- C.3.14 Slot Properties—E-1, page C-774
- C.3.15 Slot Properties—E1_21_E3_DS3_3 and E1_63_E3_DS3_3, page C-778
- C.3.16 Slot Properties—E1-42, page C-801
- C.3.17 Slot Properties—E1-63 (ONS 15305 CTC), page C-808
- C.3.18 Slot Properties—E1-8 (ONS 15305 CTC), page C-810
- C.3.19 Slot Properties—E1-N-14, page C-812
- C.3.20 Slot Properties—E3-12, page C-820
- C.3.21 Slot Properties—E3T3_6 (ONS 15305 CTC), page C-824
- C.3.22 Slot Properties—EC1-12, page C-826
- C.3.23 Slot Properties—FMEC-E3/DS-3, page C-831

C.3.1 Slot Properties—DS-1-14

The slot properties pane displays information about the Cisco ONS 15310 CL, Cisco ONS 15310 MA SONET, Cisco ONS 15327, or Cisco ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The DS-1-14 card provides 14 Telcordia-compliant GR-499 DS-1 ports. Each port operates at 1.544 Mb/s over a 100-ohm twisted-pair copper cable.

For the DS-1-14 module, the slot properties pane displays the following properties: Module View, Identification, Line, STS, VT, Loopback, Protection, Alarm Behavior, and J1 Path Trace.

C.3.1.1 Module View

The Module View displays a graphic of the DS-1 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.3.1.2 Identification

The Identification Properties pane allows you to view and update DS-1 identification information.

Table C-858 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.1.3 Line

The Line Properties pane allows you to view and update DS-1 optical line performance monitoring information.

Table C-859 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number (1 to 14).
Port Name	Allows you to add a name for the optical port.
SF BER	Sets the signal failure bit error rate. Values are: • 1E-3 • 1E-4 (default) • 1E-5

Table C-859 Field Descriptions for the Line Properties Pane (continued)

Field	Description
SD BER	Sets the signal deterioration bit error rate. Values are: • 1E-5 • 1E-6 • 1E-7 (default) • 1E-8 • 1E-9
Line Type	Allows you to select the line framing type. Values are: • D4 (default) • ESF—Extended Super Frame • Unframed
Line Coding	Allows you to define the DS-1-14 transmission coding type. Values are: • AMI—Alternate Mark Inversion (default) • B8ZS—Bipolar 8-zero Substitution
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. Values are: • 0–131 (default) • 132–262 • 263–393 • 394–524 • 525–655
Administration State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • IS—In Service. The port service state changes to IS_NR. • OOS, DSBLD—Out of Service, Disabled. The port service state changes to OOS_MA, DSBLD. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT Administration State must be initiated. • IS, AINS—Automatic In Service. The port service state changes to OOS_AU, AINS.
AINS Soak	Automatic in-service soak. The amount of valid input signal in *hh.mm*, after which the port is set in service by the software. The range is from 0 to 48 hours, in 15-minute increments.
AINS Soak Count Down	Displays the remaining time of valid input signal in *hh.mm*, after which the card becomes in service (IS) automatically. The range is from 0 to 48 hours, in 15-minute increments.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS-V for DS-1 AIS	When checked, sends an Alarm Indication Signal VT (AIS-V) instead of a DS-1 AIS (from the line side toward the backplane/system side) when a line-side trigger occurs.
Raise AIS for LOF	Sends an AIS when a loss of frame (LOF) occurs.
Line Threshold 15 Minutes	

Table C-859 Field Descriptions for the Line Properties Pane (continued)

Field	Description
Port Number	The optical port number (1 to 14).
CV-L	Coding violations line (near-end only). The default is 13340.
ES-L	Errored seconds line. The default is 65.
SES-L	Severely errored seconds line (near-end only). The default is 10.
LOSS-L	Loss of signal seconds line (near-end only). The default is 10.
Line Threshold 1 Day	
Port Number	The optical port number (1 to 14).
CV-L	Coding violations line (near-end only). The default is 133400.
ES-L	Errored seconds line. The default is 648.
SES-L	Severely errored seconds line (near-end only). The default is 100.
LOSS-L	Loss of signal seconds line (near-end only). The default is 10.
Path Threshold 1 Day	
Near End	
Displays the following near-end 1-day path threshold information.	
Port Number	The optical port number (1 to 14).
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
SAS-P	Severely errored frame/alarm indication signal–path information.
AISS-P	Alarm indication signal seconds path.
UAS-P	Unavailable seconds path.
Far End	
Displays the following far-end 1-day path threshold information.	
Port Number	The optical port number (1 to 14).
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
ESA-P	Errored seconds type A path.
ESB-P	Errored seconds type B path.
CSS-P	Controlled slip seconds path.
SEFS-P	Severely errored framing seconds path.
Path Threshold 15 Minutes	
Near End	
Displays the following near-end 15-minute path threshold information.	
Port Number	The optical port number (1 to 14).

Table C-859 Field Descriptions for the Line Properties Pane (continued)

Field	Description
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
SAS-P	Severely errored frame/alarm indication signal path.
AISS-P	Alarm indication signal seconds path.
UAS-P	Unavailable seconds path.
Far End	
Displays the following far-end 15-minute path threshold information.	
Port Number	The optical port number (1 to 14).
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
ESA-P	Errored seconds type A path.
ESB-P	Errored seconds type B path.
CSS-P	Controlled slip seconds path.
SEFS-P	Severely errored framing seconds path.

C.3.1.4 STS

The STS Properties pane allows you to view and update DS-1 synchronous transport signal (STS) information.

Table C-860 Field Descriptions for the STS Properties Pane

Field	Description
STS Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path. The default is 15.
ES-P	Errored seconds path. The default is 12.
SES-P	Severely errored seconds path. The default is 3.
UAS-P	Unavailable seconds path. The default is 10.
FC-P	Failure count path. The default is 10.
STS Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path. The default is 125.
ES-P	Errored seconds path. The default is 100.
SES-P	Severely errored seconds path. The default is 7.

Table C-860 Field Descriptions for the STS Properties Pane (continued)

Field	Description
UAS-P	Unavailable seconds path. The default is 10.
FC-P	Failure count path. The default is 10.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.1.5 VT

The VT Properties pane allows you to view and update DS-1 virtual tributary information.

Table C-861 Field Descriptions for the VT Properties Pane

Field	Description
VT Threshold 15 Minutes	
VT Number	The VT number.
CV-V	Coding violations–VT path. The default is 15.
ES-V	Errored seconds–VT path. The default is 12.
SES-V	Severely errored seconds–VT path. The default is 3.
UAS-V	Unavailable seconds–VT path. The default is 10.
VT Threshold 1 Day	
VT Number	The VT number.
CV-V	Coding violations–VT path. The default is 125.
ES-V	Errored seconds–VT path. The default is 100.
SES-V	Severely errored seconds–VT path. The default is 7.
UAS-V	Unavailable seconds–VT path. The default is 10.
Customer Info	
VT Number	The VT number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.1.6 Loopback

The Loopback Properties pane allows you to view and update DS-1 loopback information.

Table C-862 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number (1 to 14).
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.3.1.7 Protection

The Protection Properties pane allows you to view and update DS-1 protection group information.

Table C-863 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.1.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update DS-1 alarm profile information.

Table C-864 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.1.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update J1 path trace information.

Table C-865 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.

Table C-865 Field Descriptions for the J1 Path Trace Properties Pane (continued)

Field	Description
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Member Number	Displays the virtual concatenation (VCAT) member number.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

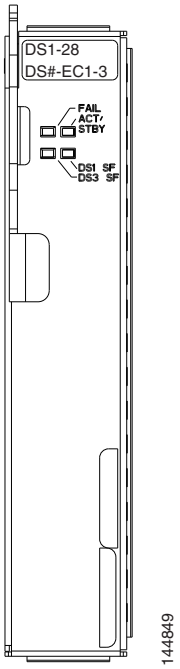
C.3.2 Slot Properties—DS1-28/DS3-EC1-3

The ONS 15310 MA SONET DS1-28/DS3-EC1-3 card provides 28 Telcordia-compliant, GR-499 DS-1 ports per card, and three DS-3/EC-1 ports. Each DS-1 port operates at 1.544 Mb/s. Each DS-3/EC-1 port operates at 44.736 Mb/s over a single 75-ohm 728A or equivalent coaxial span. This card can operate as a working or protect card in 1:N protection schemes, where N is less than or equal to 2.

The DS1-28/DS3-EC1-3 card can be installed in slots 1, 2, 5, and 6. Cards installed in slots 1 and 2 correspond with BIC A, and cards in slots 5 and 6 correspond with BIC B.

The following figure shows the DS1-28/DS3-EC1-3 card faceplate.

Figure C-63 DS1-28/DS3-EC1-3 Card Faceplate



For the DS1-28/DS3-EC1-3 module, the slot properties pane displays the following properties: Module View, Identification, DS-1, Broadband Ports, DS-3, EC1, Protection, and Info.

C.3.2.1 Module View

The Module View displays a graphic of the DS1-28/DS3-EC1-3 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.3.2.2 Identification

The Identification Properties pane allows you to view and update DS1-28/DS3-EC1-3 identification information.

Table C-866 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.

Table C-866 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.2.3 DS-1

The DS-1 Properties pane allows you to view and update DS-1 information for the card. The DS-1 Properties pane contains the following tabs:

- C.3.2.3.1 Line Config Tab, page C-660
- C.3.2.3.2 Line Thresh 15 Min Tab, page C-662
- C.3.2.3.3 Line Thresh 1 Day Tab, page C-662
- C.3.2.3.4 Electric Path Thresh 15 Min Tab, page C-663
- C.3.2.3.5 Electric Path Thresh 1 Day Tab, page C-664
- C.3.2.3.6 STS Thresh 15 Min Tab, page C-665
- C.3.2.3.7 STS Thresh 1 Day Tab, page C-665
- C.3.2.3.8 VT Thresh 15 Min Tab, page C-666
- C.3.2.3.9 VT Thresh 1 Day Tab, page C-666
- C.3.2.3.10 Alarm Behavior Tab, page C-667
- C.3.2.3.11 Loopback Tab, page C-667
- C.3.2.3.12 J1 Path Trace Tab, page C-668
- C.3.2.3.13 Customer Info Tab, page C-668

C.3.2.3.1 Line Config Tab

The Line Config tab allows you to view and update line configuration information.

Table C-867 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the optical port.
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the DS-1N transmission coding type.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. • 0–131 (default) • 132–262
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
SF BER	Sets the signal failure bit error rate.
SD BER	Sets the signal deterioration bit error rate.
Send Do Not Use	When checked, sends a do not use (DUS) message on the S1 byte.
Provides Sync	When checked, the card is provisioned as an NE timing reference.
Enable Sync Message	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Enable Retiming	When checked, retimes the transmit clock to the clock reference of the NE, removing the asynchronous relationship between electrical line and SONET transport time domains for the electrical path. When unchecked, leaves the port as *through-timed*, which means that the transmit clock is extracted from the DS-1/E1 data in the SONET payload coming from the backplane.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS-V for DS1-AIS/Defects	When checked, sends an Alarm Indication Signal VT (AIS-V) instead of a DS-1 AIS (from the line side toward the backplane/system side) when a line-side trigger occurs.

Table C-867 Field Descriptions for the Line Config Tab (continued)

Field	Description
Raise AIS for LOF	Sends an AIS when a loss of frame (LOF) occurs.
Admin SSM	Overrides the synchronization status message (SSM) synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU. Admin SSM allows you to override the STU value with one of the following: • PRS—Primary Reference Source (Stratum 1) • ST2—Stratum 2 • TNC—Transit node clock • ST3E—Stratum 3E • ST3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4 • DUS—Do not use for timing synchronization • RES—Reserved; quality level set by user

C.3.2.3.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute threshold settings of the port.

Table C-868 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.

C.3.2.3.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the near- and far-end 1-day threshold settings of the port.

Table C-869 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.

C.3.2.3.4 Electric Path Thresh 15 Min Tab

The Electric Path Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute electrical path threshold settings for the card.

Table C-870 Field Descriptions for the Electric Path Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
CSS-P	Displays the controlled slip seconds path information.
ESA-P	Displays the errored seconds type A path information.
ESB-P	Displays the errored seconds type B path information.
SEFS-P	Displays the severely errored framing seconds path information.
FC-P	Failure count path.

Table C-870 Field Descriptions for the Electric Path Thresh 15 Min Tab (continued)

Field	Description
ESNE	Displays the network performance errored seconds (near end) during a fixed measurement interval.
ESFE	Displays the network performance errored seconds (far end) during a fixed measurement interval.
SESNE	Displays the network performance severely errored seconds (near end) during a fixed measurement interval.
SESFE	Displays the network performance severely errored seconds (far end) during a fixed measurement interval.
UASNE	Displays the network performance unavailable seconds (near end) during a fixed measurement interval.
UASFE	Displays the network performance unavailable seconds (far end) during a fixed measurement interval.

C.3.2.3.5 Electric Path Thresh 1 Day Tab

The Electric Path Thresh 1 Day tab allows you to view and change the near- and far-end 1-day electrical path threshold settings for the card.

Table C-871 Field Descriptions for the Electric Path Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
CSS-P	Displays the controlled slip seconds path information.
ESA-P	Displays the errored seconds type A path information.
ESB-P	Displays the errored seconds type B path information.
SEFS-P	Displays the severely errored framing seconds path information.
FC-P	Failure count path.
ESNE	Displays the network performance errored seconds (near end) during a fixed measurement interval.
ESFE	Displays the network performance errored seconds (far end) during a fixed measurement interval.

Table C-871 Field Descriptions for the Electric Path Thresh 1 Day Tab (continued)

Field	Description
SESNE	Displays the network performance severely errored seconds (near end) during a fixed measurement interval.
SESFE	Displays the network performance severely errored seconds (far end) during a fixed measurement interval.
UASNE	Displays the network performance unavailable seconds (near end) during a fixed measurement interval.
UASFE	Displays the network performance unavailable seconds (far end) during a fixed measurement interval.

C.3.2.3.6 STS Thresh 15 Min Tab

The STS Thresh 15 Min tab allows you to view and change near- and far-end 15-minute synchronous transport signal (STS) information for the port.

Table C-872 Field Descriptions for the STS Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.2.3.7 STS Thresh 1 Day Tab

The STS Thresh 1 Day tab allows you to view and change near- and far-end 1-day STS information for the port.

Table C-873 Field Descriptions for the STS Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.

Table C-873 Field Descriptions for the STS Thresh 1 Day Tab (continued)

Field	Description
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.2.3.8 VT Thresh 15 Min Tab

The VT Thresh 15 Min tab displays near- and far-end 15-minute VT threshold information.

Table C-874 Field Descriptions for the VT Thresh 15 Min Tab

Field	Description
Near End	
VT Number	Displays VT number information.
CV	Displays the coding violations–VT path information.
ES	Displays the errored seconds–VT path information.
SES	Displays the severely errored seconds–VT path information.
UAS	Displays the unavailable seconds–VT path information.
FC	Failure count.
Far End	
VT Number	Displays VT number information.
CV	Displays the coding violations–VT path information.
ES	Displays the errored seconds–VT path information.
SES	Displays the severely errored seconds–VT path information.
UAS	Displays the unavailable seconds–VT path information.
FC	Failure count.

C.3.2.3.9 VT Thresh 1 Day Tab

The VT Thresh 1 Day tab displays near- and far-end 1-day VT threshold information.

Table C-875 Field Descriptions for the VT Thresh 1 Day Tab

Field	Description
Near End	
VT Number	Displays VT number information.
CV	Displays the coding violations–VT path information.
ES	Displays the errored seconds–VT path information.
SES	Displays the severely errored seconds–VT path information.
UAS	Displays the unavailable seconds–VT path information.
FC	Failure count.
Far End	
VT Number	Displays VT number information.
CV	Displays the coding violations–VT path information.
ES	Displays the errored seconds–VT path information.
SES	Displays the severely errored seconds–VT path information.
UAS	Displays the unavailable seconds–VT path information.
FC	Failure count.

C.3.2.3.10 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update port alarm profile information.

Table C-876 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.2.3.11 Loopback Tab

The Loopback tab allows you to view and update port loopback information.

Table C-877 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.

Table C-877 Field Descriptions for the Loopback Tab (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Send Code	Allows you to select No Code (default) or Line Loop Code. Selecting Line Loop Code inserts a line loop activate Far End Action Code (FEAC) in the CBIT overhead transmitting to the connected facility. This code initiates a loopback from the facility to the ONS 15310 MA SONET. Selecting No Code sends a line loop deactivate FEAC code to the connected equipment, which removes the loopback. You can also insert an FEAC for the 28 individual DS-1 circuits transmuxed into a DS-3 circuit.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.
Inhibit FE Loopback	If the Inhibit FE Loopback check box is checked for a port, that port will ignore any FEAC line loop codes and will not loop back. The port can still be put into loopback manually using the Loopback Type column even if the Inhibit FE Loopback check box is selected. Only DS-3 ports can be configured to inhibit responding to FEAC loopback commands.

C.3.2.3.12 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information.

Table C-878 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.2.3.13 Customer Info Tab

The Customer Info tab displays the port customer information.

Table C-879 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the synchronous transport signal number.
Customer ID	The customer ID.
Service ID	The service ID.

C.3.2.4 Broadband Ports

The Broadband Ports Properties pane allows you to view the DS-3 or EC1 port information.

Table C-880 Field Descriptions for the Broadband Ports Properties Pane

Field	Description
DS-3	
Port Number	Displays the DS-3 port number.
Rate	Displays the rate that the port is provisioned for.
EC1	
Port Number	Displays the EC1 port number.
Rate	Displays the rate that the port is provisioned for.

C.3.2.5 DS3

The DS-3 Properties pane allows you to view and update DS-3 information for the card. The DS-3 Properties pane contains the following tabs:

- C.3.2.5.1 Line Config Tab, page C-669
- C.3.2.5.2 Line Thresh 15 Min Tab, page C-670
- C.3.2.5.3 Line Thresh 1 Day Tab, page C-670
- C.3.2.5.4 PBit Thresh 15 Min Tab, page C-671
- C.3.2.5.5 PBit Thresh 1 Day Tab, page C-671
- C.3.2.5.6 CPBit Thresh 15 Min Tab, page C-671
- C.3.2.5.7 CPBit Thresh 1 Day Tab, page C-672
- C.3.2.5.8 STS Thresh 15 Min Tab, page C-673
- C.3.2.5.9 STS Thresh 1 Day Tab, page C-673
- C.3.2.5.10 Alarm Behavior Tab, page C-674
- C.3.2.5.11 Loopback Tab, page C-674
- C.3.2.5.12 J1 Path Trace Tab, page C-675
- C.3.2.5.13 Customer Info Tab, page C-675

C.3.2.5.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the port.

Table C-881 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number for the optical port.
Port Name	Allows you to add a name for the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Line Length (feet)	Defines the distance (in feet) from backplane connection to the next termination point. Values are 0 through 225 (default) or 226 through 450.
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the DS-3i transmission coding type.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.2.5.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute threshold settings of the port.

Table C-882 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
LOSS-L	Displays the unavailable seconds line.

C.3.2.5.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the near- and far-end 1-day threshold settings of the port.

Table C-883 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line.

Table C-883 Field Descriptions for the Line Thresh 1 Day Tab (continued)

Field	Description
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.

C.3.2.5.4 PBit Thresh 15 Min Tab

The PBit Thresh 15 Min tab displays near-end 15-minute PBit path threshold information on the card.

Table C-884 Field Descriptions for the PBit Thresh 15 Min Tab

Field	Description
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Severely errored frame/alarm indication signal path
AISS-P	Alarm indication signal seconds path
UAS-P	Displays the unavailable seconds path information.

C.3.2.5.5 PBit Thresh 1 Day Tab

The PBit Thresh 1 Day tab displays near- and far-end 1-day PBit path threshold information on the card.

Table C-885 Field Descriptions for the PBit Thresh 1 Day Tab

Field	Description
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Severely errored frame/alarm indication signal path information.
AISS-P	Alarm indication signal seconds path
UAS-P	Displays the unavailable seconds path information.

C.3.2.5.6 CPBit Thresh 15 Min Tab

The CPBit Thresh 15 Min tab displays near- and far-end 15-minute CPBit path threshold information on the card.

Table C-886 Field Descriptions for the CPBit Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
Far End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
UAS-P	Displays the unavailable seconds path information.

C.3.2.5.7 CPBit Thresh 1 Day Tab

The CPBit Thresh 1 Day tab displays near- and far-end 1-day CPBit path threshold information on the card.

Table C-887 Field Descriptions for the CPBit Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
Far End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
UAS-P	Displays the unavailable seconds path information.

C.3.2.5.8 STS Thresh 15 Min Tab

The STS Thresh 15 Min tab allows you to view and change near- and far-end 15-minute synchronous transport signal (STS) information for the port.

Table C-888 Field Descriptions for the STS Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.2.5.9 STS Thresh 1 Day Tab

The STS Thresh 1 Day tab allows you to view and change near- and far-end 1-day STS information for the port.

Table C-889 Field Descriptions for the STS Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.

Table C-889 Field Descriptions for the STS Thresh 1 Day Tab (continued)

Field	Description
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.2.5.10 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update port alarm profile information.

Table C-890 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.2.5.11 Loopback Tab

The Loopback tab allows you to view and update port loopback information.

Table C-891 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.
Inhibit FE Loopback	If the Inhibit FE Loopback check box is checked for a port, that port will ignore any FEAC line loop codes and will not loop back. The port can still be put into loopback manually using the Loopback Type column even if the Inhibit FE Loopback check box is selected. Only DS-3 ports can be configured to inhibit responding to FEAC loopback commands.

C.3.2.5.12 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information.

Table C-892 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.2.5.13 Customer Info Tab

The Customer Info tab displays the port customer information.

Table C-893 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the synchronous transport signal number.
Customer ID	The customer ID.
Service ID	The service ID.

C.3.2.6 EC1

The EC1 Properties pane allows you to view node near-end and far-end performance on an EC1 card to detect possible performance problems.

The EC1 Properties pane contains the following tabs:

- C.3.2.6.1 Line Config Tab, page C-676
- C.3.2.6.2 Line Thresh 15 Min Tab, page C-676
- C.3.2.6.3 Line Thresh 1 Day Tab, page C-677
- C.3.2.6.4 Section Thresh 15 Min Tab, page C-677
- C.3.2.6.5 Section Thresh 1 Day Tab, page C-678
- C.3.2.6.6 STS Thresh 15 Min Tab, page C-678
- C.3.2.6.7 STS Thresh 1 Day Tab, page C-679
- C.3.2.6.8 Alarm Behavior Tab, page C-680
- C.3.2.6.9 STS Config Tab, page C-680
- C.3.2.6.10 Loopback Tab, page C-680

- C.3.2.6.11 Section Trace Tab, page C-681
- C.3.2.6.12 J1 Path Trace Tab, page C-681
- C.3.2.6.13 Customer Info Tab, page C-682

C.3.2.6.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the EC1 port.

Table C-894 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number for the optical port.
Port Name	Allows you to add a name for the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
PJSTSMon#	Sets the EC-1 port that will be used for pointer justification. Values are Off or 1.
Line Length (feet)	Defines the distance (in feet) from backplane connection to the next termination point. Values are 0 through 225 (default) or 226 through 450.
Rx Equalization	For early EC1 card versions, equalization can be turned off if the line length is short or the environment is extremely cold; Rx Equalization should normally be set to On (checked, default).
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.2.6.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute threshold settings of the EC1 port.

Table C-895 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.
Far End	

Table C-895 Field Descriptions for the Line Thresh 15 Min Tab (continued)

Field	Description
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line information.
FC-L	Displays the failure count line.

C.3.2.6.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the near- and far-end 1-day threshold settings of the EC1 port.

Table C-896 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
FC-L	Displays the failure count line.
UAS-L	Displays the unavailable seconds line.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.

C.3.2.6.4 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the near-end 15-minute section threshold information on the EC1 port.

Table C-897 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.

Table C-897 Field Descriptions for the Section Thresh 15 Min Tab (continued)

Field	Description
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.

C.3.2.6.5 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the near-end 1-day section threshold information on the EC1 port.

Table C-898 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.

C.3.2.6.6 STS Thresh 15 Min Tab

The STS Thresh 15 Min tab allows you to view and change near- and far-end 15-minute synchronous transport signal (STS) information for the port.

Table C-899 Field Descriptions for the STS Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.

Table C-899 Field Descriptions for the STS Thresh 15 Min Tab (continued)

Field	Description
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.2.6.7 STS Thresh 1 Day Tab

The STS Thresh 1 Day tab allows you to view and change near- and far-end 1-day STS information for the port.

Table C-900 Field Descriptions for the STS Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.

Table C-900 Field Descriptions for the STS Thresh 1 Day Tab (continued)

Field	Description
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.2.6.8 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update port alarm profile information.

Table C-901 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.2.6.9 STS Config Tab

The STS Config tab allows you to view and change the STS settings of the EC1 port.

Table C-902 Field Descriptions for the STS Config Tab

Field	Description
STS Number	Displays the synchronous transport signal number information.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.

C.3.2.6.10 Loopback Tab

The Loopback tab allows you to view and update port loopback information.

Table C-903 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

Table C-903 Field Descriptions for the Loopback Tab (continued)

Field	Description
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.
Inhibit FE Loopback	If the Inhibit FE Loopback check box is checked for a port, that port will ignore any FEAC line loop codes and will not loop back. The port can still be put into loopback manually using the Loopback Type column even if the Inhibit FE Loopback check box is selected. Only DS-3 ports can be configured to inhibit responding to FEAC loopback commands.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

C.3.2.6.11 Section Trace Tab

The Section Trace tab allows you to change the EC1 port section trace settings.

Table C-904 Field Descriptions for the Section Trace Tab

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.3.2.6.12 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information.

Table C-905 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.

Table C-905 Field Descriptions for the J1 Path Trace Tab (continued)

Field	Description
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.2.6.13 Customer Info Tab

The Customer Info tab displays the port customer information.

Table C-906 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the synchronous transport signal number.
Customer ID	The customer ID.
Service ID	The service ID.

C.3.2.7 Protection

The Protection Properties pane allows you to view and update protection group information.

Table C-907 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups, such as which port is the protected port and which port is the working port. Also allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock-out switching, or lock-on switching.

C.3.2.8 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-908 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

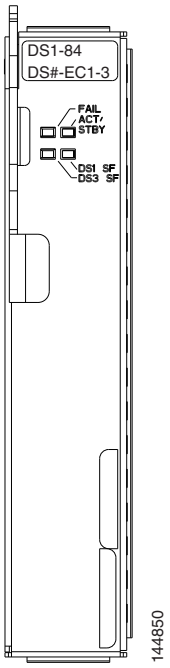
C.3.3 Slot Properties—DS1-84/DS3-EC1-3

The ONS 15310 MA SONET DS1-84/DS3-EC1-3 card provides 84 Telcordia-compliant, GR-499 DS-1 ports per card, and three DS-3/EC-1 ports. Each DS-1 port operates at 1.544 Mb/s. Each DS-3/EC-1 port operates at 44.736 Mb/s over a single 75-ohm 728A or equivalent coaxial span. This card can operate as a working or protect card in 1:N protection schemes, where N is less than or equal to 2.

The DS1-84/DS3-EC1-3 card can be installed in slots 1, 2, 5, and 6. Cards installed in slots 1 and 2 correspond with BIC A, and cards in slots 5 and 6 correspond with BIC B.

The following figure shows the DS1-84/DS3-EC1-3 card faceplate.

Figure C-64 DS1-84/DS3-EC1-3 Card Faceplate



For the DS1-84/DS3-EC1-3 module, the slot properties pane displays the following properties: Module View, Identification, DS-1, Broadband Ports, DS-3, EC1, Protection, and Info.

C.3.3.1 Module View

The Module View displays a graphic of the DS1-84/DS3-EC1-3 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).
Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.3.3.2 Identification

The Identification Properties pane allows you to view and update DS1-84-DS3-EC1-3 identification information.

Table C-909 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.3.3 DS1

The DS-1 Properties pane allows you to view and update DS-1 information for the card. The DS-1 Properties pane contains the following tabs:

- C.3.3.3.1 Line Config Tab, page C-685
- C.3.3.3.2 Line Thresh 15 Min Tab, page C-686
- C.3.3.3.3 Line Thresh 1 Day Tab, page C-686
- C.3.3.3.4 Electric Path Thresh 15 Min Tab, page C-687
- C.3.3.3.5 Electric Path Thresh 1 Day Tab, page C-688
- C.3.3.3.6 STS Thresh 15 Min Tab, page C-689
- C.3.3.3.7 STS Thresh 1 Day Tab, page C-689
- C.3.3.3.8 VT Thresh 15 Min Tab, page C-690
- C.3.3.3.9 VT Thresh 1 Day Tab, page C-690
- C.3.3.3.10 Alarm Behavior Tab, page C-691
- C.3.3.3.11 Loopback Tab, page C-691

- C.3.3.3.12 J1 Path Trace Tab, page C-692
- C.3.3.3.13 Customer Info Tab, page C-692

C.3.3.3.1 Line Config Tab

The Line Config tab allows you to view and update line configuration information.

Table C-910 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the optical port.
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the DS-1N transmission coding type.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. • 0–131 (default) • 132–262
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
SF BER	Sets the signal failure bit error rate.
SD BER	Sets the signal deterioration bit error rate.
Send Do Not Use	When checked, sends a do not use (DUS) message on the S1 byte.
Provides Sync	When checked, the card is provisioned as an NE timing reference.
Enable Sync Message	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Enable Retiming	When checked, retimes the transmit clock to the clock reference of the NE, removing the asynchronous relationship between electrical line and SONET transport time domains for the electrical path. When unchecked, leaves the port as *through-timed*, which means that the transmit clock is extracted from the DS-1/E1 data in the SONET payload coming from the backplane.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS-V for DS1-AIS/Defects	When checked, sends an Alarm Indication Signal VT (AIS-V) instead of a DS-1 AIS (from the line side toward the backplane/system side) when a line-side trigger occurs.

Table C-910 Field Descriptions for the Line Config Tab (continued)

Field	Description
Raise AIS for LOF	Sends an AIS when a loss of frame (LOF) occurs.
Admin SSM	Overrides the synchronization status message (SSM) synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU. Admin SSM allows you to override the STU value with one of the following: • PRS—Primary Reference Source (Stratum 1) • ST2—Stratum 2 • TNC—Transit node clock • ST3E—Stratum 3E • ST3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4 • DUS—Do not use for timing synchronization • RES—Reserved; quality level set by user

C.3.3.3.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute threshold settings of the port.

Table C-911 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.

C.3.3.3.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the near- and far-end 1-day threshold settings of the port.

Table C-912 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.

C.3.3.3.4 Electric Path Thresh 15 Min Tab

The Electric Path Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute electrical path threshold settings for the card.

Table C-913 Field Descriptions for the Electric Path Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
CSS-P	Displays the controlled slip seconds path information.
ESA-P	Displays the errored seconds type A path information.
ESB-P	Displays the errored seconds type B path information.
SEFS-P	Displays the severely errored framing seconds path information.
FC-P	Failure count path.

Table C-913 Field Descriptions for the Electric Path Thresh 15 Min Tab (continued)

Field	Description
ESNE	Displays the network performance errored seconds (near end) during a fixed measurement interval.
ESFE	Displays the network performance errored seconds (far end) during a fixed measurement interval.
SESNE	Displays the network performance severely errored seconds (near end) during a fixed measurement interval.
SESFE	Displays the network performance severely errored seconds (far end) during a fixed measurement interval.
UASNE	Displays the network performance unavailable seconds (near end) during a fixed measurement interval.
UASFE	Displays the network performance unavailable seconds (far end) during a fixed measurement interval.

C.3.3.3.5 Electric Path Thresh 1 Day Tab

The Electric Path Thresh 1 Day tab allows you to view and change the near- and far-end 1-day electrical path threshold settings for the card.

Table C-914 Field Descriptions for the Electric Path Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
CSS-P	Displays the controlled slip seconds path information.
ESA-P	Displays the errored seconds type A path information.
ESB-P	Displays the errored seconds type B path information.
SEFS-P	Displays the severely errored framing seconds path information.
FC-P	Failure count path.
ESNE	Displays the network performance errored seconds (near end) during a fixed measurement interval.
ESFE	Displays the network performance errored seconds (far end) during a fixed measurement interval.

Table C-914 Field Descriptions for the Electric Path Thresh 1 Day Tab (continued)

Field	Description
SESNE	Displays the network performance severely errored seconds (near end) during a fixed measurement interval.
SESFE	Displays the network performance severely errored seconds (far end) during a fixed measurement interval.
UASNE	Displays the network performance unavailable seconds (near end) during a fixed measurement interval.
UASFE	Displays the network performance unavailable seconds (far end) during a fixed measurement interval.

C.3.3.3.6 STS Thresh 15 Min Tab

The STS Thresh 15 Min tab allows you to view and change near- and far-end 15-minute synchronous transport signal (STS) information for the port.

Table C-915 Field Descriptions for the STS Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.3.3.7 STS Thresh 1 Day Tab

The STS Thresh 1 Day tab allows you to view and change near- and far-end 1-day STS information for the port.

Table C-916 Field Descriptions for the STS Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.

Table C-916 Field Descriptions for the STS Thresh 1 Day Tab (continued)

Field	Description
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.3.3.8 VT Thresh 15 Min Tab

The VT Thresh 15 Min tab displays near- and far-end 15-minute VT threshold information.

Table C-917 Field Descriptions for the VT Thresh 15 Min Tab

Field	Description
Near End	
VT Number	Displays VT number information.
CV	Displays the coding violations–VT path information.
ES	Displays the errored seconds–VT path information.
SES	Displays the severely errored seconds–VT path information.
UAS	Displays the unavailable seconds–VT path information.
FC	Failure count.
Far End	
VT Number	Displays VT number information.
CV	Displays the coding violations–VT path information.
ES	Displays the errored seconds–VT path information.
SES	Displays the severely errored seconds–VT path information.
UAS	Displays the unavailable seconds–VT path information.
FC	Failure count.

C.3.3.3.9 VT Thresh 1 Day Tab

The VT Thresh 1 Day tab displays near- and far-end 1-day VT threshold information.

Table C-918 Field Descriptions for the VT Thresh 1 Day Tab

Field	Description
Near End	
VT Number	Displays VT number information.
CV	Displays the coding violations–VT path information.
ES	Displays the errored seconds–VT path information.
SES	Displays the severely errored seconds–VT path information.
UAS	Displays the unavailable seconds–VT path information.
FC	Failure count.
Far End	
VT Number	Displays VT number information.
CV	Displays the coding violations–VT path information.
ES	Displays the errored seconds–VT path information.
SES	Displays the severely errored seconds–VT path information.
UAS	Displays the unavailable seconds–VT path information.
FC	Failure count.

C.3.3.3.10 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update port alarm profile information.

Table C-919 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.3.3.11 Loopback Tab

The Loopback tab allows you to view and update port loopback information.

Table C-920 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.

Table C-920 Field Descriptions for the Loopback Tab (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Send Code	Allows you to select No Code (default) or Line Loop Code. Selecting Line Loop Code inserts a line loop activate Far End Action Code (FEAC) in the CBIT overhead transmitting to the connected facility. This code initiates a loopback from the facility to the ONS 15310 MA SONET. Selecting No Code sends a line loop deactivate FEAC code to the connected equipment, which removes the loopback. You can also insert an FEAC for the 28 individual DS-1 circuits transmuxed into a DS-3 circuit.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.
Inhibit FE Loopback	If the Inhibit FE Loopback check box is checked for a port, that port will ignore any FEAC line loop codes and will not loop back. The port can still be put into loopback manually using the Loopback Type column even if the Inhibit FE Loopback check box is selected. Only DS-3 ports can be configured to inhibit responding to FEAC loopback commands.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

C.3.3.3.12 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information.

Table C-921 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.3.3.13 Customer Info Tab

The Customer Info tab displays the port customer information.

Table C-922 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the synchronous transport signal number.
Customer ID	The customer ID.
Service ID	The service ID.

C.3.3.4 Broadband Ports

The Broadband Ports Properties pane allows you to view the DS-3 or EC1 port information.

Table C-923 Field Descriptions for the Broadband Ports Properties Pane

Field	Description
DS-3	
Port Number	Displays the DS-3 port number.
Rate	Displays the rate that the port is provisioned for.
EC1	
Port Number	Displays the EC1 port number.
Rate	Displays the rate that the port is provisioned for.

C.3.3.5 DS3

The DS-3 Properties pane allows you to view and update DS-3 information for the card. The DS-3 Properties pane contains the following tabs:

- C.3.3.5.1 Line Config Tab, page C-693
- C.3.3.5.2 Line Thresh 15 Min Tab, page C-694
- C.3.3.5.3 Line Thresh 1 Day Tab, page C-694
- C.3.3.5.4 PBit Thresh 15 Min Tab, page C-695
- C.3.3.5.5 PBit Thresh 1 Day Tab, page C-695
- C.3.3.5.6 CPBit Thresh 15 Min Tab, page C-696
- C.3.3.5.7 CPBit Thresh 1 Day Tab, page C-696
- C.3.3.5.8 STS Thresh 15 Min Tab, page C-697
- C.3.3.5.9 STS Thresh 1 Day Tab, page C-697
- C.3.3.5.10 Alarm Behavior Tab, page C-698
- C.3.3.5.11 Loopback Tab, page C-698
- C.3.3.5.12 J1 Path Trace Tab, page C-699
- C.3.3.5.13 Customer Info Tab, page C-699

C.3.3.5.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the DS3 port.

Table C-924 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number for the optical port.
Port Name	Allows you to add a name for the optical port.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Line Length (feet)	Defines the distance (in feet) from backplane connection to the next termination point. Values are 0 through 225 (default) or 226 through 450.
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the DS-1N transmission coding type.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.3.5.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute threshold settings of the port.

Table C-925 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.

C.3.3.5.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the near- and far-end 1-day threshold settings of the EC1 port.

Table C-926 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
FC-L	Displays the failure count line.
UAS-L	Displays the unavailable seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.

C.3.3.5.4 PBit Thresh 15 Min Tab

The PBit Thresh 15 Min tab allows you to view and change the near-end 15-minute PBit path threshold information on the card.

Table C-927 Field Descriptions for the PBit Path Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.

C.3.3.5.5 PBit Thresh 1 Day Tab

The PBit Thresh 1 Day tab displays near- and far-end 1-day PBit path threshold information on the card.

Table C-928 Field Descriptions for the PBit Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Severely errored frame/alarm indication signal path information.

Table C-928 Field Descriptions for the PBit Thresh 1 Day Tab (continued)

Field	Description
AISS-P	Alarm indication signal seconds path
UAS-P	Displays the unavailable seconds path information.

C.3.3.5.6 CPBit Thresh 15 Min Tab

The CPBit Thresh 15 Min tab displays near- and far-end 15-minute CPBit path threshold information on the card.

Table C-929 Field Descriptions for the CPBit Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
Far End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
UAS-P	Displays the unavailable seconds path information.

C.3.3.5.7 CPBit Thresh 1 Day Tab

The CPBit Thresh 1 Day tab displays near- and far-end 1-day CPBit path threshold information on the card.

Table C-930 Field Descriptions for the CPBit Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
Far End	
Port No.	Displays the optical port number.

Table C-930 Field Descriptions for the CPBit Thresh 1 Day Tab (continued)

Field	Description
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
UAS-P	Displays the unavailable seconds path information.

C.3.3.5.8 STS Thresh 15 Min Tab

The STS Thresh 15 Min tab allows you to view and change near- and far-end 15-minute synchronous transport signal (STS) information for the port.

Table C-931 Field Descriptions for the STS Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.3.5.9 STS Thresh 1 Day Tab

The STS Thresh 1 Day tab allows you to view and change near- and far-end 1-day STS information for the port.

Table C-932 Field Descriptions for the STS Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.

Table C-932 Field Descriptions for the STS Thresh 1 Day Tab (continued)

Field	Description
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.3.5.10 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update DS-3 port alarm profile information.

Table C-933 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.3.5.11 Loopback Tab

The Loopback tab allows you to view and update DS-3 port loopback information.

Table C-934 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

Table C-934 Field Descriptions for the Loopback Tab (continued)

Field	Description
Inhibit FE Loopback	If the Inhibit FE Loopback check box is checked for a DS-3 port, that port will ignore any FEAC line loop codes and will not loop back. The port can still be put into loopback manually using the Loopback Type column even if the Inhibit FE Loopback check box is selected. Only DS-3 ports can be configured to inhibit responding to FEAC loopback commands.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.
Inhibit FE Loopback	If the Inhibit FE Loopback check box is checked for a port, that port will ignore any FEAC line loop codes and will not loop back. The port can still be put into loopback manually using the Loopback Type column even if the Inhibit FE Loopback check box is selected. Only DS-3 ports can be configured to inhibit responding to FEAC loopback commands.

C.3.3.5.12 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information on the DS-3 port.

Table C-935 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.3.5.13 Customer Info Tab

The Customer Info tab displays the DS-3 port customer information.

Table C-936 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the synchronous transport signal number.
Customer ID	The customer ID.
Service ID	The service ID.

C.3.3.6 EC1

The EC1 Properties pane allows you to view node near-end and far-end performance on an EC1 card to detect possible performance problems.

The EC1 Properties pane contains the following tabs:

- C.3.3.6.1 Line Config Tab, page C-700
- C.3.3.6.2 Line Thresh 15 Min Tab, page C-701
- C.3.3.6.3 Line Thresh 1 Day Tab, page C-701
- C.3.3.6.4 Section Thresh 15 Min Tab, page C-702
- C.3.3.6.5 Section Thresh 1 Day Tab, page C-702
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C.3.3.6.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the EC1 port.

Table C-937 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number for the optical port.
Port Name	Allows you to add a name for the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
PJSTSMon#	Sets the EC-1 port that will be used for pointer justification. Values are Off or 1.
Line Length (feet)	Defines the distance (in feet) from backplane connection to the next termination point. Values are 0 through 225 (default) or 226 through 450.
Rx Equalization	For early EC1 card versions, equalization can be turned off if the line length is short or the environment is extremely cold; Rx Equalization should normally be set to On (checked, default).
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.3.6.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute threshold settings of the EC1 port.

Table C-938 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.

C.3.3.6.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the near- and far-end 1-day threshold settings of the EC1 port.

Table C-939 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.

Table C-939 Field Descriptions for the Line Thresh 1 Day Tab (continued)

Field	Description
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.

C.3.3.6.4 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the near-end 15-minute section threshold information on the EC1 port.

Table C-940 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.

C.3.3.6.5 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the near-end 1-day section threshold information on the EC1 port.

Table C-941 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.

C.3.3.6.6 STS Thresh 15 Min Tab

The STS Thresh 15 Min tab allows you to view and change near- and far-end 15-minute synchronous transport signal (STS) information for the port.

Table C-942 Field Descriptions for the STS Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.

Table C-942 Field Descriptions for the STS Thresh 15 Min Tab (continued)

Field	Description
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.3.6.7 STS Thresh 1 Day Tab

The STS Thresh 1 Day tab allows you to view and change near- and far-end 1-day STS information for the port.

Table C-943 Field Descriptions for the STS Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.

Table C-943 Field Descriptions for the STS Thresh 1 Day Tab (continued)

Field	Description
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.3.6.8 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update port alarm profile information.

Table C-944 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.3.6.9 STS Config Tab

The STS Config tab allows you to view and change the STS settings of the EC1 port.

Table C-945 Field Descriptions for the STS Config Tab

Field	Description
STS Number	Displays the synchronous transport signal number information.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.

C.3.3.6.10 Loopback Tab

The Loopback tab allows you to view and update port loopback information.

Table C-946 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

C.3.3.6.11 Section Trace Tab

The Section Trace tab allows you to change the EC1 port section trace settings.

Table C-947 Field Descriptions for the Section Trace Tab

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.3.3.6.12 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information.

Table C-948 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.

Table C-948 Field Descriptions for the J1 Path Trace Tab (continued)

Field	Description
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.3.6.13 Customer Info Tab

The Customer Info tab displays the port customer information.

Table C-949 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the synchronous transport signal number.
Customer ID	The customer ID.
Service ID	The service ID.

C.3.3.7 Protection

The Protection Properties pane allows you to view and update protection group information.

Table C-950 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection groups, such as which port is the protected port and which port is the working port. Also allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch, perform a forced switch, or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock-out switching, or lock-on switching.

C.3.3.8 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-951 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.4 Slot Properties—DS-1N

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The DS-1N transmux card can accept up to six DS-3 signals and convert each signal to 28 VT1.5s. Conversely, the card can take 28 T-1s and multiplex them into a channeled C-bit or M23 framed DS-3. Unlike the DS-3-12 and DS-3N-12 cards, the DS-1N allows circuit mapping at the VT level.

For the DS-1N module, the slot properties pane displays the following properties: Module View, Identification, Line, STS, VT, Loopback, Protection, and Alarm Behavior.

C.3.4.1 Module View

The Module View displays a graphic of the DS-1N that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.3.4.2 Identification

The Identification Properties pane allows you to view and update DS-1N identification information.

Table C-952 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.4.3 Line

The Line Properties pane allows you to view and update DS-1N optical line performance monitoring information.

Table C-953 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the optical port.
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the DS-1N transmission coding type.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. • 0–131 (default) • 132–262
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS-V for DS-1 AIS	When checked, sends an Alarm Indication Signal VT (AIS-V) instead of a DS-1 AIS (from the line side toward the backplane/system side) when a line-side trigger occurs.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
BLSR Ext. Byte	Select an alternate BLSR byte. Choices are Z2, E2, or F1.
Line Threshold 15 Minutes	
Port Number	The optical port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
Line Threshold 1 Day	
Port Number	The optical port number.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
Path Threshold 15 Minutes	
Port Number	The optical port number.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
SAS-P	Severely errored frame/alarm indication signal path.

Table C-953 Field Descriptions for the Line Properties Pane (continued)

Field	Description
AIS-P	Alarm indication signal path.
UAS-P	Unavailable seconds path.
Path Threshold 1 Day	
Port Number	The optical port number.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
SAS-P	Severely errored frame/alarm indication signal path.
AIS-P	Alarm indication signal path.
UAS-P	Unavailable seconds path.

C.3.4.4 STS

The STS Properties pane allows you to view and update DS-1N Synchronous Transport Signal (STS) information.

Table C-954 Field Descriptions for the STS Properties Pane

Field	Description
STS Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
STS Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
Customer Info	
VC Number	The VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.
J1 Path Trace	
Port Number	Displays the port number.

Table C-954 Field Descriptions for the STS Properties Pane (continued)

Field	Description
VC Number	Displays the VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.

C.3.4.5 VT

The VT Properties pane allows you to view and update DS-1N virtual tributary information.

Table C-955 Field Descriptions for the VT

Field	Description
VT Threshold 15 Minutes	
VT Number	The VT number.
CV-V	Coding violations–VT layer.
ES-V	Errored seconds–VT layer.
SES-V	Severely errored seconds–VT layer.
UAS-V	Unavailable seconds–VT layer.
VT Threshold 1 Day	
VT Number	The VT number.
CV-V	Coding violations–VT layer.
ES-V	Errored seconds–VT layer.
SES-V	Severely errored seconds–VT layer.
UAS-V	Unavailable seconds–VT layer.

C.3.4.6 Loopback

The Loopback Properties pane allows you to view and update DS-1N loopback information.

Table C-956 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).

C.3.4.7 Protection

The Protection Properties pane allows you to view and update DS-1N protection group information.

Table C-957 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.4.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update DS-1N alarm profile information.

Table C-958 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Parent Profile	Displays a global alarm profile for the card from the drop-down list.
Port Number	Displays the DS-1N port number.
Alarm Profile	Displays an alarm profile for the slot from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.5 Slot Properties—DS-3-12

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The DS-3-12 cards (DS-3-12, DS-3N-12) provide 12 Telcordia-compliant GR-499 DS-3 ports per card. Each port operates at 44.736 Mb/s over a single 75-ohm 728A or equivalent coaxial span. The DS-3N-12 supports the same features as the DS-3-12 but can also provide 1:N protection (where N is less than or equal to 5).

For the DS-3-12 module, the slot properties pane displays the following properties: Module View, Identification, Line, STS, Loopback, Protection, and Alarm Behavior.

C.3.5.1 Module View

The Module View displays a graphic of the DS-3 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.3.5.2 Identification

The Identification Properties pane allows you to view and update DS-3 identification information.

Table C-959 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.5.3 Line

The Line Properties pane allows you to view and update DS-3 optical line performance monitoring information.

Table C-960 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number (1 to 12).
Port Name	Allows you to add a name for the optical port.
SF BER	Sets the signal failure bit error rate.
SD BER	Sets the signal deterioration bit error rate.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. • 0–131 (default) • 132–262
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

Table C-960 Field Descriptions for the Line Properties Pane (continued)

Field	Description
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Line Threshold 15 Minutes	
Port Number	The optical port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.
Line Threshold 1 Day	
Port Number	The optical port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.

C.3.5.4 STS

The STS Properties pane allows you to view and update DS-3 STS information.

Table C-961 Field Descriptions for the STS Properties Pane

Field	Description
STS Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
STS Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
Customer Info	
STS Number	The STS number.

Table C-961 Field Descriptions for the STS Properties Pane (continued)

Field	Description
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.5.5 Loopback

The Loopback Properties pane allows you to view and update DS-3 loopback information.

Table C-962 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.3.5.6 Protection

The Protection Properties pane allows you to view and update DS-3 protection group information.

Table C-963 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.5.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update DS-3 alarm profile information.

Table C-964 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.6 Slot Properties—DS-3E

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 DS-3E cards (DS-3-12E, DS-3N-12E) provide 12 Telcordia-compliant ports per card. Each port operates at 44.736 Mb/s over a single 75-ohm 728A or equivalent coaxial span. The DS-3-12E card provides enhanced performance monitoring functions. Default thresholds are based on recommendations in GR-820-CORE, Section 5.0. The DS-3N-12E card supports the same features as the DS-3-12E but can also provide 1:N protection (where N is less than or equal to 5).

For the DS-3E module, the slot properties pane displays the following properties: Module View, Identification, Line, STS, Loopback, Protection, Alarm Behavior, and J1 Path Trace.

C.3.6.1 Module View

The Module View displays a graphic of the DS-3 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.3.6.2 Identification

The Identification Properties pane allows you to view and update DS-3 identification information.

Table C-965 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.

Table C-965 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.6.3 Line

The Line Properties pane allows you to view and update DS-3 optical line performance monitoring information.

Table C-966 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the optical port.
SF BER	Sets the signal failure bit error rate.
SD BER	Sets the signal deterioration bit error rate.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. • 0–131 (default) • 132–262
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Line Threshold 15 Minutes	
Port Number	The optical port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.
Line Threshold 1 Day	
Port Number	The optical port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.

C.3.6.4 STS

The STS Properties pane allows you to view and update DS-3 synchronous transport signal (STS) information.

Table C-967 Field Descriptions for the STS Properties Pane

Field	Description
STS Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
STS Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.6.5 Loopback

The Loopback Properties pane allows you to view and update DS-3 loopback information.

Table C-968 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.3.6.6 Protection

The Protection Properties pane allows you to view and update DS-3 protection group information.

Table C-969 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.6.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update DS-3 alarm profile information.

Table C-970 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.6.8 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-971 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
VC4 Number	Displays the VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.7 Slot Properties—DS-3i

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The DS-3i-N-12 cards provide twelve DS-3 ports. Each port operates at 44.736 Mb/s. The DS-3i-N-12 uses B3ZS error monitoring and enhanced performance monitoring, including P-Bit and CP-Bit monitoring.

For the DS-3i module, the slot properties pane displays the following properties: Module View, Identification, Line, VC-3, VC-4, Loopback, Protection, Alarm Behavior, and J1 Path Trace.

C.3.7.1 Module View

The Module View displays a graphic of the DS-3i that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.3.7.2 Identification

The Identification Properties pane allows you to view and update DS-3i identification information.

Table C-972 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.7.3 Line

The Line Properties pane allows you to view and update DS-3i line performance monitoring information.

Table C-973 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the port number.
Port Name	Allows you to add a name for the port.
SD BER	Sets the signal deterioration bit error rate.
SF BER	Sets the signal failure bit error rate.
Line Type	Allows you to select the line framing type.
Detected Line Type	Displays the detected line type.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. Values are 0–225 (default) or 226–450.
Line Coding	Allows you to define the DS-3i transmission coding type.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Line Threshold 15 Minutes	
Port Number	Displays the port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal seconds line.
Line Threshold 1 Day	
Port Number	Displays the port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal seconds line.
DS-3 PBit Path Threshold 15 Minutes	
Port Number	Displays the port number.
CV-P/EB-P	Coding violations/errored blocks path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.

Table C-973 Field Descriptions for the Line Properties Pane (continued)

Field	Description
UAS-P	Unavailable seconds path.
AISS-P	AIS seconds path.
SAS-P	Severely errored frame/alarm indication signal path.
DS-3 PBit Path Threshold 1 Day	
Port Number	Displays the port number.
CV-P/EB-P	Coding violations/errored blocks path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
AISS-P	AIS seconds path.
SAS-P	Severely errored frame/alarm indication signal path.
DS-3 CPBit Path Threshold 15 Minutes	
Port Number	Displays the port number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
SAS-P	Severely errored frame/alarm indication signal path *(far-end only)*.
DS-3 CPBit Path Threshold 1 Day	
Port Number	Displays the port number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
SAS-P	Severely errored frame/alarm indication signal path *(far-end only)*.

C.3.7.4 VC-3

The VC-3 Properties pane allows you to view and update DS-3i VC-3 information.

Table C-974 Field Descriptions for the VC-3 Properties Pane

Field	Description
Threshold 15 Minutes	
VC Number	The VC number.
EB-LP	Errored blocks–low-order path.
BBE-LP	Background block errors–low-order path.
ES-LP	Errored seconds–low-order path.

Table C-974 Field Descriptions for the VC-3 Properties Pane (continued)

Field	Description
SES-LP	Severely errored seconds–low-order path.
UAS-LP	Unavailable seconds–low-order path.
Threshold 1 Day	
VC Number	The VC number.
EB-LP	Errored blocks–low-order path.
BBE-LP	Background block errors–low-order path.
ES-LP	Errored seconds–low-order path.
SES-LP	Severely errored seconds–low-order path.
UAS-LP	Unavailable seconds–low-order path.
Customer Info	
VC Number	The VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.7.5 VC-4

The VC-4 Properties pane allows you to view and update DS-3i VC-4 information.

Table C-975 Field Descriptions for the VC-4 Properties Pane

Field	Description
Threshold 15 Minutes	
VC Number	The VC number. Displays as VC4-*x*, where *x* equals 1, 2, 3, or 4.
EB-HP/BEC-HP	Errored block/byte errors corrected–high-order path.
BBE-HP	Background block errors–high-order path.
ES-HP	Errored seconds–high-order path.
SES-HP	Severely errored seconds–high-order path.
UAS-HP	Unavailable seconds–high-order path.
Threshold 1 Day	
VC Number	The VC number. Displays as VC4-*x*, where *x* equals 1, 2, 3, or 4.
EB-HP/BEC-HP	Errored block/byte errors corrected–high-order path.
BBE-HP	Background block errors–high-order path.
ES-HP	Errored seconds–high-order path.
SES-HP	Severely errored seconds–high-order path.
UAS-HP	Unavailable seconds–high-order path.

C.3.7.6 Loopback

The Loopback Properties pane allows you to view and update DS-3i loopback information.

Table C-976 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Inhibit Loopback	Allows you to prevent loopback functionality.

C.3.7.7 Protection

The Protection Properties pane allows you to view and update DS-3i protection group information.

Table C-977 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.7.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update DS-3i alarm profile information.

Table C-978 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.7.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-979 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
VC4 Number	Displays the VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Member Number	Displays the virtual concatenation (VCAT) member number.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.8 Slot Properties—DS-3i-N-12

The slot properties pane displays information about the Cisco ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The DS-3i-N-12 cards provide twelve DS-3 ports. Each port operates at 44.736 Mb/s. The DS-3i-N-12 uses B3ZS error monitoring and enhanced performance monitoring, including P-Bit and CP-Bit monitoring.

For the DS-3i module, the slot properties pane displays the following properties: Module View, Identification, Line, STS, Loopback, Protection, Alarm Behavior, and J1 Path Trace.

C.3.8.1 Module View

The Module View displays a graphic of the DS-3i that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.3.8.2 Identification

The Identification Properties pane allows you to view and update DS-3i identification information.

Table C-980 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.8.3 Line

The Line Properties pane allows you to view and update DS-3i line performance monitoring information.

Table C-981 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the port number (1 to 12).
Port Name	Allows you to add a name for the port.
SD BER	Sets the signal deterioration bit error rate.
SF BER	Sets the signal failure bit error rate.
Line Type	Allows you to select the line framing type.
Detected Line Type	Displays the detected line type.
Line Length	Displays the length of the line.
Line Coding	Allows you to define the DS-3i transmission coding type.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.

Table C-981 Field Descriptions for the Line Properties Pane (continued)

Field	Description
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Line Threshold 15 Minutes	
Port Number	Displays the port number (1 to 12).
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
LOSS-L	Loss of signal seconds line.
Line Threshold 1 Day	
Port Number	Displays the port number (1 to 12).
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
LOSS-L	Loss of signal seconds line.
DS-3 PBit Path Threshold 15 Minutes	
Port Number	Displays the port number (1 to 12).
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
AISS-P	AIS seconds path.
SAS-P	Severely errored frame/alarm indication signal path.
DS-3 PBit Path Threshold 1 Day	
Port Number	Displays the port number (1 to 12).
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
AISS-P	AIS seconds path.
SAS-P	Severely errored frame/alarm indication signal path.
DS-3 CPBit Path Threshold 15 Minutes	
Port Number	Displays the port number (1 to 12).
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
SAS-P	Severely errored frame/alarm indication signal path.

Table C-981 Field Descriptions for the Line Properties Pane (continued)

Field	Description
DS-3 CPBit Path Threshold 1 Day	
Port Number	Displays the port number (1 to 12).
CV-P	Coding violations paths path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
SAS-P	Severely errored frame/alarm indication signal path.

C.3.8.4 STS

The STS Properties pane allows you to view and update DS-3 synchronous transport signal (STS) information.

Table C-982 Field Descriptions for the STS Properties Pane

Field	Description
STS Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
STS Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.8.5 Loopback

The Loopback Properties pane allows you to view and update DS-3i loopback information.

Table C-983 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number (1 to 12).
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Inhibit Loopback	Allows you to prevent loopback functionality.

C.3.8.6 Protection

The Protection Properties pane allows you to view and update DS-3i protection group information.

Table C-984 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.8.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update DS-3i alarm profile information.

Table C-985 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.8.8 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-986 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Member Number	Displays the virtual concatenation (VCAT) member number.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.9 Slot Properties—DS-3XM-6

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The DS-3XM-6 card provides six Telcordia-compliant GR-499-CORE M13 multiplexing functions. The DS-3XM-6 converts six framed DS-3 network connections to 28x6 or 168 VT1.5s. Unlike the DS-3-12 and DS-3N-12 cards, the DS-3XM-6 allows circuit mapping at the VT level.

For the DS-3XM-6 module, the slot properties pane displays the following properties: Module View, Identification, Line, STS, VT, DS-1, Loopback, Protection, Alarm Behavior, and J1 Path Trace.

C.3.9.1 Module View

The Module View displays a graphic of the DS-3XM-6 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.3.9.2 Identification

The Identification Properties pane allows you to view and update DS-3XM-6 identification information.

Table C-987 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.9.3 Line

The Line Properties pane allows you to view and update DS-3XM-6 optical line performance monitoring information.

Table C-988 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number (1 to 6).
Port Name	Allows you to add a name for the optical port.
SD BER	Sets the signal deterioration bit error rate.
SF BER	Sets the signal failure bit error rate.
Line Type	Allows you to select the line framing type. Values are: • M13 (default) • C BIT
Line Coding	Allows you to define the DS-3XM transmission coding type.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. • 0–131 (default) • 132–262
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

Table C-988 Field Descriptions for the Line Properties Pane (continued)

Field	Description
AINS Soak	Automatic in-service soak. The amount of valid input signal in *hh.mm*, after which the port is set in service by the software. The range is from 0 to 48 hours, in 15-minute increments.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically. The range is from 0 to 48 hours, in 15-minute increments.
Line Threshold 15 Minutes	
Port Number	Displays the optical port number (1 to 6).
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal seconds line.
Line Threshold 1 Day	
Port Number	Displays the optical port number (1 to 6).
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal seconds line.
PBit Path Threshold 15 Minutes	
Port Number	Displays the optical port number (1 to 6).
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
SAS-P	Severely errored frame/alarm indication signal path.
AIS-P	Alarm indication signal path.
UAS-P	Unavailable seconds path.
PBit Path Threshold 1 Day	
Port Number	Displays the optical port number (1 to 6).
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
SAS-P	Severely errored frame/alarm indication signal path.
AIS-P	Alarm indication signal path.
UAS-P	Unavailable seconds path.
Port Number	Displays the optical port number (1 to 6).
CPBit Path Threshold 15 Minutes	
Port Number	Displays the optical port number (1 to 6).
CV-P	Coding violations path.

Table C-988 Field Descriptions for the Line Properties Pane (continued)

Field	Description
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
SAS-P	Severely errored frame/alarm indication signal path.
UAS-P	Unavailable seconds path.
CPBit Path Threshold 1 Day	
Port Number	Displays the optical port number (1 to 6).
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
SAS-P	Severely errored frame/alarm indication signal path.
UAS-P	Unavailable seconds path.

C.3.9.4 STS

The STS Properties pane allows you to view and update DS-3XM-6 STS information.

Table C-989 Field Descriptions for the STS Properties Pane

Field	Description
STS Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
STS Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.9.5 VT

The VT Properties pane allows you to view and update DS-3XM-6 virtual tributary information.

Table C-990 Field Descriptions for the VT Properties Pane

Field	Description
VT Threshold 15 Minutes	
VT Number	Displays the VT number.
CV-V	Coding violations–VT path.
ES-V	Errored seconds–VT path.
SES-V	Severely errored seconds–VT path.
UAS-V	Unavailable seconds–VT path.
VT Threshold 1 Day	
VT Number	Displays the VT number.
CV-V	Coding violations–VT path.
ES-V	Errored seconds–VT path.
SES-V	Severely errored seconds–VT path.
UAS-V	Unavailable seconds–VT path.
Customer Info	
VT Number	The VT number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.9.6 DS-1

The DS-1 Properties pane allows you to view and update DS-3XM-6 virtual tributary information.

Table C-991 Field Descriptions for the DS-1 Field Properties Pane

Field	Description
Path Threshold 15 Minutes	
Port Number	Displays the optical port number (1 to 6).
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
SAS-P	Severely errored frame/alarm indication signal path.
AISS-P	Alarm indication signal seconds path.
UAS-P	Unavailable seconds path.
Path Threshold 1 Day	
Port Number	Displays the optical port number (1 to 6).
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.

Table C-991 Field Descriptions for the DS-1 Field Properties Pane (continued)

Field	Description
SAS-P	Severely errored frame/alarm indication signal path.
AISS-P	Alarm indication signal seconds path.
UAS-P	Unavailable seconds path.
Customer Info	
VT Number	The VT number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.9.7 Loopback

The Loopback Properties pane allows you to view and update DS-3XM-6 loopback information.

Table C-992 Field Descriptions for the Loopback Properties Pane

Subfield	Description
DS-1	
Port Number	Displays the optical port number (1 to 6).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).
Send Code	Allows you to select No Code (default) or Line Loop Code. Selecting Line Loop Code inserts a line loop activate Far End Action Code (FEAC) in the CBIT overhead transmitting to the connected facility. This code initiates a loopback from the facility to the ONS 15454. Selecting No Code sends a line loop deactivate FEAC code to the connected equipment, which removes the loopback. You can also insert an FEAC for the 28 individual DS-1 circuits transmuxed into a DS-3 circuit.
Derived State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT). **Note** The Derived State field is available only for release 3.4.
DS-3	
Port Number	Displays the port number.
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT). **Note** The State field is available only for release 3.4.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).
Send Code	Allows you to select No Code (default) or Line Loop Code. Selecting Line Loop Code inserts a line loop activate Far End Action Code (FEAC) in the CBIT overhead transmitting to the connected facility. This code initiates a loopback from the facility to the ONS 15454. Selecting No Code sends a line loop deactivate FEAC code to the connected equipment, which removes the loopback. You can also insert an FEAC for the 28 individual DS-1 circuits transmuxed into a DS-3 circuit.
Inhibit FE Loopback	If the Inhibit FE Loopback check box is checked for a DS-3 port, that port will ignore any FEAC line loop codes and will not loop back. The port can still be put into loopback manually using the Loopback Type column even if the Inhibit FE Loopback check box is selected. Only DS-3 ports can be configured to inhibit responding to FEAC loopback commands.

C.3.9.8 Protection

The Protection Properties pane allows you to view and update DS-3XM-6 protection group information.

Table C-993 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.9.9 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update DS-3XM-6 alarm profile information.

Table C-994 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.9.10 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-995 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Member Number	Displays the virtual concatenation (VCAT) member number.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.10 Slot Properties—DS-N

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

For the DS-N module, the slot properties pane displays the following properties: Module View, Identification, and Protection.

C.3.10.1 Module View

The Module View displays a graphic of the DS-N that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.3.10.2 Identification

The Identification Properties pane allows you to view and update DS-N identification information.

Table C-996 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the card revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.10.3 Protection

The Protection Properties pane allows you to view and update protection group information.

Table C-997 Field Descriptions for the Protection Properties Pane

Field	Description
State of Slot *x*	Displays the state of the selected slot and of the companion DS-N slot.
Switch	Click to switch the selected slot from its current state to the other states.
Lock	Click to lock the selected slot into its current state.
Unlock	Click to unlock the current slot from its current state.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.11 Slot Properties—DS1_E1_56

The slot properties pane displays information about the ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The DS1_E1_56 card provides 56 Telcordia-compliant, GR-499 DS-1 ports per card, or 56 E1 ports per card. Each port operates at 1.544 Mb/s (DS-1) or 2.048 Mb/s (E1). The DS1_E1_56 card operates as a working or protect card in 1:N protection schemes, where N <= 2. The DS1_E1_56 card can be used with the XCVT, XC10G, or XC-VXC-10G cross-connect cards.

Caution When a protection switch moves traffic from the DS1_E1_56 working/active card to the DS1_E1_56 protect/standby card, ports on the now active/standby card cannot be taken out of service. Lost traffic can result if you take a port out of service, even if the DS1_E1_56 standby card no longer carries traffic.

Note This module works only in a high-density ONS chassis backplane.

For the DS1_E1_56 module, the slot properties pane displays the following properties: Module View, Identification, Card, Line, STS, VT, Loopback, Protection, Alarm Behavior, J1 Path Trace, and Info.

C.3.11.1 Module View

The Module View displays a graphic of the DS1_E1_56 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.3.11.2 Identification

The Identification Properties pane allows you to view and update DS1_E1_56 line card identification information.

Table C-998 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.11.3 Card

The Card Properties pane allows you to provision the encapsulation, port usage and retiming, and VT mapping for the DS1_E1_56 card.

Table C-999 Field Descriptions for the Card Properties Pane

Field	Description
Transport Mode	Sets encapsulation to SONET mode or AU4 mode. SONET mode transports DS-1s in VT1.5s; AU4 mode transports DS-1s and E1s in a structured VC4 payload (STS-3c). The transport mode changes depending on the operating mode. **Note** Switching from one transport mode to another is not allowed if any circuit exists on any port or if any port is in service.
Operating Mode	Sets the port usage: • All DS-1—All 56 ports are to be used as DS-1 ports. Ports 1 to 28 have retiming capability. In this mode, the Retiming Enabled value is always enabled. • All E1—All 56 ports are to be used as E1 ports. Ports 1 to 21 have retiming capability. In this mode, the Retiming Enabled value can be enabled or disabled. The restrictions on switching between these restrictions are based on existing circuits, ports being in service, and port usage as an NE reference source.
Retiming Enabled	When checked, sets the retime transmission of data out to the plesiochronous digital hierarchy (PDH) line.
Port to VT Mapping	Selects the ordering in which DS-1 ports are mapped into the VT1.5s within an STS-1. This setting applies to a group of DS-1 ports associated with the same STS-1. • GR-253 interleaves the DS-1 ports into the DS-1-14-compatible VT1.5. In this mapping, sequential DS-1 port numbers are mapped to interleave the 7 VT groups of VT1.5s. Interleaving by VT group essentially means that the DS-1 ports follow the order of transmission of the VT1.5s, as indicated in GR-253. • INDUSTRY maps sequential DS-1 port numbers to fill each VT group in order. The operating mode All E1 always corresponds to INDUSTRY. **Note** The Port to VT Mapping field is editable only when the operating mode is set to All DS-1.

C.3.11.4 Line

The Line Properties pane allows you to view and update DS1_E1_56 line performance monitoring information.

Table C-1000 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the port number (1 to 56).
Port Name	Allows you to add a name for the port.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
SF BER	Sets the signal failure bit error rate.
SD BER	Sets the signal deterioration bit error rate.

Table C-1000 Field Descriptions for the Line Properties Pane (continued)

Field	Description
Line Type	Allows you to select the line framing type: ESF, D4, UNFRAMED, AUTO_PROVISION_FMT, or J_ESF.
Line Coding	Defines the transmission coding type: B8ZS or AMI.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
Provides Sync	When checked, the port is provisioned as an NE timing reference.
Enable Sync Message	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Enable Retiming	When checked, retimes the transmit clock to the clock reference of the NE, removing the asynchronous relationship between electrical line and SONET transport time domains for the electrical path. When unchecked, leaves the port as *through-timed*, which means that the transmit clock is extracted from the DS-1/E1 data in the SONET payload coming from the backplane.
Admin SSM	Overrides the synchronization status message (SSM) synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU. Admin SSM allows you to override the STU value with one of the following: • PRS—Primary Reference Source (Stratum 1) • ST2—Stratum 2 • TNC—Transit node clock • ST3E—Stratum 3E • ST3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4 • DUS—Do not use for timing synchronization • RES—Reserved; quality level set by user
Line Length	Defines the distance (in feet) from the backplane connection to the next termination point.
FDL Mode	Sets the mode for far-end loopbacks and far-end performance monitoring.
DS-1 Mapping	Sets the mapping mode: • Asynchronous—DS-1 transport over SONET uses asynchronous mapping into VT1.5 (within a VT-structured STS-1 synchronous payload envelope [SPE]). • Byte Synchronous—DS-1 transport over SONET uses byte-synchronous mapping into VT1.5 (within a VT-structured STS-1 SPE). • Japan Byte Synchronous—E1 transport over SONET uses asynchronous mapping into VT2 (within a VT-structured STS-1 SPE).
Send AIS-V for DS-1 AIS	When checked, sends an Alarm Indication Signal VT (AIS-V) instead of a DS-1 AIS (from the line side toward the backplane/system side) when a line-side trigger occurs.
Raise AIS for LOF	Sends an AIS when a loss of frame (LOF) occurs.

Table C-1000 Field Descriptions for the Line Properties Pane (continued)

Field	Description
Line Threshold 15 Minutes	
Near End	
Port Number	The optical port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.
Far End	
Port Number	The optical port number.
ES-L	Errored seconds line.
Line Threshold 1 Day	
Port Number	The optical port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.
Far End	
Port Number	The optical port number.
ES-L	Errored seconds line.
Path Thresh 15 Min	
Near End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
CSS-P	Displays the controlled slip seconds path information.
ESA-P	Displays the errored seconds type A path information.

Table C-1000 Field Descriptions for the Line Properties Pane (continued)

Field	Description
ESB-P	Displays the errored seconds type B path information.
SEFS-P	Displays the severely errored framing seconds path information.
FC-P	Displays the failure count path information.
ESNE	Displays the network performance errored seconds (near end) during a fixed measurement interval.
ESFE	Displays the network performance errored seconds (far end) during a fixed measurement interval.
SESNE	Displays the network performance severely errored seconds (near end) during a fixed measurement interval.
SESFE	Displays the network performance severely errored seconds (far end) during a fixed measurement interval.
UASNE	Displays the network performance unavailable seconds (near end) during a fixed measurement interval.
UASFE	Displays the network performance unavailable seconds (far end) during a fixed measurement interval.
Path Thresh 1 Day	
Near End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
Port No.	Displays the port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
CSS-P	Displays the controlled slip seconds path information.
ESA-P	Displays the errored seconds type A path information.
ESB-P	Displays the errored seconds type B path information.
SEFS-P	Displays the severely errored framing seconds path information.
FC-P	Displays the failure count path information.
ESNE	Displays the network performance errored seconds (near end) during a fixed measurement interval.
ESFE	Displays the network performance errored seconds (far end) during a fixed measurement interval.
SESNE	Displays the network performance severely errored seconds (near end) during a fixed measurement interval.

Table C-1000 Field Descriptions for the Line Properties Pane (continued)

Field	Description
SESFE	Displays the network performance severely errored seconds (far end) during a fixed measurement interval.
UASNE	Displays the network performance unavailable seconds (near end) during a fixed measurement interval.
UASFE	Displays the network performance unavailable seconds (far end) during a fixed measurement interval.

C.3.11.5 STS

The STS Properties pane allows you to view and update DS1_E1_56 STS information.

Table C-1001 Field Descriptions for the STS Properties Pane

Field	Description
STS Threshold 15 Minutes	
Near End, Far End	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
FC-P	Failure count path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
STS Threshold 1 Day	
Near End, Far End	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
FC-P	Failure count path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.11.6 VT

The VT Properties pane allows you to view and update DS1_E1_56 virtual tributary information.

Table C-1002 Field Descriptions for the VT Properties Pane

Field	Description
VT Thresh 15 Minutes, Near End and Far End	
VT No.	Displays VT number information.
ES-V	Displays the errored seconds–VT path information.
SES-V	Displays the severely errored seconds–VT path information.
CV-V	Displays the coding violations–VT path information.
UAS-V	Displays the unavailable seconds–VT path information.
VT Thresh 1 Day, Near End and Far End	
VT No.	Displays VT number information.
ES-V	Displays the errored seconds–VT path information.
SES-V	Displays the severely errored seconds–VT path information.
CV-V	Displays the coding violations–VT path information.
UAS-V	Displays the unavailable seconds–VT path information.
Customer Info	
VT No.	The VT number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.11.7 Loopback

The Loopback Properties pane allows you to view and update DS1_E1_56 loopback information.

Table C-1003 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Send Code	Allows you to select No Code (default) or Line Loop Code. Selecting Line Loop Code inserts a line loop activate Far End Action Code (FEAC) in the CBIT overhead transmitting to the connected facility. This code initiates a loopback from the facility to the ONS 15454. Selecting No Code sends a line loop deactivate FEAC code to the connected equipment, which removes the loopback. You can also insert an FEAC for the 28 individual DS-1 circuits transmuxed into a DS-3 circuit.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.

Table C-1003 Field Descriptions for the Loopback Properties Pane (continued)

Field	Description
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.
Inhibit FE Loopback	If the Inhibit FE Loopback check box is checked for a DS-3 port, that port will ignore any FEAC line loop codes and will not loop back. The port can still be put into loopback manually using the Loopback Type column even if the Inhibit FE Loopback check box is selected. Only DS-3 ports can be configured to inhibit responding to FEAC loopback commands.

C.3.11.8 Protection

The Protection Properties pane allows you to view and update DS1_E1_56 protection group information.

Table C-1004 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.11.9 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update DS1_E1_56 alarm profile information.

Table C-1005 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.11.10 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1006 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.11.11 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the DS1_E1_56 card.

Table C-1007 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.12 Slot Properties—DS3_EC1_48

The slot properties pane displays information about the Cisco ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The DS3_EC1_48 card is a high-density I/O card with 48 ports that may function as a DS-3 or EC1 interface. This allows users to provision the card at port level instead of card level. Each of the DS-3 interfaces operates at 44.736 Mb/s over a single 75-ohm coaxial span. Each of the EC1 interfaces operates at 51.840 Mb/s over a single 75-ohm coaxial span.

Note This module works only in a high-density backplane.

For the DS3_EC1_48 module, the slot properties pane displays the following properties: Module View, Identification, Broadband Ports, DS-3, EC1, Protection, and Info.

C.3.12.1 Module View

The Module View displays a graphic of the DS3_EC1_48 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.3.12.2 Identification

The Identification Properties pane allows you to view and update DS3_EC1_48 identification information.

Table C-1008 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.12.3 Broadband Ports

The Broadband Ports Properties pane allows you to view the DS-3 or EC1 port information.

Table C-1009 Field Descriptions for the Broadband Ports

Field	Description
DS-3	
Port Number	Displays the DS-3 port number.
Rate	Displays the rate that the port is provisioned for.

Table C-1009 Field Descriptions for the Broadband Ports (continued)

Field	Description
EC1	
Port Number	Displays the EC1 port number.
Rate	Displays the rate that the port is provisioned for.

C.3.12.3.1 Provision Pluggable Dialog Box

In the Broadband Ports Properties pane, click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to create DS-3 or EC1 ports inside the DS3_EC1_48 card.

Table C-1010 Field Descriptions for the Provision Pluggable Dialog Box—PPM

Field	Description
Port Number	Select a port number (1 to 48) from the pull-down menu.
Port Rate	Select a port. You can choose either DS-3 or EC1 from the pull-down menu.

You can also delete a DS-3 or EC1 port listed under the Broadband Ports Properties pane. Select a DS-3 port listed in the DS-3 area or an EC1 port listed in the EC1 area; then click the **Delete** button.

C.3.12.4 DS-3

The DS-3 Properties pane allows you to view and update DS-3 information for the DS3_EC1_48 card. The DS-3 Properties pane contains the following tabs:

- C.3.12.4.1 Line Config Tab, page C-749
- C.3.12.4.2 Line Thresh 15 Min Tab, page C-749
- C.3.12.4.3 Line Thresh 1 Day Tab, page C-749
- C.3.12.4.4 PBit Path Thresh 15 Min Tab, page C-750
- C.3.12.4.5 PBit Path Thresh 1 Day Tab, page C-750
- C.3.12.4.6 CPBit Path Thresh 15 Min Tab, page C-751
- C.3.12.4.7 CPBit Path Thresh 1 Day Tab, page C-751
- C.3.12.4.8 STS Thresh 15 Min Tab, page C-752
- C.3.12.4.9 STS Thresh 1 Day Tab, page C-752
- C.3.12.4.10 Alarm Behavior Tab, page C-753
- C.3.12.4.11 Loopback Tab, page C-753
- C.3.12.4.12 J1 Path Trace Tab, page C-754
- C.3.12.4.13 Customer Info Tab, page C-754

C.3.12.4.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the DS-3 port.

Table C-1011 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the optical port.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. Values are: • 0–225 • 226–450
Line Type	Allows you to select the line framing type.
Detected Line Type	Displays the detected line type.
Line Coding	Allows you to define the transmission coding type.
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.12.4.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute threshold settings of the DS-3 port.

Table C-1012 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line (near-end only).
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line (near-end only).
LOSS-L	Displays the loss of signal seconds line (near-end only).

C.3.12.4.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day threshold settings of the DS-3 port.

Table C-1013 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line (near-end only).
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line (near-end only).
LOSS-L	Displays the loss of signal seconds line (near-end only).

C.3.12.4.4 PBit Path Thresh 15 Min Tab

The PBit Path Thresh 15 Min tab allows you to view and change near-end 15-minute PBit path threshold settings of the DS-3 port.

Table C-1014 Field Descriptions for the PBit Path Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.

C.3.12.4.5 PBit Path Thresh 1 Day Tab

The PBit Path Thresh 1 Day tab allows you to view and change near-end 1-day PBit path threshold settings of the DS-3 port.

Table C-1015 Field Descriptions for the PBit Path Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.

C.3.12.4.6 CPBit Path Thresh 15 Min Tab

The CBit Path Thresh 15 Min tab allows you to view and change near- and far-end 15-minute CBit path threshold settings of the DS-3 port.

Table C-1016 Field Descriptions for the CPBit Path Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
Far End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
UAS-P	Displays the unavailable seconds path information.

C.3.12.4.7 CPBit Path Thresh 1 Day Tab

The CBit Path Thresh 1 Day tab allows you to view and change near- and far-end 1-day CBit path threshold settings of the DS-3 port.

Table C-1017 Field Descriptions for the CPBit Path Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
Far End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
UAS-P	Displays the unavailable seconds path information.

C.3.12.4.8 STS Thresh 15 Min Tab

The STS Thresh 15 Min tab allows you to view and change near- and far-end 15-minute synchronous transport signal (STS) information for the DS-3 port.

Table C-1018 Field Descriptions for the STS Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.12.4.9 STS Thresh 1 Day Tab

The STS Thresh 1 Day tab allows you to view and change near- and far-end 1-day STS information for the DS-3 port.

Table C-1019 Field Descriptions for the STS Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.

Table C-1019 Field Descriptions for the STS Thresh 1 Day Tab (continued)

Field	Description
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.12.4.10 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update DS-3 port alarm profile information.

Table C-1020 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.12.4.11 Loopback Tab

The Loopback tab allows you to view and update DS-3 port loopback information.

Table C-1021 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Inhibit FE Loopback	If the Inhibit FE Loopback check box is checked for a DS-3 port, that port will ignore any FEAC line loop codes and will not loop back. The port can still be put into loopback manually using the Loopback Type column even if the Inhibit FE Loopback check box is selected. Only DS-3 ports can be configured to inhibit responding to FEAC loopback commands.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

C.3.12.4.12 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information on the DS-3 port.

Table C-1022 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.12.4.13 Customer Info Tab

The Customer Info tab displays the DS-3 port customer information.

Table C-1023 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the synchronous transport signal number.
Customer ID	The customer ID.
Service ID	The service ID.

C.3.12.5 EC1

The EC1 Properties pane allows you to view node near-end and far-end performance on an EC1 card to detect possible performance problems. The EC1 Properties pane contains the following tabs:

- C.3.12.5.1 Line Config Tab, page C-755
- C.3.12.5.2 Line Thresh 15 Min Tab, page C-755
- C.3.12.5.3 Line Thresh 1 Day Tab, page C-756
- C.3.12.5.4 Section Thresh 15 Min Tab, page C-756
- C.3.12.5.5 Section Thresh 1 Day Tab, page C-757
- C.3.12.5.6 Path Thresh 15 Min Tab, page C-757
- C.3.12.5.7 Path Thresh 1 Day Tab, page C-758
- C.3.12.5.8 Alarm Behavior Tab, page C-759
- C.3.12.5.9 STS Config Tab, page C-759
- C.3.12.5.10 Loopback Tab, page C-759
- C.3.12.5.11 J1 Path Trace Tab, page C-760

- C.3.12.5.12 Customer Info Tab, page C-760
- C.3.12.5.13 Section Trace Tab, page C-760

C.3.12.5.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the EC1 port.

Table C-1024 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number for the optical port.
Port Name	Allows you to add a name for the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
PJSTSMon#	Sets the EC-1 port that will be used for pointer justification. Values are Off or 1.
Line Length (feet)	Defines the distance (in feet) from backplane connection to the next termination point. Values are 0 through 225 (default) or 226 through 450.
Rx Equalization	For early EC1 card versions, equalization can be turned off if the line length is short or the environment is extremely cold; Rx Equalization should normally be set to On (checked, default).
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.12.5.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute threshold settings of the EC1 port.

Table C-1025 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.
Far End	
Port Number	Displays the optical port number.

Table C-1025 Field Descriptions for the Line Thresh 15 Min Tab (continued)

Field	Description
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.

C.3.12.5.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the near- and far-end 1-day threshold settings of the EC1 port.

Table C-1026 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
FC-L	Displays the failure count line.
UAS-L	Displays the unavailable seconds line.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
CV-L	Displays the coding violations line.
UAS-L	Displays the unavailable seconds line.
FC-L	Displays the failure count line.

C.3.12.5.4 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the near-end 15-minute section threshold information on the EC1 port.

Table C-1027 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.

Table C-1027 Field Descriptions for the Section Thresh 15 Min Tab (continued)

Field	Description
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.

C.3.12.5.5 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the near-end 1-day section threshold information on the EC1 port.

Table C-1028 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations section.
ES-S	Displays the errored seconds section.
SES-S	Displays the severely errored seconds section.
SEFS-S	Displays the severely errored framing seconds section.

C.3.12.5.6 Path Thresh 15 Min Tab

The Path Thresh 15 Min tab allows you to view and change near- and far-end 15-minute path threshold information on the EC1 port.

Table C-1029 Field Descriptions for the Path Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
PPJC-Pdet	Positive pointer justification count-VC4 path detected.
NPJC-Pdet	Negative pointer justification count-VC4 path detected.
PPJC-Pgen	Positive pointer justification count-VC4 path generated.
NPJC-Pgen	Negative pointer justification count-VC4 path generated.
PJCS-Pdet	Indicates the number of pointer justification count seconds (PJCS) detected on a particular path.
PJCS-Pgen	Indicates the number of pointer justification count seconds generated for a particular path.

Table C-1029 Field Descriptions for the Path Thresh 15 Min Tab (continued)

Field	Description
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.12.5.7 Path Thresh 1 Day Tab

The Path Thresh 1 Day tab allows you to view and change near- and far-end 1-day path threshold information on the EC1 port.

Table C-1030 Field Descriptions for the Path Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
PPJC-Pdet	Positive pointer justification count-VC4 path detected.
NPJC-Pdet	Negative pointer justification count-VC4 path detected.
PPJC-Pgen	Positive pointer justification count-VC4 path generated.
NPJC-Pgen	Negative pointer justification count-VC4 path generated.
PJCS-Pdet	Indicates the number of pointer justification count seconds (PJCS) detected on a particular path.
PJCS-Pgen	Indicates the number of pointer justification count seconds generated for a particular path.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.

Table C-1030 Field Descriptions for the Path Thresh 1 Day Tab (continued)

Field	Description
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.12.5.8 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and change EC1 port alarm profile information.

Table C-1031 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.12.5.9 STS Config Tab

The STS Config tab allows you to view and change the STS settings of the EC1 port.

Table C-1032 Field Descriptions for the STS Config Tab

Field	Description
STS Number	Displays the synchronous transport signal number information.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.

C.3.12.5.10 Loopback Tab

The Loopback tab allows you to view and change EC1 port loopback information.

Table C-1033 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

Table C-1033 Field Descriptions for the Loopback Tab (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

C.3.12.5.11 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information on the EC1 port.

Table C-1034 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.12.5.12 Customer Info Tab

The Customer Info tab displays EC1 port customer information.

Table C-1035 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the STS number.
Customer ID	The customer ID.
Service ID	The service ID.

C.3.12.5.13 Section Trace Tab

The Section Trace tab allows you to change the EC1 port section trace settings.

Table C-1036 Field Descriptions for the Section Trace Tab

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

C.3.12.6 Protection

The Protection Properties pane allows you to view and update protection group information.

Table C-1037 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.12.7 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the DS3_EC1_48 card.

Table C-1038 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.13 Slot Properties—DS3XM-12

The slot properties pane displays information about the Cisco ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The DS3XM-12 card provides 12 Telcordia-compliant GR-499-CORE M13 multiplexing functions. The DS3XM-12 converts twelve framed DS-3 network connections to 28x12 or 336 VT1.5s.

For the DS3XM-12 module, the slot properties pane displays the following properties: Module View, Identification, Line, STS, VT, DS-1, Loopback, Protection, Alarm Behavior, J1 Path Trace, and Info.

C.3.13.1 Module View

The Module View displays a graphic of the DS3XM-12 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.3.13.2 Identification

The Identification Properties pane allows you to view and update identification information.

Table C-1039 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Backplane Rate	Allows you to select STS12, STS48, STS96, or STS192 as the backplane rate.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.13.3 Line

The Line Properties pane allows you to view and update optical line performance monitoring information. The Line Properties pane contains the following tabs:

- C.3.13.3.1 Line Config Tab, page C-763

- C.3.13.3.2 Line Thresh 15 Min Tab, page C-763
- C.3.13.3.3 Line Thresh 1 Day Tab, page C-764
- C.3.13.3.4 PBit Path Thresh 15 Min Tab, page C-764
- C.3.13.3.5 PBit Path Thresh 1 Day Tab, page C-764
- C.3.13.3.6 CPBit Path Thresh 15 Min Tab, page C-765
- C.3.13.3.7 CPBit Path Thresh 1 Day Tab, page C-765

C.3.13.3.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the DS3XM-12 card.

Table C-1040 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the transmission coding type.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. • 0–131 (default) • 132–262
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.13.3.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute threshold settings of the DS3XM-12 card.

Table C-1041 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line (near-end only).
ES-L	Displays the errored seconds line.

Table C-1041 Field Descriptions for the Line Thresh 15 Min Tab (continued)

Field	Description
SES-L	Displays the severely errored seconds line (near-end only).
LOSS-L	Displays the loss of signal seconds line (near-end only).

C.3.13.3.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day threshold settings of the DS3XM-12 card.

Table C-1042 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Port Number	Displays the optical port number.
CV-L	Displays the coding violations line (near-end only).
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line (near-end only).
LOSS-L	Displays the loss of signal seconds line (near-end only).

C.3.13.3.4 PBit Path Thresh 15 Min Tab

The PBit Thresh 15 Min tab allows you to view and change the near-end 15-minute PBit path threshold information on the card.

Table C-1043 Field Descriptions for the PBit Path Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.

C.3.13.3.5 PBit Path Thresh 1 Day Tab

The PBit Path Thresh 1 Day tab allows you to view and change the near-end 1-day PBit path threshold information on the DS3XM-12 card.

Table C-1044 Field Descriptions for the PBit Path Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.

C.3.13.3.6 CPBit Path Thresh 15 Min Tab

The CBit Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute CBit path threshold information on the DS3XM-12 card.

Table C-1045 Field Descriptions for the CPBit Path Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
UAS-P	Displays the unavailable seconds path information.
Far End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
UAS-P	Displays the unavailable seconds path information.

C.3.13.3.7 CPBit Path Thresh 1 Day Tab

The CBit Thresh 1 Day tab allows you to view and change the near- and far-end 1-day CBit path threshold information on the DS3XM-12 card.

Table C-1046 Field Descriptions for the CPBit Path Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
UAS-P	Displays the unavailable seconds path information.
Far End	
Port Number	Displays the optical port number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
UAS-P	Displays the unavailable seconds path information.

C.3.13.4 STS

The STS Properties pane allows you to view and update DS3XM-12 Synchronous Transport Signal (STS) information. The STS Properties pane contains the following tabs:

- C.3.13.4.1 STS Thresh 15 Min Tab, page C-766
- C.3.13.4.2 STS Thresh 1 Day Tab, page C-767
- C.3.13.4.3 Customer Info Tab, page C-767

C.3.13.4.1 STS Thresh 15 Min Tab

The STS Thresh 15 Min tab allows you to view and change near- and far-end 15-minute STS information for the DS3XM-12 card.

Table C-1047 Field Descriptions for the STS Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

Table C-1047 Field Descriptions for the STS Thresh 15 Min Tab (continued)

Field	Description
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.13.4.2 STS Thresh 1 Day Tab

The STS Thresh 1 Day tab allows you to view and change near- and far-end 1-day STS information for the DS3XM-12 card.

Table C-1048 Field Descriptions for the STS Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
STS Number	Displays the synchronous transport signal number.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.

C.3.13.4.3 Customer Info Tab

The Customer Info tab displays the customer information.

Table C-1049 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the synchronous transport signal number.
Customer ID	Displays the customer ID.
Service ID	Displays the service ID.

C.3.13.5 VT

The VT Properties pane allows you to view and update DS3XM-12 virtual tributary information. The VT Properties pane contains the following tabs:

- C.3.13.5.1 VT Thresh 15 Min Tab, page C-768
- C.3.13.5.2 VT Thresh 1 Day Tab, page C-768
- C.3.13.5.3 Customer Info Tab, page C-769

C.3.13.5.1 VT Thresh 15 Min Tab

The VT Thresh 15 Min tab displays near- and far-end 15-minute VT threshold information.

Table C-1050 Field Descriptions for the VT Thresh 15 Min Tab

Field	Description
Near End	
VT Number	Displays VT number information.
CV-V	Displays the coding violations–VT path information.
ES-V	Displays the errored seconds–VT path information.
SES-V	Displays the severely errored seconds–VT path information.
UAS-V	Displays the unavailable seconds–VT path information.
Far End	
VT Number	Displays VT number information.
CV-V	Displays the coding violations–VT path information.
ES-V	Displays the errored seconds–VT path information.
SES-V	Displays the severely errored seconds–VT path information.
UAS-V	Displays the unavailable seconds–VT path information.

C.3.13.5.2 VT Thresh 1 Day Tab

The VT Thresh 1 Day tab displays near- and far-end 1-day VT threshold information.

Table C-1051 Field Descriptions for the VT Thresh 1 Day Tab

Field	Description
Near End	
VT Number	Displays VT number information.
CV-V	Displays the coding violations–VT path information.
ES-V	Displays the errored seconds–VT path information.
SES-V	Displays the severely errored seconds–VT path information.
UAS-V	Displays the unavailable seconds–VT path information.
Far End	
VT Number	Displays VT number information.
CV-V	Displays the coding violations–VT path information.

Table C-1051 Field Descriptions for the VT Thresh 1 Day Tab (continued)

Field	Description
ES-V	Displays the errored seconds–VT path information.
SES-V	Displays the severely errored seconds–VT path information.
UAS-V	Displays the unavailable seconds–VT path information.

C.3.13.5.3 Customer Info Tab

The Customer Info tab displays the customer information.

Table C-1052 Field Descriptions for the Customer Info Tab

Field	Description
VT Number	Displays VT number information.
Customer ID	The customer ID.
Service ID	The service ID.

C.3.13.6 DS-1

The DS-1 Properties pane allows you to view and update DS3XM-12 DS-1 information. The DS-1 Properties pane contains the following tabs:

- C.3.13.6.1 DS-1 Config Tab, page C-769
- C.3.13.6.2 Path Thresh 15 Min Tab, page C-769
- C.3.13.6.3 Path Thresh 1 Day Tab, page C-770

C.3.13.6.1 DS-1 Config Tab

The DS-1 Config tab allows you to view and change the DS-1 configuration settings for the DS3XM-12 card.

Table C-1053 Field Descriptions for the DS-1 Config Tab

Field	Description
Port Number	Displays the port number information.
Port Name	Allows you to add a name for the optical port. The name can contain up to 32 alphanumeric or special characters. By default, the port name is blank.
Line Type	Allows you to select the line framing type.
FDL Mode	Allows you to select the facility data link mode.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.13.6.2 Path Thresh 15 Min Tab

The Path Thresh 15 Min tab allows you to view and change the 15-minute path threshold information for the DS3XM-12 card.

Table C-1054 Field Descriptions for the Path Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the port number information.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
Port No.	Displays the port number information.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
CSS-P	Displays the controlled slip seconds path information.
ESA-P	Displays the errored seconds type A path information.
ESB-P	Displays the errored seconds type B path information.
SEFS-P	Displays the severely errored framing seconds path information.
ESNE	Displays the network performance errored seconds (near end) during a fixed measurement interval.
SESNE	Displays the network performance severely errored seconds (near end) during a fixed measurement interval.
UASNE	Displays the network performance unavailable seconds (near end) during a fixed measurement interval.
ESFE	Displays the network performance errored seconds (far end) during a fixed measurement interval.
SESFE	Displays the network performance severely errored seconds (far end) during a fixed measurement interval.
UASFE	Displays the network performance unavailable seconds (far end) during a fixed measurement interval.

C.3.13.6.3 Path Thresh 1 Day Tab

The Path Thresh 1 Day tab allows you to view and change the 1-day path threshold information for the DS3XM-12 card.

Table C-1055 Field Descriptions for the Path Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number information.
CV-P	Displays the coding violations path information.

Table C-1055 Field Descriptions for the Path Thresh 1 Day Tab (continued)

Field	Description
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
FC-P	Displays the failure count path information.
Far End	
Port No.	Displays the port number information.
CV-P	Displays the coding violations path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
CSS-P	Displays the controlled slip seconds path information.
ESA-P	Displays the errored seconds type A path information.
ESB-P	Displays the errored seconds type B path information.
SEFS-P	Displays the severely errored framing seconds path information.
ESNE	Displays the network performance errored seconds (near end) during a fixed measurement interval.
SESNE	Displays the network performance severely errored seconds (near end) during a fixed measurement interval.
UASNE	Displays the network performance unavailable seconds (near end) during a fixed measurement interval.
ESFE	Displays the network performance errored seconds (far end) during a fixed measurement interval.
SESFE	Displays the network performance severely errored seconds (far end) during a fixed measurement interval.
UASFE	Displays the network performance unavailable seconds (far end) during a fixed measurement interval.

C.3.13.7 Loopback

The Loopback Properties pane allows you to view and update DS3XM-12 loopback information. The Properties pane contains the following tabs:

- C.3.13.7.1 DS-3 Tab, page C-771
- C.3.13.7.2 DS-1 Tab, page C-772

C.3.13.7.1 DS-3 Tab

The DS-3 tab allows you to view and change the DS-3 loopback information of the DS3XM-12 card.

Table C-1056 Field Descriptions for the DS-3 Tab

Subfield	Description
Port Number	Displays the optical port number.
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).
Send Code	Allows you to select No Code (default) or Line Loop Code. Selecting Line Loop Code inserts a line loop activate Far End Action Code (FEAC) in the CBIT overhead transmitting to the connected facility. This code initiates a loopback from the facility to the ONS 15454. Selecting No Code sends a line loop deactivate FEAC code to the connected equipment, which removes the loopback. You can also insert an FEAC for the 28 individual DS-1 circuits transmuxed into a DS-3 circuit.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.
Inhibit FE Loopback	If the Inhibit FE Loopback check box is checked for a DS-3 port, that port will ignore any FEAC line loop codes and will not loop back. The port can still be put into loopback manually using the Loopback Type column even if the Inhibit FE Loopback check box is selected. Only DS-3 ports can be configured to inhibit responding to FEAC loopback commands.

C.3.13.7.2 DS-1 Tab

The DS-1 tab allows you to view and change the DS-1 loopback information of the DS3XM-12 card.

Table C-1057 Field Descriptions for the DS-1 Tab

Subfield	Description
Port Number	Displays the optical port number.
Derived State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT). **Note** The Derived State field is available only for release 3.4.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).
Send Code	Allows you to select No Code (default) or Line Loop Code. Selecting Line Loop Code inserts a line loop activate Far End Action Code (FEAC) in the CBIT overhead transmitting to the connected facility. This code initiates a loopback from the facility to the ONS 15454. Selecting No Code sends a line loop deactivate FEAC code to the connected equipment, which removes the loopback. You can also insert an FEAC for the 28 individual DS-1 circuits transmuxed into a DS-3 circuit.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

C.3.13.8 Protection

The Protection Properties pane allows you to view and update DS3XM-12 protection group information.

Table C-1058 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.13.9 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update DS3XM-12 alarm profile information.

Table C-1059 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.13.10 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1060 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.13.11 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the DS3XM-12 card.

Table C-1061 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.14 Slot Properties—E-1

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 SDH E-1 cards (E-1-N-14) provide 14 E-1 ports. Each port operates at 2.048 Mb/s.

For the E-1 card, the slot properties pane displays the following properties: Module View, Identification, Line, VC-12, Loopback, Protection, and Alarm Behavior.

C.3.14.1 Module View

The Module View displays a graphic of the E-1 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.3.14.2 Identification

The Identification Properties pane allows you to view and update E-1 identification information.

Table C-1062 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.

Table C-1062 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.14.3 Line

The Line Properties pane allows you to view and update E-1 line performance monitoring information.

Table C-1063 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the port number.
Port Name	Allows you to add a name for the port.
SD BER	Sets the signal deterioration bit error rate.
SF BER	Sets the signal failure bit error rate.
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the E1 transmission coding type.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Threshold 15 Minutes	
Port Number	Displays the port number
CV-L	Coding violations - line
ES-L	Errored seconds - line
SES-L	Severely errored seconds - line
Line Threshold 1 Day	
Port Number	Displays the port number
CV-L	Coding violations - line

Table C-1063 Field Descriptions for the Line Properties Pane (continued)

Field	Description
ES-L	Errored seconds - line
SES-L	Severely errored seconds - line
Path Threshold 15 Minutes - Near End, Far End	
Port Number	Displays the port number
CV-P/EB-P	Coding violations/errored bits - path
BBE-P	Background block errors - path
ES-P	Errored seconds - path
SES-P	Severely errored seconds - path
UAS-P	Unavailable seconds - path
AISS-P	Alarm indication signal seconds - path
Path Threshold 1 Day - Near End, Far End	
Port Number	Displays the port number
CV-P/EB-P	Coding violations/errored bits - path
BBE-P	Background block errors - path
ES-P	Errored seconds - path
SES-P	Severely errored seconds - path
UAS-P	Unavailable seconds - path
AISS-P	Alarm indication signal seconds - path

C.3.14.4 VC-12

The VC-12 Properties pane allows you to view and update E-1 VC-12 information.

Table C-1064 Field Descriptions for the VC-12 Properties Pane

Field	Description
Threshold 15 Minutes - Near End, Far End	
VC Number	The VC number
EB	Errored bits
BBE	Background block errors
ES	Errored seconds
SES	Severely errored seconds
UAS	Unavailable seconds
Threshold 1 Day - Near End, Far End	
VC Number	The VC number
EB	Errored bits
BBE	Background block errors
ES	Errored seconds

Table C-1064 Field Descriptions for the VC-12 Properties Pane (continued)

Field	Description
SES	Severely errored seconds
UAS	Unavailable seconds
Customer Info	
VC Number	The VC number
Customer ID	The user-defined customer ID number
Service ID	The user-defined service ID number

C.3.14.5 Loopback

The Loopback Properties pane allows you to view and update E-1 loopback information.

Table C-1065 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the current loopback state.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.3.14.6 Protection

The Protection Properties pane allows you to view and update E-1 protection group information.

Table C-1066 Field descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.14.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update E-1 alarm profile information.

Table C-1067 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.

Table C-1067 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.15 Slot Properties—E1_21_E3_DS3_3 and E1_63_E3_DS3_3

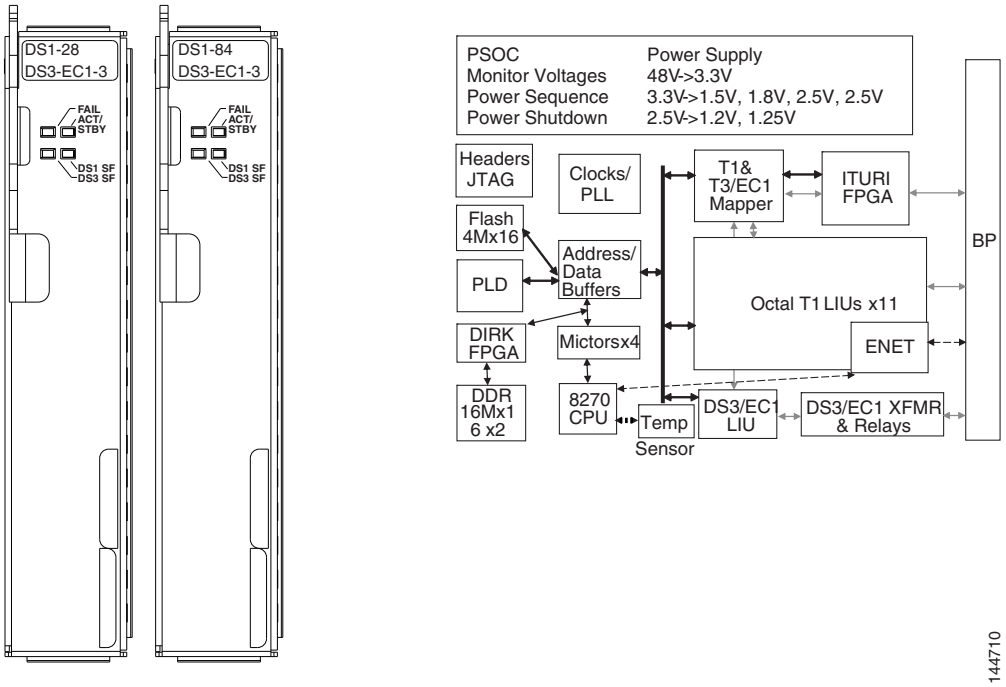
The ONS 15310 MA SDH E1_21_E3_DS3_3 and E1_63_E3_DS3_3 cards provide 21 and 63 Telcordia-compliant E1 ports, and three E3/DS-3 ports. Each E1 port operates at 2.048 Mb/s. Each E3/DS-3 port operates at 34.368 Mb/s/44.736 Mb/s over a single 75-ohm, 728-A or equivalent coaxial span. These cards can operate as working or protect cards in 1:1 protection schemes.

In addition, the E1_21_E3_DS3_3 card provides retiming, so that any outgoing E1 signal can be retimed to eliminate accumulated jitter and wander at the point of egress from a synchronous network. Any incoming E1 signal from the transport element can also be used as a timing source.

The E1_21_E3_DS3_3 and E1_63_E3_DS3_3 cards can be installed in slots 1, 2, 5, and 6. Cards installed in slots 1 and 2 correspond with the electrical interface assembly (EIA) installed on side A at the rear of the shelf assembly, and cards in slots 5 and 6 correspond with the EIA installed on side B.

The following figure shows the E1_21_E3_DS3_3 and E1_63_E3_DS3_3 card faceplates and block diagram.

Figure C-65 E1_21_E3_DS3_3 and E1_63_E3_DS3_3 Card Faceplates and Block Diagram



For the E1_21_E3_DS3_3 and E1_63_E3_DS3_3 cards, the slot properties pane displays the following properties: Module View, Identification, Broadband Ports, E1, DS3, E3, Protection, and Info.

C.3.15.1 Module View

The Module View displays a graphic of the E1_21_E3_DS3_3 or E1_63_E3_DS3_3 card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphics.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its ports. Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the module.

C.3.15.2 Identification

The Identification Properties pane allows you to view and update E1_21_E3_DS3_3 or E1_63_E3_DS3_3 card identification information.

Table C-1068 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.

Table C-1068 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Displays the administration state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.15.3 Broadband Ports

The Broadband Ports Properties pane allows you to view, create, and delete DS-3 and E3 broadband ports.

Table C-1069 Field Descriptions for the Broadband Ports

Field	Description
Create	Click the **Create** button to launch the Create Port dialog box and create a new broadband port. Use the **Port Number** drop-down list to choose an available port. Use the **Port Rate** drop-down list to specify the port rate (DS-3 or E3). After making your selections, click **OK**.
Delete	Click the **Delete** button to delete an existing DS-3 or E3 broadband port.
E3/DS3	
Port Number	Displays the DS-3 or E3 port number.
Rate	Displays the rate that the slot is provisioned for.

C.3.15.4 E1

The E1 Properties pane allows you to view and update E1 information for the card. The E1 Properties pane contains the following tabs:

- C.3.15.4.1 Line Config Tab, page C-781
- C.3.15.4.2 Line Thresh 15 Min Tab, page C-782
- C.3.15.4.3 Line Thresh 1 Day Tab, page C-782
- C.3.15.4.4 Electric Path Thresh 15 Min Tab, page C-783
- C.3.15.4.5 Electric Path Thresh 1 Day Tab, page C-783
- C.3.15.4.6 VC LO Thresh 15 Min Tab, page C-784
- C.3.15.4.7 VC LO Thresh 1 Day Tab, page C-784

- C.3.15.4.8 Alarm Behavior Tab, page C-785
- C.3.15.4.9 Loopback Tab, page C-785
- C.3.15.4.10 J1 Path Trace Tab, page C-786
- C.3.15.4.11 Customer Info Tab, page C-786

C.3.15.4.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the port.

Table C-1070 Field Descriptions for the Line Config Tab

Field	Description
Port No.	Displays the port number.
Port Name	Displays the name of the port.
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the transmission coding type.
Admin State	The port administration state. It can be: • Unlocked • Locked, disabled • Locked, maintenance • Unlocked, automatic in service
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Send DoNot Use	When checked, sends a do not use (DUS) message on the S1 byte.
Provides Sync	When checked, the card is provisioned as an NE timing reference.
Enable Sync Message	When checked, enables synchronization status messages, which allow the node to choose the best timing source.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS-V for DS1-AIS/Defects	When checked, sends an AIS-V instead of a DS-1 AIS (from the line side toward the backplane/system side) when a line-side trigger occurs.
Raise AIS for LOF	Sends an AIS when a loss of frame (LOF) occurs.

Table C-1070 Field Descriptions for the Line Config Tab (continued)

Field	Description
Admin SSM	If the node does not receive an SSM signal, it defaults to STU. Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4
SA Bit	Transmits the SSM message.

C.3.15.4.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute line threshold settings of the port.

Table C-1071 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Port No.	Port number.
EB-L	Errored blocks line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal line.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.4.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day line threshold settings of the port.

Table C-1072 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Port No.	Port number.
EB-L	Errored blocks line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal line.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.4.4 Electric Path Thresh 15 Min Tab

The Electric Path Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute electric path threshold settings of the port.

Table C-1073 Field Descriptions for the Electric Path Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Port number.
BBE	Background block errors.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
AISS-P	Alarm indication signal seconds path.
Far End	
Port No.	Port number.
BBE	Background block errors.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.4.5 Electric Path Thresh 1 Day Tab

The Electric Path Thresh 1 Day tab allows you to view and change the near- and far-end 1-day electric path threshold settings of the port.

Table C-1074 Field Descriptions for the Electric Path Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Port number.
BBE	Background block errors.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
AISS-P	Alarm indication signal seconds path.
Far End	
Port No.	Port number.
BBE	Background block errors.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.

Table C-1074 Field Descriptions for the Electric Path Thresh 1 Day Tab (continued)

Field	Description
UAS-P	Unavailable seconds path.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.4.6 VC LO Thresh 15 Min Tab

The VC LO Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute VC low order threshold settings of the port.

Table C-1075 Field Descriptions for the VC LO Thresh 15 Min Tab

Field	Description
Near End	
VT No.	VT number.
EB	Errored blocks.
ES	Errored seconds.
SES	Severely errored seconds.
UAS	Unavailable seconds.
FC	Failure count.
Far End	
VT No.	VT number.
EB	Errored blocks.
ES	Errored seconds.
SES	Severely errored seconds.
UAS	Unavailable seconds.
FC	Failure count.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.4.7 VC LO Thresh 1 Day Tab

The VC LO Thresh 1 Day tab allows you to view and change the near- and far-end 1-day VC low order threshold settings of the port.

Table C-1076 Field Descriptions for the VC LO Thresh 1 Day Tab

Field	Description
Near End	
VT No.	VT number.
EB	Errored blocks.
ES	Errored seconds.
SES	Severely errored seconds.
UAS	Unavailable seconds.

Table C-1076 Field Descriptions for the VC LO Thresh 1 Day Tab (continued)

Field	Description
FC	Failure count.
Far End	
VT No.	VT number.
EB	Errored blocks.
ES	Errored seconds.
SES	Severely errored seconds.
UAS	Unavailable seconds.
FC	Failure count.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.4.8 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update port alarm profile information.

Table C-1077 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.15.4.9 Loopback Tab

The Loopback tab allows you to view and update port loopback information.

Table C-1078 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be locked, Maintenance before you can configure the loopback type.

Table C-1078 Field Descriptions for the Loopback Tab (continued)

Field	Description
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

C.3.15.4.10 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information.

Table C-1079 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
VC4 No.	Displays the VC4 number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.15.4.11 Customer Info Tab

The Customer Info tab displays the port customer information.

Table C-1080 Field Descriptions for the Customer Info Tab

Field	Description
STS	
STS Number	Displays the synchronous transport signal number.
Customer ID	The customer ID.
Service ID	The service ID.
VT	
STS Number	Displays the synchronous transport signal number.
Customer ID	The customer ID.
Service ID	The service ID.

C.3.15.5 DS3

The DS3 Properties pane allows you to view and update DS-3 information for the card. The DS3 Properties pane contains the following tabs:

- C.3.15.5.1 Line Config Tab, page C-787
- C.3.15.5.2 Line Thresh 15 Min Tab, page C-788
- C.3.15.5.3 Line Thresh 1 Day Tab, page C-788
- C.3.15.5.4 PBit Thresh 15 Min Tab, page C-788
- C.3.15.5.5 PBit Thresh 1 Day Tab, page C-789
- C.3.15.5.6 CPBit Thresh 15 Min Tab, page C-789
- C.3.15.5.7 CPBit Thresh 1 Day Tab, page C-789
- C.3.15.5.8 VC4 Thresh 15 Min Tab, page C-790
- C.3.15.5.9 VC4 Thresh 1 Day Tab, page C-791
- C.3.15.5.10 VC LO Thresh 15 Min Tab, page C-791
- C.3.15.5.11 VC LO Thresh 1 Day Tab, page C-792
- C.3.15.5.12 Alarm Behavior Tab, page C-792
- C.3.15.5.13 Loopback Tab, page C-793
- C.3.15.5.14 J1 Path Trace Tab, page C-793
- C.3.15.5.15 Customer Info Tab, page C-794

C.3.15.5.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the port.

Table C-1081 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number for the port.
Port Name	Allows you to add a name for the port.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. Values are 0 through 225 (default) or 226 through 450.
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the transmission coding type.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.15.5.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute line threshold settings of the port.

Table C-1082 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Port Number	Displays the port number.
EB-L	Displays the errored blocks line information.
ES-L	Displays the errored seconds line information.
SES-L	Displays the severely errored seconds line information.
LOSS-L	Displays the loss of signal line information.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.5.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day line threshold settings of the port.

Table C-1083 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Port Number	Displays the port number.
EB-L	Displays the errored blocks line information.
ES-L	Displays the errored seconds line information.
SES-L	Displays the severely errored seconds line information.
LOSS-L	Displays the loss of signal line information.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.5.4 PBit Thresh 15 Min Tab

The PBit Thresh 15 Min tab displays 15-minute PBit path threshold information of the port.

Table C-1084 Field Descriptions for the PBit Thresh 15 Min Tab

Field	Description
Port No.	Displays the port number.
EB-P	Displays the errored blocks path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.5.5 PBit Thresh 1 Day Tab

The PBit Thresh 1 Day tab displays 1-day PBit path threshold information of the port.

Table C-1085 Field Descriptions for the PBit Thresh 1 Day Tab

Field	Description
Port No.	Displays the optical port number.
EB-P	Displays the errored blocks path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal path information.
AISS-P	Displays the alarm indication signal seconds path information.
UAS-P	Displays the unavailable seconds path information.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.5.6 CPBit Thresh 15 Min Tab

The CPBit Thresh 15 Min tab displays near- and far-end 15-minute CPBit path threshold information of the port.

Table C-1086 Field Descriptions for the CPBit Thresh 15 Min Tab

Field	Description
Near End	
Port No.	Displays the port number.
EB-P	Displays the errored blocks path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
Far End	
Port No.	Displays the port number.
EB-P	Displays the errored blocks path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal–path information.
UAS-P	Displays the unavailable seconds path information.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.5.7 CPBit Thresh 1 Day Tab

The CPBit Thresh 1 Day tab displays near- and far-end 1-day CPBit path threshold information of the port.

Table C-1087 Field Descriptions for the CPBit Thresh 1 Day Tab

Field	Description
Near End	
Port No.	Displays the port number.
EB-P	Displays the errored blocks path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
UAS-P	Displays the unavailable seconds path information.
Far End	
Port No.	Displays the port number.
EB-P	Displays the errored blocks path information.
ES-P	Displays the errored seconds path information.
SES-P	Displays the severely errored seconds path information.
SAS-P	Displays the severely errored frame/alarm indication signal–path information.
UAS-P	Displays the unavailable seconds path information.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.5.8 VC4 Thresh 15 Min Tab

The VC4 Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute VC4 threshold settings of the port.

Table C-1088 Field Descriptions for the VC4 Thresh 15 Min Tab

Field	Description
Near End	
VC-4 Number	VC-4 number.
EB-HP	Errored blocks–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
FC-HP	Failure count–higher-order path.
Far End	
VC-4 Number	VC-4 number.
EB-HP	Errored blocks–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
FC-HP	Failure count–higher-order path.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.5.9 VC4 Thresh 1 Day Tab

The VC4 Thresh 1 Day tab allows you to view and change the near- and far-end 1-day VC4 threshold settings of the port.

Table C-1089 Field Descriptions for the VC4 Thresh 1 Day Tab

Field	Description
Near End	
VC-4 Number	VC-4 number.
EB-HP	Errored blocks–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
FC-HP	Failure count–higher-order path.
Far End	
VC-4 Number	VC-4 number.
EB-HP	Errored blocks–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
FC-HP	Failure count–higher-order path.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.5.10 VC LO Thresh 15 Min Tab

The VC LO Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute VC low order threshold settings of the port.

Table C-1090 Field Descriptions for the VC LO Thresh 15 Min Tab

Field	Description
Near End	
VT No.	VT number.
EB	Errored blocks.
ES	Errored seconds.
SES	Severely errored seconds.
UAS	Unavailable seconds.
FC	Failure count.
Far End	
VT No.	VT number.
EB	Errored blocks.
ES	Errored seconds.

Table C-1090 Field Descriptions for the VC LO Thresh 15 Min Tab (continued)

Field	Description
SES	Severely errored seconds.
UAS	Unavailable seconds.
FC	Failure count.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.5.11 VC LO Thresh 1 Day Tab

The VC LO Thresh 1 Day tab allows you to view and change the near- and far-end 1-day VC low order threshold settings of the port.

Table C-1091 Field Descriptions for the VC LO Thresh 1 Day Tab

Field	Description
Near End	
VT No.	VT number.
EB	Errored blocks.
ES	Errored seconds.
SES	Severely errored seconds.
UAS	Unavailable seconds.
FC	Failure count.
Far End	
VT No.	VT number.
EB	Errored blocks.
ES	Errored seconds.
SES	Severely errored seconds.
UAS	Unavailable seconds.
FC	Failure count.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.5.12 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update port alarm profile information.

Table C-1092 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.

Table C-1092 Field Descriptions for the Alarm Behavior Tab (continued)

Field	Description
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.15.5.13 Loopback Tab

The Loopback tab allows you to view and update port loopback information.

Table C-1093 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.
Inhibit FE Loopback	If the Inhibit FE Loopback check box is checked for a port, that port will ignore any FEAC line loop codes and will not loop back. The port can still be put into loopback manually using the Loopback Type column even if the Inhibit FE Loopback check box is selected. Only DS-3 ports can be configured to inhibit responding to FEAC loopback commands.

C.3.15.5.14 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information.

Table C-1094 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
VC4 Number	Displays the VC4 number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.

Table C-1094 Field Descriptions for the J1 Path Trace Tab (continued)

Field	Description
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.15.5.15 Customer Info Tab

The Customer Info tab displays the port customer information.

Table C-1095 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the synchronous transport signal number.
Customer ID	The customer ID.
Service ID	The service ID.

C.3.15.6 E3

The E3 Properties pane allows you to view and update E3 information for the card. The E3 Properties pane contains the following tabs:

- C.3.15.6.1 Line Config Tab, page C-794
- C.3.15.6.2 Line Thresh 15 Min Tab, page C-795
- C.3.15.6.3 Line Thresh 1 Day Tab, page C-795
- C.3.15.6.4 Electric Path Thresh 15 Min Tab, page C-796
- C.3.15.6.5 Electric Path Thresh 1 Day Tab, page C-796
- C.3.15.6.6 VC4 Thresh 15 Min Tab, page C-796
- C.3.15.6.7 VC4 Thresh 1 Day Tab, page C-797
- C.3.15.6.8 VC LO Thresh 15 Min Tab, page C-797
- C.3.15.6.9 VC LO Thresh 1 Day Tab, page C-798
- C.3.15.6.10 Alarm Behavior Tab, page C-799
- C.3.15.6.11 Loopback Tab, page C-799
- C.3.15.6.12 J1 Path Trace Tab, page C-800
- C.3.15.6.13 Customer Info Tab, page C-800

C.3.15.6.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the port.

Table C-1096 Field Descriptions for the Line Config Tab

Field	Description
Port No.	Displays the port number.
Port Name	Displays the name of the port.
Admin State	The port administration state. It can be: • Unlocked • Locked, disabled • Locked, maintenance • Unlocked, automatic in service
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
AINS Soak (H:M)	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.15.6.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute line threshold settings of the port.

Table C-1097 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Port No.	Displays the port number.
EB-L	Displays the errored blocks line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.
LOSS-L	Displays the loss of signal line.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.6.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day line threshold settings of the port.

Table C-1098 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Port No.	Displays the port number.
EB-L	Displays the errored blocks line.
ES-L	Displays the errored seconds line.
SES-L	Displays the severely errored seconds line.

Table C-1098 Field Descriptions for the Line Thresh 1 Day Tab (continued)

Field	Description
LOSS-L	Displays the loss of signal line.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.6.4 Electric Path Thresh 15 Min Tab

The Electric Path Thresh 15 Min tab allows you to view and change the 15-minute electrical path threshold settings of the port.

Table C-1099 Field Descriptions for the Electric Path Thresh 15 Min Tab

Field	Description
Port No.	Port number.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.6.5 Electric Path Thresh 1 Day Tab

The Electric Path Thresh 1 Day tab allows you to view and change the 1-day electrical path threshold settings of the port.

Table C-1100 Field Descriptions for the Electric Path Thresh 1 Day Tab

Field	Description
Port No.	Port number.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.6.6 VC4 Thresh 15 Min Tab

The VC4 Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute VC4 threshold settings of the port.

Table C-1101 Field Descriptions for the VC4 Thresh 15 Min Tab

Field	Description
Near End	
VC-4 Number	VC-4 number.
EB-HP	Errored blocks–higher-order path.
ES-HP	Errored seconds–higher-order path.

Table C-1101 Field Descriptions for the VC4 Thresh 15 Min Tab (continued)

Field	Description
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
FC-HP	Failure count–higher-order path.
Far End	
VC-4 Number	VC-4 number.
EB-HP	Errored blocks–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
FC-HP	Failure count–higher-order path.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.6.7 VC4 Thresh 1 Day Tab

The VC4 Thresh 1 Day tab allows you to view and change the near- and far-end 1-day VC4 threshold settings of the port.

Table C-1102 Field Descriptions for the VC4 Thresh 1 Day Tab

Field	Description
Near End	
VC-4 Number	VC-4 number.
EB-HP	Errored blocks–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
FC-HP	Failure count–higher-order path.
Far End	
VC-4 Number	VC-4 number.
EB-HP	Errored blocks–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
FC-HP	Failure count–higher-order path.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.6.8 VC LO Thresh 15 Min Tab

The VC LO Thresh 15 Min tab allows you to view and change the near- and far-end 15-minute VC low order threshold settings of the port.

Table C-1103 Field Descriptions for the VC LO Thresh 15 Min Tab

Field	Description
Near End	
VT No.	VT number.
EB	Errored blocks.
ES	Errored seconds.
SES	Severely errored seconds.
UAS	Unavailable seconds.
FC	Failure count.
Far End	
VT No.	VT number.
EB	Errored blocks.
ES	Errored seconds.
SES	Severely errored seconds.
UAS	Unavailable seconds.
FC	Failure count.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.6.9 VC LO Thresh 1 Day Tab

The VC LO Thresh 1 Day tab allows you to view and change the near- and far-end 1-day VC low order threshold settings of the port.

Table C-1104 Field Descriptions for the VC LO Thresh 1 Day Tab

Field	Description
Near End	
VT No.	VT number.
EB	Errored blocks.
ES	Errored seconds.
SES	Severely errored seconds.
UAS	Unavailable seconds.
FC	Failure count.
Far End	
VT No.	VT number.
EB	Errored blocks.
ES	Errored seconds.
SES	Severely errored seconds.
UAS	Unavailable seconds.

Table C-1104 Field Descriptions for the VC LO Thresh 1 Day Tab (continued)

Field	Description
FC	Failure count.
Reset To Defaults	Resets the value of the parameters to the default value.

C.3.15.6.10 Alarm Behavior Tab

The Alarm Behavior tab allows you to view and update port alarm profile information.

Table C-1105 Field Descriptions for the Alarm Behavior Tab

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.15.6.11 Loopback Tab

The Loopback tab allows you to view and update port loopback information.

Table C-1106 Field Descriptions for the Loopback Tab

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Send Code	Allows you to send loopback commands to the far end.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.
Inhibit FE Loopback	If the Inhibit FE Loopback check box is checked for a port, that port will ignore any FEAC line loop codes and will not loop back. The port can still be put into loopback manually using the Loopback Type column even if the Inhibit FE Loopback check box is selected. Only DS-3 ports can be configured to inhibit responding to FEAC loopback commands.

C.3.15.6.12 J1 Path Trace Tab

The J1 Path Trace tab allows you to view and retrieve J1 path trace information.

Table C-1107 Field Descriptions for the J1 Path Trace Tab

Field	Description
Port Number	Displays the port number.
VC4 Number	Displays the synchronous transport signal number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.3.15.6.13 Customer Info Tab

The Customer Info tab displays the port customer information.

Table C-1108 Field Descriptions for the Customer Info Tab

Field	Description
STS Number	Displays the synchronous transport signal number.
Customer ID	The customer ID.
Service ID	The service ID.

C.3.15.7 Protection

The Protection Properties pane allows you to view and update E1_21_E3_DS3_3 or E1_63_E3_DS3_3 protection group information.

Table C-1109 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays the list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.15.8 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the E1_21_E3_DS3_3 or E1_63_E3_DS3_3 card.

Table C-1110 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.16 Slot Properties—E1-42

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The 42-port ONS 15454 SDH E1-42 card provides 42 ITU-compliant, G.703 E-1 ports. Each port of the E1-42 card operates at 2.048 Mb/s over a 120-ohm, twisted-pair copper cable. Front mount electrical connection is done using the FMEC E1-120 NP card for unprotected operation, the FMEC E1-120PROA for 1:3 protection in the left side of the shelf, or the FMEC E1-120PROB for 1:3 protection on the right side of the shelf.

For the E1-42 module, the slot properties pane displays the following properties: Module View, Identification, Line, VC-12, VC-4, Loopback, Protection, Alarm Behavior, J1 Path Trace, and Info.

C.3.16.1 Module View

The Module View displays a graphic of the E1-42 card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphics.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its ports. Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the module.

C.3.16.2 Identification

The Identification Properties pane allows you to view and update E1-42 card identification information.

Table C-1111 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.

Table C-1111 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.16.3 Line

The Line Properties pane allows you to view and update E1-42 optical line performance monitoring information. The Line Properties pane contains the following tabs:

- C.3.16.3.1 Line Config Tab, page C-802
- C.3.16.3.2 MS Thresh 15 Min Tab, page C-803
- C.3.16.3.3 MS Thresh 1 Day Tab, page C-803
- C.3.16.3.4 Elect Path Thresh 15 Min Tab, page C-803
- C.3.16.3.5 Elect Path Thresh 1 Day Tab, page C-804

C.3.16.3.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the E1-42 card.

Table C-1112 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Line Type	Sets the line framing type.
Line Coding	Allows you to define the transmission coding type.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.

Table C-1112 Field Descriptions for the Line Config Tab (continued)

Field	Description
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.16.3.2 MS Thresh 15 Min Tab

The MS Thresh 15 Min tab allows you to view the 15-minute multiplexer section threshold of the E1-42 card.

Table C-1113 Field Descriptions for the MS Thresh 15 Min Tab

Field	Description
Port Number	Displays the port number
EB-L	Errored blocks line
ES-L	Errored seconds line
SES-L	Severely errored seconds line
LOSS-L	Loss of signal line

C.3.16.3.3 MS Thresh 1 Day Tab

The MS Thresh 1 Day tab allows you to view the 1-day multiplexer section threshold of the E1-42 card.

Table C-1114 Field Descriptions for the MS Thresh 1 Day Tab

Field	Description
Port Number	Displays the port number
EB-L	Errored blocks line
ES-L	Errored seconds line
SES-L	Severely errored seconds line
LOSS-L	Loss of signal line

C.3.16.3.4 Elect Path Thresh 15 Min Tab

The Elect Path Thresh 15 Min tab allows you to view the near- and far-end 15-minute electrical path threshold settings of the E1-42 card.

Table C-1115 Field Descriptions for the Elect Path Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number
EB-P	Errored blocks path
BBE-P	Background block errors path

Table C-1115 Field Descriptions for the Elect Path Thresh 15 Min Tab (continued)

Field	Description
ES-P	Errored seconds path
SES-P	Severely errored seconds path
UAS-P	Unavailable seconds path
AISS-P	Alarm indication signal seconds - path
Far End	
Port Number	Displays the port number
EB-P	Errored blocks path
BBE-P	Background block errors path
ES-P	Errored seconds path
SES-P	Severely errored seconds path
UAS-P	Unavailable seconds path
AISS-P	Alarm indication signal seconds - path

C.3.16.3.5 Elect Path Thresh 1 Day Tab

The Elect Path Thresh 1 Day tab allows you to view the near- and far-end 1-day electrical path threshold settings of the E1-42 card.

Table C-1116 Field Descriptions for the Elect Path Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number
EB-P	Errored blocks path
BBE-P	Background block errors path
ES-P	Errored seconds path
SES-P	Severely errored seconds path
UAS-P	Unavailable seconds path
AISS-P	Alarm indication signal seconds path
Far End	
Port Number	Displays the port number
EB-P	Errored blocks path
BBE-P	Background block errors path
ES-P	Errored seconds path
SES-P	Severely errored seconds path
UAS-P	Unavailable seconds path
AISS-P	Alarm indication signal seconds path

C.3.16.4 VC-12

The VC-12 Properties pane allows you to view and update E1-42 VC-12 information. The Properties pane contains the following tabs:

- C.3.16.4.1 Thresh 15 Min Tab, page C-805
- C.3.16.4.2 Thresh 1 Day Tab, page C-805
- C.3.16.4.3 Customer Info Tab, page C-806

C.3.16.4.1 Thresh 15 Min Tab

The Thresh 15 Min tab allows you to view the near- and far-end 15-minute path threshold settings of the E1-42 card.

Table C-1117 Field Descriptions for the Thresh 15 Min Tab

Field	Description
Near End	
VC Number	Displays the VC number.
EB-LP	Errored blocks–low-order path.
BBE-LP	Background block errors–low-order path.
ES-LP	Errored seconds–low-order path.
SES-LP	Severely errored seconds–low-order path.
UAS-LP	Unavailable seconds–low-order path.
Far End	
VC Number	Displays the VC number.
EB-LP	Errored blocks–low-order path.
BBE-LP	Background block errors–low-order path.
ES-LP	Errored seconds–low-order path.
SES-LP	Severely errored seconds–low-order path.
UAS-LP	Unavailable seconds–low-order path.

C.3.16.4.2 Thresh 1 Day Tab

The Thresh 1 Day tab allows you to view the near- and far-end 1-day path threshold settings of the E1-42 card.

Table C-1118 Field Descriptions for the Thresh 1 Day Tab

Field	Description
Near End	
VC Number	Displays the VC number.
EB-LP	Errored blocks–low-order path.
BBE-LP	Background block errors–low-order path.
ES-LP	Errored seconds–low-order path.

Table C-1118 Field Descriptions for the Thresh 1 Day Tab (continued)

Field	Description
SES-LP	Severely errored seconds–low-order path.
UAS-LP	Unavailable seconds–low-order path.
Far End	
VC Number	Displays the VC number.
EB-LP	Errored blocks–low-order path.
BBE-LP	Background block errors–low-order path.
ES-LP	Errored seconds–low-order path.
SES-LP	Severely errored seconds–low-order path.
UAS-LP	Unavailable seconds–low-order path.

C.3.16.4.3 Customer Info Tab

The Customer Info tab allows you to view customer information.

Table C-1119 Field Descriptions for the Customer Info Tab

Field	Description
VC Number	Displays the VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.16.5 VC-4

The VC-4 Properties pane allows you to view and update E1-42 VC-4 information. The Properties pane contains the Customer Info tab.

C.3.16.5.1 Customer Info Tab

The Customer Info tab allows you to view customer information.

Table C-1120 Field Descriptions for the Customer Info Tab

Field	Description
VC Number	Displays the VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.16.6 Loopback

The Loopback Properties pane allows you to view and update E1-42 loopback information.

Table C-1121 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Loopback Type	Allows you to configure a port for terminal loopback (Inward) or Facility (Line), or clear the current loopback (None).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.16.7 Protection

The Protection Properties pane allows you to view and update E1-42 protection group information.

Table C-1122 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays the list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.16.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update E1-42 alarm profile information.

Table C-1123 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to all ports	When clicked, forces all the ports to the selected alarm profile.

C.3.16.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update J1 path trace information.

Table C-1124 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
VC4 Number	Displays the VC number.

Table C-1124 Field Descriptions for the J1 Path Trace Properties Pane (continued)

Field	Description
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents the machine-generated J1/J2 payload label byte.

C.3.16.10 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the E1-42 card.

Table C-1125 Field Descriptions for the Info Properties Pane

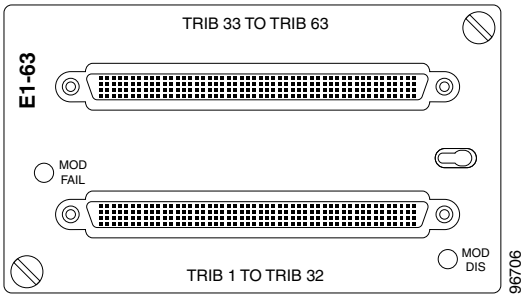
Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.17 Slot Properties—E1-63 (ONS 15305 CTC)

The Cisco ONS 15305 CTC E1-63 module contains 63 E1 interfaces. The E1 traffic is mapped into VC-12 containers and multiplexed together. Two high-density, LFH-type connectors are used to interface the 63 E1s: 32 interfaces in the bottom connector, and 31 interfaces in the top connector (one pair remains unconnected). The module supports transparent data (G.703) and ISDN PRA. The following figure shows the module diagram.

Figure C-66 High-Density 63xE1 Module, E1-63



For the E1-63 module, the slot properties pane displays the following properties: Module View, Identification, Line, and Loopback.

C.3.17.1 Module View

The Module View displays a graphic of the E1-63 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.3.17.2 Identification

The Identification Properties pane allows you to view and update E1-63 identification information.

Table C-1126 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Displays the alarm profile for the port.

C.3.17.3 Line

The Line Properties pane allows you to view and update line card information.

Table C-1127 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Line Type	Allows you to select the line framing type: pra, tra, or pra-fixed.
Line Coding	Allows you to define the transmission coding type.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.17.4 Loopback

The Loopback Properties pane allows you to view and update loopback information.

Table C-1128 Field Descriptions for the Loopback Properties Pane

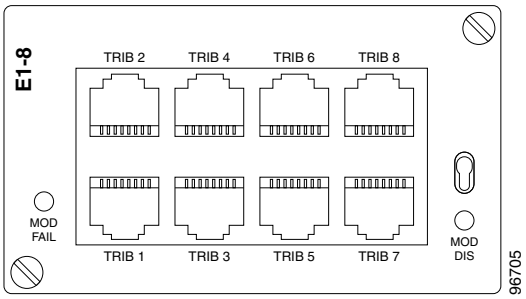
Field	Description
Port Number	Displays the port number.
Administration State	Allows you to select the administration state of the port: In Service (IS) or Out of Service (OOS).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.18 Slot Properties—E1-8 (ONS 15305 CTC)

The Cisco ONS 15305 CTC E1-8 module contains eight E1 interfaces. The E1 traffic is mapped into VC-12 containers and multiplexed together. The physical interface uses an RJ-45 connector and supports only a 120-ohm differential interface. The module does not contain any IP functionality. The interface supports both transparent data (G.703) and the NT functionality of ISDN PRA according to ETSI 300 233. The following figure shows the module diagram.

Figure C-67 E1 Tributary Module, E1-8



For the E1-8 module, the slot properties pane displays the following properties: Module View, Identification, Line, and Loopback.

C.3.18.1 Module View

The Module View displays a graphic of the E1-8 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.3.18.2 Identification

The Identification Properties pane allows you to view and update E1-8 identification information.

Table C-1129 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Card Mode	Allows you to select a multicard Ether Switch group, a single-card Ether Switch group, or the Port Mapped mode for E-series cards.
Alarm Profile	Displays the alarm profile for the port.

C.3.18.3 Line

The Line Properties pane allows you to view and update line card information.

Table C-1130 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Line Type	Allows you to select the line framing type: pra, tra, or pra-fixed.
Line Coding	Allows you to define the transmission coding type as HDB3.

Table C-1130 Field Descriptions for the Line Properties Pane (continued)

Field	Description
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.18.4 Loopback

The Loopback Properties pane allows you to view and update E1-8 loopback information.

Table C-1131 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	Allows you to select the administration state of the port: In Service (IS) or Out of Service (OOS).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.19 Slot Properties—E1-N-14

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The 14-port ONS 15454 SDH E1-N-14 card provides 14 ITU-compliant, G.703 E-1 ports. Each port of the card operates at 2.048 Mb/s over a 120-ohm, twisted-pair copper cable (with FMEC-E1) or over a 75-ohm unbalanced coaxial cable (with FMEC-E1).

For the E1-N-14 module, the slot properties pane displays the following properties: Module View, Identification, Line, VC-12, VC-4, Loopback, Protection, Alarm Behavior, J1 Path Trace, and Info.

C.3.19.1 Module View

The Module View displays a graphic of the E1-N-14 card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphics.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its ports. Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the module.

C.3.19.2 Identification

The Identification Properties pane allows you to view and update E1-N-14 card identification information.

Table C-1132 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.19.3 Line

The Line Properties pane allows you to view and update E1-N-14 optical line performance monitoring information. The Line Properties pane contains the following tabs:

- C.3.19.3.1 Line Config Tab, page C-814
- C.3.19.3.2 MS Thresh 15 Min Tab, page C-814
- C.3.19.3.3 MS Thresh 1 Day Tab, page C-814
- C.3.19.3.4 Elect Path Thresh 15 Min Tab, page C-815
- C.3.19.3.5 Elect Path Thresh 1 Day Tab, page C-815

C.3.19.3.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the E1-N-14 card.

Table C-1133 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Line Type	Sets the line framing type.
Line Coding	Allows you to define the transmission coding type.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.19.3.2 MS Thresh 15 Min Tab

The MS Thresh 15 Min tab allows you to view the 15-minute multiplexer section threshold of the E1-N-14 card.

Table C-1134 Field Descriptions for the MS Thresh 15 Min Tab

Field	Description
Port Number	Displays the port number.
EB-L	Errored blocks line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal line.

C.3.19.3.3 MS Thresh 1 Day Tab

The MS Thresh 1 Day tab allows you to view the 1-day multiplexer section threshold of the E1-N-14 card.

Table C-1135 Field Descriptions for the MS Thresh 1 Day Tab

Field	Description
Port Number	Displays the port number.
EB-L	Errored blocks line.
ES-L	Errored seconds line.

Table C-1135 Field Descriptions for the MS Thresh 1 Day Tab (continued)

Field	Description
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal line.

C.3.19.3.4 Elect Path Thresh 15 Min Tab

The Elect Path Thresh 15 Min tab allows you to view the near- and far-end 15-minute electrical path threshold settings of the E1-N-14 card.

Table C-1136 Field Descriptions for the Elect Path Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
EB-P	Errored blocks path.
BBE-P	Background block errors path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
AISS-P	Alarm indication signal seconds path.
Far End	
Port Number	Displays the port number.
EB-P	Errored blocks path.
BBE-P	Background block errors path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
AISS-P	Alarm indication signal seconds path.

C.3.19.3.5 Elect Path Thresh 1 Day Tab

The Elect Path Thresh 1 Day tab allows you to view the near- and far-end 1-day electrical path threshold settings of the E1-N-14 card.

Table C-1137 Field Descriptions for the Elect Path Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
EB-P	Errored blocks path.
BBE-P	Background block errors path.
ES-P	Errored seconds path.

Table C-1137 Field Descriptions for the Elect Path Thresh 1 Day Tab (continued)

Field	Description
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
AISS-P	Alarm indication signal seconds path.
Far End	
Port Number	Displays the port number.
EB-P	Errored blocks path.
BBE-P	Background block errors path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
AISS-P	Alarm indication signal seconds path.

C.3.19.4 VC-12

The VC-12 Properties pane allows you to view and update E1-N-14 VC-12 information. The Properties pane contains the following tabs:

- C.3.19.4.1 Thresh 15 Min Tab, page C-816
- C.3.19.4.2 Thresh 1 Day Tab, page C-817
- C.3.19.4.3 Customer Info Tab, page C-817

C.3.19.4.1 Thresh 15 Min Tab

The Thresh 15 Min tab allows you to view the near- and far-end 15-minute path threshold settings of the E1-N-14 card.

Table C-1138 Field Descriptions for the Thresh 15 Min Tab

Field	Description
Near End	
VC Number	Displays the VC number.
EB-LP	Errored blocks–low-order path.
BBE-LP	Background block errors–low-order path.
ES-LP	Errored seconds–low-order path.
SES-LP	Severely errored seconds–low-order path.
UAS-LP	Unavailable seconds–low-order path.
Far End	
VC Number	Displays the VC number.
EB-LP	Errored blocks–low-order path.
BBE-LP	Background block errors–low-order path.
ES-LP	Errored seconds–low-order path.

Table C-1138 Field Descriptions for the Thresh 15 Min Tab (continued)

Field	Description
SES-LP	Severely errored seconds–low-order path.
UAS-LP	Unavailable seconds–low-order path.

C.3.19.4.2 Thresh 1 Day Tab

The Thresh 1 Day tab allows you to view the near- and far-end 1-day path threshold settings of the E1-N-14 card.

Table C-1139 Field Descriptions for the Thresh 1 Day Tab

Field	Description
Near End	
VC Number	Displays the VC number.
EB-LP	Errored blocks–low-order path.
BBE-LP	Background block errors–low-order path.
ES-LP	Errored seconds–low-order path.
SES-LP	Severely errored seconds–low-order path.
UAS-LP	Unavailable seconds–low-order path.
Far End	
VC Number	Displays the VC number.
EB-LP	Errored blocks–low-order path.
BBE-LP	Background block errors–low-order path.
ES-LP	Errored seconds–low-order path.
SES-LP	Severely errored seconds–low-order path.
UAS-LP	Unavailable seconds–low-order path.

C.3.19.4.3 Customer Info Tab

The Customer Info tab allows you to view customer information.

Table C-1140 Field Descriptions for the Customer Info Tab

Field	Description
VC Number	Displays the VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.19.5 VC-4

The VC-4 Properties pane allows you to view and update E1-N-14 VC-4 information. The Properties pane contains the Customer Info tab.

C.3.19.5.1 Customer Info Tab

The Customer Info tab allows you to view customer information.

Table C-1141 Field Descriptions for the Customer Info Tab

Field	Description
VC Number	Displays the VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.19.6 Loopback

The Loopback Properties pane allows you to view and update E1-N-14 loopback information.

Table C-1142 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Loopback Type	Allows you to configure a port for terminal loopback (Inward) or Facility (Line), or clear the current loopback (None).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.19.7 Protection

The Protection Properties pane allows you to view and update E1-N-14 protection group information.

Table C-1143 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays the list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.19.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update E1-N-14 alarm profile information.

Table C-1144 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to all ports	When clicked, forces all the ports to the selected alarm profile.

C.3.19.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update J1 path trace information.

Table C-1145 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
VC4 Number	Displays the VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents the machine-generated J1/J2 payload label byte.

C.3.19.10 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the E1-N-14 card.

Table C-1146 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.20 Slot Properties—E3-12

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 SDH E3-12 cards provides twelve E3 ports. Each port operates at 34.368 Mb/s.

For the E3-12 module, the slot properties pane displays the following properties: Module View, Identification, Line, VC-3, VC-4, Loopback, Protection, Alarm Behavior, and J1 Path Trace.

C.3.20.1 Module View

The Module View displays a graphic of the E3-12 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.3.20.2 Identification

The Identification Properties pane allows you to view and update E3-12 identification information.

Table C-1147 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.20.3 Line

The Line Properties pane allows you to view and update E3-12 line performance monitoring information.

Table C-1148 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the port number.
Port Name	Allows you to add a name for the port.
SD BER	Sets the signal deterioration bit error rate.
SF BER	Sets the signal failure bit error rate.
AINS Soak	Automatic in-service soak. The determination of duration left before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Line Threshold 15 Minutes	
Port Number	Displays the port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.
Line Threshold 1 Day	
Port Number	Displays the port number.
CV-L	Coding violations line.
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
LOSS-L	Loss of signal line; number of 1-second intervals containing one or more LOS defects.
Path Threshold 15 Minutes	
Port Number	Displays the port number.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
Path Threshold 1 Day	
Port Number	Displays the port number.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.

C.3.20.4 VC-3

The VC-3 Properties pane allows you to view and update E3-12 VC-3 information.

Table C-1149 Field Descriptions for the VC-3 Properties Pane

Field	Description
Threshold 15 Minutes	
VC Number	The VC number.
EB-LP	Errored blocks–low-order path.
BBE-LP	Background block errors–low-order path.
ES-LP	Errored seconds–low-order path.
SES-LP	Severely errored seconds–low-order path.
UAS-LP	Unavailable seconds–low-order path.
Threshold 1 Day	
VC Number	The VC number
EB-LP	Errored blocks–low-order path.
BBE-LP	Background block errors–low-order path.
ES-LP	Errored seconds–low-order path.
SES-LP	Severely errored seconds–low-order path.
UAS-LP	Unavailable seconds–low-order path.
Customer Info	
VC Number	The VC number
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.20.5 VC-4

The VC-4 Properties pane allows you to view and update E3-12 VC-4 information.

Table C-1150 Field Descriptions for the VC-4 Properties Pane

Field	Description
Threshold 15 Minutes	
VC Number	The VC number. Displays as VC4-*x*, where *x* equals 1, 2, 3, or 4.
EB-HP	Errored blocks–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
Threshold 1 Day	
VC Number	The VC number. Displays as VC4-*x*, where *x* equals 1, 2, 3, or 4.

Table C-1150 Field Descriptions for the VC-4 Properties Pane (continued)

Field	Description
EB-HP	Errored blocks–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.

C.3.20.6 Loopback

The Loopback Properties pane allows you to view and update E3-12 loopback information.

Table C-1151 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the current loopback state.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.3.20.7 Protection

The Protection Properties pane allows you to view and update E3-12 protection group information.

Table C-1152 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.20.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update E3-12 alarm profile information.

Table C-1153 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.

Table C-1153 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.20.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve E3-12 J1 path trace information.

Table C-1154 Field Descriptions for the J1 Path Trace Properties Pane

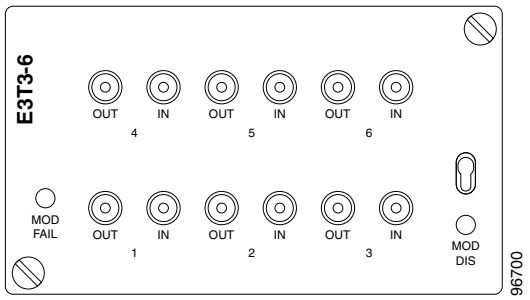
Field	Description
Port Number	Displays the port number.
VC Number	Displays the VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Mem Num	Displays the virtual concatenation (VCAT) member number.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.21 Slot Properties—E3T3_6 (ONS 15305 CTC)

The Cisco ONS 15305 CTC E3T3_6 module contains six E3 interfaces. The E3 traffic is mapped into VC-3 containers and multiplexed together. The interfaces can be configured to E3 or T3. The physical connector for the interface is the miniature 1.0/2.3 type. The module does not contain any IP functionality. The interface supports transparent data (G.703). The following figure shows the module diagram.

Figure C-68 Hex E3/T3 Tributary Module, E3T3_6



For the E3T3_6 module, the slot properties pane displays the following properties: Module View, Identification, Line, and Loopback.

C.3.21.1 Module View

The Module View displays a graphic of the E3T3_6 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.3.21.2 Identification

The Identification Properties pane allows you to view and update E3T3_6 identification information.

Table C-1155 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Displays the alarm profile for the port.

C.3.21.3 Line

The Line Properties pane allows you to view and update line card information.

Table C-1156 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Line Type	Allows you to select the line framing type: pra, tra, or pra-fixed.
Line Coding	Allows you to define the transmission coding type.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.3.21.4 Loopback

The Loopback Properties pane allows you to view and update loopback information.

Table C-1157 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	Allows you to select the administration state of the port: In Service (IS) or Out of Service (OOS).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.22 Slot Properties—EC1-12

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties. The EC1-12 provides 12 STS-1 electrical ports. Each port operates at 51.840 Mb/s.

For the EC1_12 module, the slot properties pane displays the following properties: Module View, Identification, Line, STS, Loopback, Protection, Alarm Behavior, and J1 Path Trace.

C.3.22.1 Module View

The Module View displays a graphic of the EC1_12 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.3.22.2 Identification

The Identification Properties pane allows you to view and update EC1-12 identification information.

Table C-1158 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.3.22.3 Line

The Line Properties pane allows you to view and update EC1-12 optical line performance monitoring information.

Table C-1159 Field Descriptions for the Line Properties Pane

Subfield	Description
Line Config	
Port Number	Displays the EC1-12 part number (1 through 12).
Port Name	Allows you to add a name for the optical port. The name can contain up to 32 alphanumeric or special characters. By default, the port name is blank.
SF BER	Sets the signal failure bit error rate.
SD BER	Sets the signal deterioration bit error rate.
PJStsMon#	Allows you to set the STS that will be used for pointer justification. If set to zero, no STS is used.

Table C-1159 Field Descriptions for the Line Properties Pane (continued)

Subfield	Description
Line Length	Defines the distance (in feet) from backplane connection to the next termination point. Values are 0 through 225 (default) or 226 through 450.
Rx Equalization	For early EC1-12 card versions, equalization can be turned off if the line length is short or the environment is extremely cold; Rx Equalization should normally be set to On (checked, default).
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The amount of valid input signal in *hh.mm*, after which the port is set in service by the software. The range is from 0 to 48 hours, in 15-minute increments.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically. The range is from 0 to 48 hours, in 15-minute increments.
Line Threshold 15 Minutes	
Port Number	The optical port number (1 to 12).
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
PSC	Protection switching count (near-end only).
PSD	Protection switching duration (near-end only).
PPJC-PDET	Positive pointer justification count, STS path detected.
PPJC-PGEN	Positive pointer justification count, STS path generated.
NPJC-PDET	Negative pointer justification count, STS path detected.
NPJC-PGEN	Negative pointer justification count, STS path generated.
Line Threshold 1 Day	
Port Number	The optical port number (1 to 12).
ES-L	Errored seconds line.
SES-L	Severely errored seconds line.
CV-L	Coding violations line.
UAS-L	Unavailable seconds line.
FC-L	Failure count line.
PSC	Protection switching count (near-end only).
PSD	Protection switching duration (near-end only).
PPJC-PDET	Positive pointer justification count, STS path detected.
PPJC-PGEN	Positive pointer justification count, STS path generated.
NPJC-PDET	Negative pointer justification count, STS path detected.

Table C-1159 Field Descriptions for the Line Properties Pane (continued)

Subfield	Description
NPJC-PGEN	Negative pointer justification count, STS path generated.
Section Threshold 15 Minutes	
Port Number	Displays the optical port number (1 to 12).
CV-S	Coding violations section.
ES-S	Errored seconds section.
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.
Section Threshold 1 Day	
Port Number	Displays the optical port number (1 to 12).
CV-S	Coding violations section.
ES-S	Errored seconds section.
SES-S	Severely errored seconds section.
SEFS-S	Severely errored framing seconds section.

C.3.22.4 STS

The STS Properties pane allows you to view and update EC1-12 synchronous transport signal (STS) information.

Table C-1160 Field Descriptions for the STS Properties Pane

Field	Description
STS Config	Displays the STS number, intermediate path protection monitoring (IPPM), and XC loopback status.
Path Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.
Path Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations path.
ES-P	Errored seconds path.
SES-P	Severely errored seconds path.
UAS-P	Unavailable seconds path.
FC-P	Failure count path.

Table C-1160 Field Descriptions for the STS Properties Pane (continued)

Field	Description
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

C.3.22.5 Loopback

The Loopback Properties pane allows you to view and update EC1-12 loopback information.

Table C-1161 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number (1 to 12).
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.3.22.6 Protection

The Protection Properties pane allows you to view and update EC1-12 protection group information.

Table C-1162 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

C.3.22.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update EC1-12 alarm profile information.

Table C-1163 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.

Table C-1163 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.3.22.8 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update J1 path trace information.

Table C-1164 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Member Number	Displays the virtual concatenation (VCAT) member number.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.3.23 Slot Properties—FMEC-E3/DS-3

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 SDH FMEC-E3/DS-3 card provides front-mount electrical connection for 12 ITU-compliant, G.703 E-3 or DS-3 ports. With the FMEC-E3/DS-3 card, each interface of an E3-12 card operates at 34.368 Mb/s. Each interface of a DS-3i-N-12 card operates at 44.736 Mb/s over a 75-ohm unbalanced coaxial 1.0/2.3 miniature coaxial connector.

For the FMEC-E3/DS-3 module, the slot properties pane displays Module View and Identification properties.

C.3.23.1 Module View

The Module View displays a graphic of the FMEC-E3/DS-3 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

C.3.23.2 Identification

The Identification Properties pane allows you to view and update FMEC-E3/DS-3 identification information.

Table C-1165 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4 Ethernet Cards

This section describes the following Ethernet cards supported within Prime Optical:

- C.4.1 Slot Properties—CE-100T-8 (ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH), page C-833
- C.4.2 Slot Properties—CE-100T-8 (ONS 15454 SONET), page C-839
- C.4.3 Slot Properties—CE-100T-8 (ONS 15454 SDH), page C-846
- C.4.4 Slot Properties—CE-1000-4 (ONS 15454 SDH and ONS 15454 SONET), page C-853
- C.4.5 Slot Properties—CE-MR-6, page C-861
- C.4.6 Slot Properties—CE-MR-10, page C-870
- C.4.7 Slot Properties—E10/100T-4, page C-878
- C.4.8 Slot Properties—E1000-2, page C-882
- C.4.9 Slot Properties—E1000-2-G, page C-885
- C.4.10 Slot Properties—E100T-12, page C-889
- C.4.11 Slot Properties—E100T-G, page C-892
- C.4.12 Slot Properties—E100-8 (ONS 15305 CTC), page C-895
- C.4.13 Slot Properties—E100-WAN-8 (ONS 15305 CTC), page C-897
- C.4.14 Slot Properties—ETH1000, page C-900

- C.4.15 Slot Properties—G1000-2, page C-902
- C.4.16 Slot Properties—G1000-4, page C-906
- C.4.17 Slot Properties—GE-2 (ONS 15305 CTC), page C-911
- C.4.18 Slot Properties—GigE-WAN-2 (ONS 15305 CTC), page C-913
- C.4.19 Slot Properties—ML-100T-8, page C-916
- C.4.20 Slot Properties—ML1000-2, page C-922
- C.4.21 Slot Properties—ML100T-12, page C-932
- C.4.22 Slot Properties—ML100X-8, page C-942
- C.4.23 Slot Properties—ML-MR-10, page C-951
- C.4.24 Slot Properties—MS-ISC-100T, page C-959
- C.4.25 Slot Properties—RAN-SVC, page C-961
- C.4.26 Slot Properties—PT_10GE_4, page C-966
- C.4.27 Slot Properties—PTSA_GE, page C-974

C.4.1 Slot Properties—CE-100T-8 (ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH)

The slot properties pane displays information about the Cisco ONS 15310 CL, Cisco ONS 15310 MA SONET, or Cisco ONS 15310 MA SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The CE-100T-8 card is a subset of the ML-100T-8 card and provides an L1 mapping mode of operation. The card provides G-series-like behavior, but adds low- and high-order VCAT and link capacity adjustment scheme (LCAS) features, as well as GFP. The CE-100T-8 card on the ONS 15310 CL, ONS 15310 MA SONET, and ONS 15310 MA SDH interfaces interoperate with the CE-100T-8 card on the ONS 15454 platform. The card supports concatenation functions to construct transport trails (for example, STS-3c) for carrying packet data. The card provides contiguous, low-order, and high-order virtual concatenation. The CE-100T-8 card has its own PID and CLEI, and a port count that ranges from 1 to 8.

For the CE-100T-8 module, the slot properties pane displays the following properties, some of which apply only to a specific NE type: Module View, Identification, Line, Ether Loopback, Thresholds, Alarm Behavior, J1 Path Trace, and Info.

C.4.1.1 Module View

The Module View displays a graphic of the CE-100T-8 module that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.4.1.2 Identification

The Identification Properties pane allows you to view and update CE-100T-8 identification information.

Table C-1166 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.1.3 Line

The Line Properties pane allows you to view and update line performance monitoring information. The Line Properties pane contains the following tabs:

- C.4.1.3.1 Ether Line Tab, page C-834
- C.4.1.3.2 POS Line Tab, page C-835

C.4.1.3.1 Ether Line Tab

The Ether Line tab allows you to view and change the Ethernet line settings of the CE-100T-8 card.

Table C-1167 Field Descriptions for the Ether Line Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	Shows the administration state of the port: In Service (IS), Out of Service–Disabled (OOS, DSBLD), or Out of Service–Maintenance (OOS_MT).

Table C-1167 Field Descriptions for the Ether Line Tab (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up, Down, or Not Present.
Expected Speed	Displays the expected speed for the Ethernet ports. Values are Auto, 10 Mb/s, and Configurable.
Operating Speed	Displays the operating speed for the Ethernet ports. Values are Auto, 10 Mb/s, and NonConfigurable.
Expected Duplex	Expected setting of the port.
Operating Duplex	Actual setting of the port. Values are Auto, Full, and Half.
Enable Flow Control	Check this check box to enable flow control for the selected port.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
802.1Q VLAN CoS	Sets the IEEE 802.1Q standard VLAN class of service (CoS) threshold for priority queueing. Values are 0 through 7; 0 is the lowest priority and 7 is the highest priority.
IP ToS	Sets the IP type of service (ToS) byte value for priority queueing. Values are 0 through 255.
Link Integrity Timer	Set the link integrity timer for the port. Enter a range from 200 to 5000 milliseconds, in increments of 100 milliseconds. Enabling link integrity ensures that links are never broken.

C.4.1.3.2 POS Line Tab

The POS Line tab allows you to view and change the POS line settings of the CE-100T-8 card.

Table C-1168 Field Descriptions for the POS Line Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	Shows the administration state of the port: In Service (IS), Out of Service, Disabled (OOS, DSBLD), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up and Down.

Table C-1168 Field Descriptions for the POS Line Tab (continued)

Field	Description
Framing Type	Shows the encapsulation type. Values are: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • None—No framing type.
Encap CRC	Sets the cyclic redundancy check (CRC) to verify the integrity of the transmitted data.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.

C.4.1.4 Ether Loopback

The Loopback Properties pane allows you to view and update CE-100T-8 Ether loopback information.

Table C-1169 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.4.1.5 Thresholds

The Thresholds Properties pane allows you to view and create thresholds. The Thresholds Properties pane contains the following tabs:

- C.4.1.5.1 POS Ports Tab, page C-836
- C.4.1.5.2 Ether Ports Tab, page C-837

C.4.1.5.1 POS Ports Tab

The POS Ports tab allows you to view the thresholds for the POS ports.

Table C-1170 Field Descriptions for the POS Ports Tab

Field	Description
Index Number	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.

Table C-1170 Field Descriptions for the POS Ports Tab (continued)

Field	Description
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Threshold	Displays the number of occurrences for the rising threshold.
Falling Threshold	Displays the number of occurrences for the falling threshold field. In most cases, a falling threshold is set lower than the rising threshold.
Create	Click the **Create** button to create a threshold for the POS ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.4.1.5.2 Ether Ports Tab

The Ether Ports tab allows you to view the thresholds for the Ethernet ports.

Table C-1171 Field Descriptions for the Ether Ports Tab

Field	Description
Index Number	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Threshold	Displays the number of occurrences for the rising threshold.
Falling Threshold	Displays the number of occurrences for the falling threshold field. In most cases, a falling threshold is set lower than the rising threshold.
Create	Click the **Create** button to create a threshold for the Ethernet ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.4.1.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information. The Alarm Behavior Properties pane contains the following tabs:

- C.4.1.6.1 Ether Alarm Behavior Tab, page C-838

- C.4.1.6.2 POS Alarm Behavior Tab, page C-838

C.4.1.6.1 Ether Alarm Behavior Tab

The Ether Alarm Behavior tab allows you to view and update Ether alarm profile information.

Table C-1172 Field Descriptions for the Ether Alarm Behavior Tab

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.1.6.2 POS Alarm Behavior Tab

The POS Alarm Behavior tab allows you to view and update POS alarm profile information.

Table C-1173 Field Descriptions for the POS Alarm Behavior Tab

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.1.7 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1174 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Circuit Type	Displays the circuit type.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
VCAT Mem Num	Displays the virtual concatenation (VCAT) member number.

Table C-1174 Field Descriptions for the J1 Path Trace Properties Pane (continued)

Field	Description
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.4.1.8 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the CE-100T-8.

Table C-1175 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.2 Slot Properties—CE-100T-8 (ONS 15454 SONET)

The slot properties pane displays information about the Cisco ONS 15454 SONET module that is installed in the slot selected in the NE Explorer tree. Use this properties pane to change the card properties.

The CE-100T-8 is a Layer 1 mapper card with eight 10/100 Ethernet ports. It maps each port to a unique SONET circuit in a point-to-point configuration.

The CE-100T-8 cards allow you to provision and manage an Ethernet private line service as if it were a traditional SONET line. CE-100T-8 card applications include providing carrier-grade transparent LAN services (TLS), Ethernet private line services, and high-availability transport.

The CE-100T-8 card is a standard ONS line card and supports ITU-T G.707 and Telcordia GR-253-based standards for SONET. It offers the same carrier-class level of features and reliability as SONET optical cards or electrical line cards.

For the ONS 15454 SONET CE-100T-8 card, the slot properties pane displays the following properties: Module View, Identification, Line, Ether Loopback, Thresholds, Alarm Behavior, J1 Path Trace, and Info.

C.4.2.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Moving the mouse pointer over the graphic also displays the alarm counts.) Right-clicking the graphic opens a shortcut menu that allows you to reset, delete, or change the card.

C.4.2.2 Identification

The Identification Properties pane allows you to view and update CE-100T-8 identification information.

Table C-1176 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.2.3 Line

The Line Properties pane allows you to view and update performance monitoring information. The Line Properties pane contains the following tabs:

- C.4.2.3.1 Ether Line Tab, page C-841
- C.4.2.3.2 POS Line Tab, page C-841

C.4.2.3.1 Ether Line Tab

The Ether Line tab allows you to view and change the Ethernet line settings of the CE-100T-8 card.

Table C-1177 Field Descriptions for the Ether Line Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	Shows the administration state of the port: In Service (IS), Out of Service–Disabled (OOS, DSBLD), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up, Down, or Not Present.
Expected Speed	Displays the expected speed for the Ethernet ports. Values are Auto, 10 Mb/s, and Configurable.
Operating Speed	Displays the operating speed for the Ethernet ports. Values are Auto, 10 Mb/s, and NonConfigurable.
Expected Duplex	Expected setting of the port.
Operating Duplex	Actual setting of the port. Values are Auto, Full, and Half.
Enable Flow Control	Check this check box to enable flow control for the selected port.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
802.1Q VLAN CoS	Sets the IEEE 802.1Q standard VLAN class of service (CoS) threshold for priority queueing. Values are 0 through 7; 0 is the lowest priority and 7 is the highest priority.
IP ToS	Sets the IP type of service (ToS) byte value for priority queueing. Values are 0 through 255.
Link Integrity Timer	Set the link integrity timer for the port. Enter a range from 200 to 5000 milliseconds, in increments of 100 milliseconds. Enabling link integrity ensures that links are never broken.

C.4.2.3.2 POS Line Tab

The POS Line tab allows you to view and change POS line settings of the CE-100T-8 card.

Table C-1178 Field Descriptions for the POS Line Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	Shows the administration state of the port: In Service (IS), Out of Service–Disabled (OOS, DSBLD), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.

Table C-1178 Field Descriptions for the POS Line Tab (continued)

Field	Description
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up and Down.
Framing Type	Shows the encapsulation type. Values are: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • None—No framing type.
Encap CRC	Sets the cyclic redundancy check (CRC) to verify the integrity of the transmitted data.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.

C.4.2.4 Ether Loopback

The Ether Loopback Properties pane allows you to view and update loopback information.

Table C-1179 Field Descriptions for the Ether Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	Displays the status of the line. The line can be in In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT) state.
Loopback	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.4.2.5 Thresholds

The Thresholds Properties pane allows you to view thresholds and create new ones. The Properties pane contains the following tabs:

- C.4.2.5.1 POS Ports Tab, page C-843
- C.4.2.5.2 Ether Ports Tab, page C-843

C.4.2.5.1 POS Ports Tab

The POS Ports tab allows you to view the thresholds for the POS ports.

Table C-1180 Field Descriptions for the POS Ports Tab

Field	Description
Index Number	The index number.
Slot	Select a slot for the new threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	The MIB variable to monitor. Supported variables are cportQosDropPkts and cportQosDropOctets in the cportQosStatsTable in CISCO-PORT-QOS-MIB.
Alarm Type	Select an alarm type for the new threshold. Indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Enter a sample period for the new threshold. The sample period is measured in seconds.
Rising Threshold	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Threshold	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).
Create	Click the **Create** button to create a threshold for the POS ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.4.2.5.2 Ether Ports Tab

The Ether Ports tab allows you to view the thresholds for the Ethernet ports.

Table C-1181 Field Descriptions for the Ether Ports Tab

Field	Description
Index Number	The index number.
Slot	Select a slot for the new threshold.

Table C-1181 Field Descriptions for the Ether Ports Tab (continued)

Field	Description
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	The MIB variable to monitor. Supported variables are cportQosDropPkts and cportQosDropOctets in the cportQosStatsTable in CISCO-PORT-QOS-MIB.
Alarm Type	Select an alarm type for the new threshold. Indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Enter a sample period for the new threshold. The sample period is measured in seconds.
Rising Threshold	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Threshold	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).
Create	Click the **Create** button to create RMON thresholds for the Ethernet ports.
Delete	Select an RMON threshold from the list displayed and click the **Delete** button.

C.4.2.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information. The Alarm Behavior Properties pane contains the following tabs:

- C.4.2.6.1 Ether Alarm Behavior Tab, page C-844
- C.4.2.6.2 POS Alarm Behavior Tab, page C-845

C.4.2.6.1 Ether Alarm Behavior Tab

The Ether Alarm Behavior tab allows you to view and update Ether alarm profile information.

Table C-1182 Field Descriptions for the Ether Alarm Behavior Tab

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.

Table C-1182 Field Descriptions for the Ether Alarm Behavior Tab (continued)

Field	Description
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.2.6.2 POS Alarm Behavior Tab

The POS Alarm Behavior tab allows you to view and update POS alarm profile information.

Table C-1183 Field Descriptions for the POS Alarm Behavior Tab

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.2.7 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1184 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Circuit Type	Displays the circuit type.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
VCAT Mem Num	Displays the virtual concatenation (VCAT) member number.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.4.2.8 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the CE-100T-8.

Table C-1185 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.3 Slot Properties—CE-100T-8 (ONS 15454 SDH)

The slot properties pane displays information about the Cisco ONS 15454 SDH module that is installed in the slot selected in the NE Explorer tree. Use this properties pane to change the card properties.

The CE-100T-8 is a Layer 1 mapper card with eight 10/100 Ethernet ports. It maps each port to a unique SDH circuit in a point-to-point configuration.

The CE-100T-8 cards allow you to provision and manage an Ethernet private line service as if it were a traditional SDH line. CE-100T-8 card applications include providing carrier-grade transparent LAN services (TLS), Ethernet private line services, and high-availability transport.

The CE-100T-8 card is a standard ONS line card and supports ITU-T G.707 and Telcordia GR-253-based standards for SDH. It offers the same carrier-class level of features and reliability as SDH optical cards or electrical line cards.

For the ONS 15454 SDH CE-100T-8 card, the slot properties pane displays the following properties: Module View, Identification, Line, Ether Loopback, Thresholds, Alarm Behavior, J1 Path Trace, and Info.

C.4.3.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Moving the mouse pointer over the graphic also displays the alarm counts.) Right-clicking the graphic opens a shortcut menu that allows you to reset, delete, or change the card.

C.4.3.2 Identification

The Identification Properties pane allows you to view and update CE-100T-8 identification information.

Table C-1186 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.

Table C-1186 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.3.3 Line

The Line Properties pane allows you to view and update performance monitoring information. The Line Properties pane contains the following tabs:

- C.4.3.3.1 Ether Line Tab, page C-847
- C.4.3.3.2 POS Line Tab, page C-848

C.4.3.3.1 Ether Line Tab

The Ether Line tab allows you to view and change the Ethernet line settings of the CE-100T-8 card.

Table C-1187 Field Descriptions for the Ether Line Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • IS—In Service. The port service state changes to IS_NR. • OOS, DSBLD—Out of Service, Disabled. The port service state changes to OOS_MA, DSBLD. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT Administration State must be initiated. • IS, AINS—Automatic In Service. The port service state changes to OOS_AU, AINS.

Table C-1187 Field Descriptions for the Ether Line Tab (continued)

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up, Down, or Not Present.
Expected Speed	Displays the expected speed for the Ethernet ports. Values are Auto, 10 Mb/s, and Configurable.
Operating Speed	Displays the operating speed for the Ethernet ports. Values are Auto, 10 Mb/s, and NonConfigurable.
Expected Duplex	Expected setting of the port.
Operating Duplex	Actual setting of the port. Values are Auto, Full, and Half.
Enable Flow Control	Check this check box to enable flow control for the selected port.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
802.1Q VLAN CoS	Sets the IEEE 802.1Q standard VLAN class of service (CoS) threshold for priority queueing. Values are 0 through 7; 0 is the lowest priority and 7 is the highest priority.
IP ToS	Sets the IP type of service (ToS) byte value for priority queueing. Values are 0 through 255.
Link Integrity Timer	Set the link integrity timer for the port. Enter a range from 200 to 5000 milliseconds, in increments of 100 milliseconds. Enabling link integrity ensures that links are never broken.

C.4.3.3.2 POS Line Tab

The POS Line tab allows you to view and change POS line settings of the CE-100T-8 card.

Table C-1188 Field Descriptions for the POS Line Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • IS—In Service. The port service state changes to IS_NR. • OOS, DSBLD—Out of Service, Disabled. The port service state changes to OOS_MA, DSBLD. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT Administration State must be initiated. • IS, AINS—Automatic In Service. The port service state changes to OOS_AU, AINS.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.

Table C-1188 Field Descriptions for the POS Line Tab (continued)

Field	Description
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up and Down.
Framing Type	Shows the encapsulation type. Values are: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • None—No framing type.
Encap CRC	Sets the cyclic redundancy check (CRC) to verify the integrity of the transmitted data.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.

C.4.3.4 Ether Loopback

The Ether Loopback Properties pane allows you to view and update loopback information.

Table C-1189 Field Descriptions for the Ether Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • IS—In Service. The port service state changes to IS_NR. • OOS, DSBLD—Out of Service, Disabled. The port service state changes to OOS_MA, DSBLD. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT Administration State must be initiated. • IS, AINS—Automatic In Service. The port service state changes to OOS_AU, AINS.
Loopback	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.4.3.5 Thresholds

The Thresholds Properties pane allows you to view thresholds and create new ones. The Properties pane contains the following tabs:

- C.4.3.5.1 POS Ports Tab, page C-850

- C.4.3.5.2 Ether Ports Tab, page C-851

C.4.3.5.1 POS Ports Tab

The POS Ports tab allows you to view the RMON thresholds for the POS ports.

Table C-1190 Field Descriptions for the POS Ports Tab

Field	Description
Index Number	The index number.
Slot	Select a slot for the new threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	The MIB variable to monitor. Supported variables are cportQosDropPkts and cportQosDropOctets in the cportQosStatsTable in CISCO-PORT-QOS-MIB.
Alarm Type	Select an alarm type for the new threshold. Indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Enter a sample period for the new threshold. The sample period is measured in seconds.
Rising Threshold	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Threshold	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).
Create	Click the **Create** button to create a threshold for the POS ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.4.3.5.2 Ether Ports Tab

The Ether Ports tab allows you to view the RMON thresholds for the Ethernet ports.

Table C-1191 Field Descriptions for the Ether Ports Tab

Field	Description
Index Number	The index number.
Slot	Select a slot for the new threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	The MIB variable to monitor. Supported variables are cportQosDropPkts and cportQosDropOctets in the cportQosStatsTable in CISCO-PORT-QOS-MIB.
Alarm Type	Select an alarm type for the new threshold. Indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Enter a sample period for the new threshold. The sample period is measured in seconds.
Rising Threshold	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Threshold	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).
Create	Click the **Create** button to create RMON thresholds for the Ethernet ports.
Delete	Select an RMON threshold from the list displayed and click the **Delete** button.

C.4.3.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information. The Alarm Behavior Properties pane contains the following tabs:

- C.4.3.6.1 Ether Alarm Behavior Tab, page C-851
- C.4.3.6.2 POS Alarm Behavior Tab, page C-852

C.4.3.6.1 Ether Alarm Behavior Tab

The Ether Alarm Behavior tab allows you to view and update Ether alarm profile information.

Table C-1192 Field Descriptions for the Ether Alarm Behavior Tab

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.3.6.2 POS Alarm Behavior Tab

The POS Alarm Behavior tab allows you to view and update POS alarm profile information.

Table C-1193 Field Descriptions for the POS Alarm Behavior Tab

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.3.7 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1194 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Circuit Type	Displays the circuit type.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
VCAT Mem Num	Displays the virtual concatenation (VCAT) member number.

Table C-1194 Field Descriptions for the J1 Path Trace Properties Pane (continued)

Field	Description
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.4.3.8 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the CE-100T-8.

Table C-1195 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.4 Slot Properties—CE-1000-4 (ONS 15454 SDH and ONS 15454 SONET)

The CE-1000-4 is a data line card for the ONS 15454 SONET and ONS 15454 SDH NEs that enables private line Ethernet and Gigabit Ethernet services. The CE-1000-4 card has four IEEE 802.3-compliant Gigabit Ethernet ports at the ingress, and an integrated Ethernet over SONET/SDH mapper with equal number of virtual ports at the egress, to send and receive Ethernet packets over a SONET/SDH network.

The interface media type is determined by the GBICs module installed, and on a per-port basis. The CE-1000-4 card supports standard compliant ITU-T G.7041 Generic Framing Procedure (GFP), and ITUT G.707 HO virtual concatenation (VCAT). There is no support for LCAS.

The CE-1000-4 card is managed by TL1, SNMP, CTC, and Prime Optical.

The slot properties pane displays information about the Cisco ONS 15454 SDH card that is installed in the slot selected in the NE Explorer tree. Use this properties pane to change the card properties.

For the CE-1000-4 card, the slot properties pane displays the following properties: Module View, Identification, Line, Gigabit Ether Line Loopback, Thresholds, Alarm Behavior, J1 Path Trace, GBIC Inventory, and Info.

C.4.4.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Moving the mouse pointer over the graphic also displays the alarm counts.) Right-clicking the graphic opens a shortcut menu that allows you to reset, delete, or change the card.

C.4.4.2 Identification

The Identification Properties pane allows you to view and update CE-1000-4 identification information.

Table C-1196 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.4.3 Line

The Line Properties pane allows you to view and update performance monitoring information. The Line Properties pane contains the following tabs:

- C.4.4.3.1 Gigabit Ether Line Tab, page C-854
- C.4.4.3.2 POS Line Tab, page C-855

C.4.4.3.1 Gigabit Ether Line Tab

The Gigabit Ether Line tab allows you to view and change the Ethernet line settings of the CE-1000-4 card.

Table C-1197 Field Descriptions for the Gigabit Ether Line Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.

Table C-1197 Field Descriptions for the Gigabit Ether Line Tab (continued)

Field	Description
Administration State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • IS—In Service. The port service state changes to IS_NR. • OOS, DSBLD—Out of Service, Disabled. The port service state changes to OOS_MA, DSBLD. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT Administration State must be initiated. • IS, AINS—Automatic In Service. The port service state changes to OOS_AU, AINS.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up and Down.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
Flow Control Status	Displays the negotiated flow control status.
Auto Negotiation	Allows you to enable the card to match the speed and duplex mode of a partner node.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.
Water Marks	Water marks can be Custom, Low Latency, or Default.
Flow Control Low	Displays the minimum flow control.
Flow Control High	Displays the maximum flow control.
Link Integrity Disable	If this check box is checked, the Link Integrity Timer field for the corresponding port number will be disabled.
Link Integrity Timer	Set the link integrity timer for the port. Enter a range from 200 to 5000 milliseconds, in increments of 100 milliseconds. Enabling link integrity ensures that links are never broken.

C.4.4.3.2 POS Line Tab

The POS Line tab allows you to view and change POS line settings of the CE-1000-4 card.

Table C-1198 Field Descriptions for the POS Line Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a name for the optical port.

Table C-1198 Field Descriptions for the POS Line Tab (continued)

Field	Description
Administration State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • IS—In Service. The port service state changes to IS_NR. • OOS, DSBLD—Out of Service, Disabled. The port service state changes to OOS_MA, DSBLD. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT Administration State must be initiated. • IS, AINS—Automatic In Service. The port service state changes to OOS_AU, AINS.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up and Down.
Framing Type	Shows the encapsulation type. Values are: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • None—No framing type.
Encap CRC	Sets the cyclic redundancy check (CRC) to verify the integrity of the transmitted data.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.

C.4.4.4 Gigabit Ether Line Loopback

The Gigabit Ether Line Loopback Properties pane allows you to view and update loopback information.

Table C-1199 Field Descriptions for the Gigabit Ether Line Loopback

Field	Description
Port Number	Displays the port number.
Administration State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Administration states include: • IS—In Service. The port service state changes to IS_NR. • OOS, DSBLD—Out of Service, Disabled. The port service state changes to OOS_MA, DSBLD. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT Administration State must be initiated. • IS, AINS—Automatic In Service. The port service state changes to OOS_AU, AINS.
Loopback	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.4.4.5 Thresholds

The Thresholds Properties pane allows you to view thresholds and create new ones. The Properties pane contains the following tabs:

- C.4.4.5.1 POS Ports Tab, page C-857
- C.4.4.5.2 Ether Ports Tab, page C-858

C.4.4.5.1 POS Ports Tab

The POS Ports tab allows you to view the RMON thresholds for the POS ports.

Table C-1200 Field Descriptions for the POS Ports Tab

Field	Description
Index Number	The index number.
Slot	Select a slot for the new threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	The MIB variable to monitor. Supported variables are cportQosDropPkts and cportQosDropOctets in the cportQosStatsTable in CISCO-PORT-QOS-MIB.
Alarm Type	Select an alarm type for the new threshold. Indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Enter a sample period for the new threshold. The sample period is measured in seconds.

Table C-1200 Field Descriptions for the POS Ports Tab (continued)

Field	Description
Rising Threshold	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Threshold	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).
Create	Click the **Create** button to create a threshold for the POS ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.4.4.5.2 Ether Ports Tab

The Ether Ports tab allows you to view the RMON thresholds for the Ethernet ports.

Table C-1201 Field Descriptions for the Ether Ports Tab

Field	Description
Index Number	The index number.
Slot	Select a slot for the new threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	The MIB variable to monitor. Supported variables are cportQosDropPkts and cportQosDropOctets in the cportQosStatsTable in CISCO-PORT-QOS-MIB.
Alarm Type	Select an alarm type for the new threshold. Indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Enter a sample period for the new threshold. The sample period is measured in seconds.
Rising Threshold	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.

Table C-1201 Field Descriptions for the Ether Ports Tab (continued)

Field	Description
Falling Threshold	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).
Create	Click the **Create** button to create RMON thresholds for the Ethernet ports.
Delete	Select an RMON threshold from the list displayed and click the **Delete** button.

C.4.4.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information. The Alarm Behavior Properties pane contains the following tabs:

- C.4.4.6.1 POS Ports Tab, page C-859
- C.4.4.6.2 Ether Ports Tab, page C-859

C.4.4.6.1 POS Ports Tab

The POS Ports tab allows you to view and update alarm profile information.

Table C-1202 Field Descriptions for the POS Ports Tab

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.4.6.2 Ether Ports Tab

The Ether Ports tab allows you to view and update alarm profile information.

Table C-1203 Field Descriptions for the Ether Ports Tab

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.4.7 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1204 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the synchronous transport signal number information.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
VCAT Mem Num	Displays the virtual concatenation (VCAT) member number.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.4.4.8 GBIC Inventory

The GBIC Inventory Properties pane allows you to view GBIC inventory information.

Table C-1205 Field Descriptions for the GBIC Inventory Properties Pane

Field	Description
Port Number	Displays the GBIC card port number.
Equipment Type	Displays the equipment type the slot is provisioned for.
Serial Number	Displays the GBIC serial number that is unique to each GBIC.
CLEI Code	Displays the CLEI code.
Hardware Part Number	Displays the manufacturer's part number.
Hardware Revision	Displays the hardware revision number.

Table C-1205 Field Descriptions for the GBIC Inventory Properties Pane (continued)

Field	Description
Actual Equipment Type	Displays the actual card that is installed in the slot. Values are single mode or multimode.
Vendor ID	Displays the ID of the vendor.

C.4.4.9 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the CE-1000-4.

Table C-1206 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.5 Slot Properties—CE-MR-6

The slot properties pane displays information about the Cisco ONS 15310 MA SONET or ONS 15310 MA SDH module that is installed in the slot selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Carrier Ethernet Multirate 6 (CE-MR-6) card provides six IEEE 802.3-compliant 10/100/1000-Mb/s Gigabit Ethernet ports at the ingress. At the egress, the CE-MR-6 card provides an integrated Ethernet-over-SONET mapper with six virtual ports to transfer Ethernet packets over a SONET network.

The CE-MR-6 card uses pluggable SFPs to transport Ethernet traffic over a SONET network. The Ethernet frames are encapsulated using the ITU-T generic framing procedure (GFP) (with or without CRC) or LAN extension (LEX), the point-to-point protocol (PPP) with high-level data link control (HDLC).

The Ethernet ports automatically configure to operate at either half or full duplex and can determine whether to enable or disable flow control. The Ethernet ports can also be oversubscribed using flow control.

The CE-MR-6 card supports the link capacity adjustment scheme (LCAS), which allows hitless dynamic adjustment of SONET link bandwidth. The CE-MR-6 card's LCAS is hardware-based, but the CE-MR-6 also supports software LCAS (SW-LCAS). This makes it compatible with ML-series cards, which support only SW-LCAS, along with the CE-100T-8 cards. The CE-MR-6 card also supports the nonlink capacity adjustment scheme (no-LCAS). The CE-MR-6 card supports both flexible and fixed VCAT groups (VCG). Prime Optical supports the FE payload on RAD SFPs.

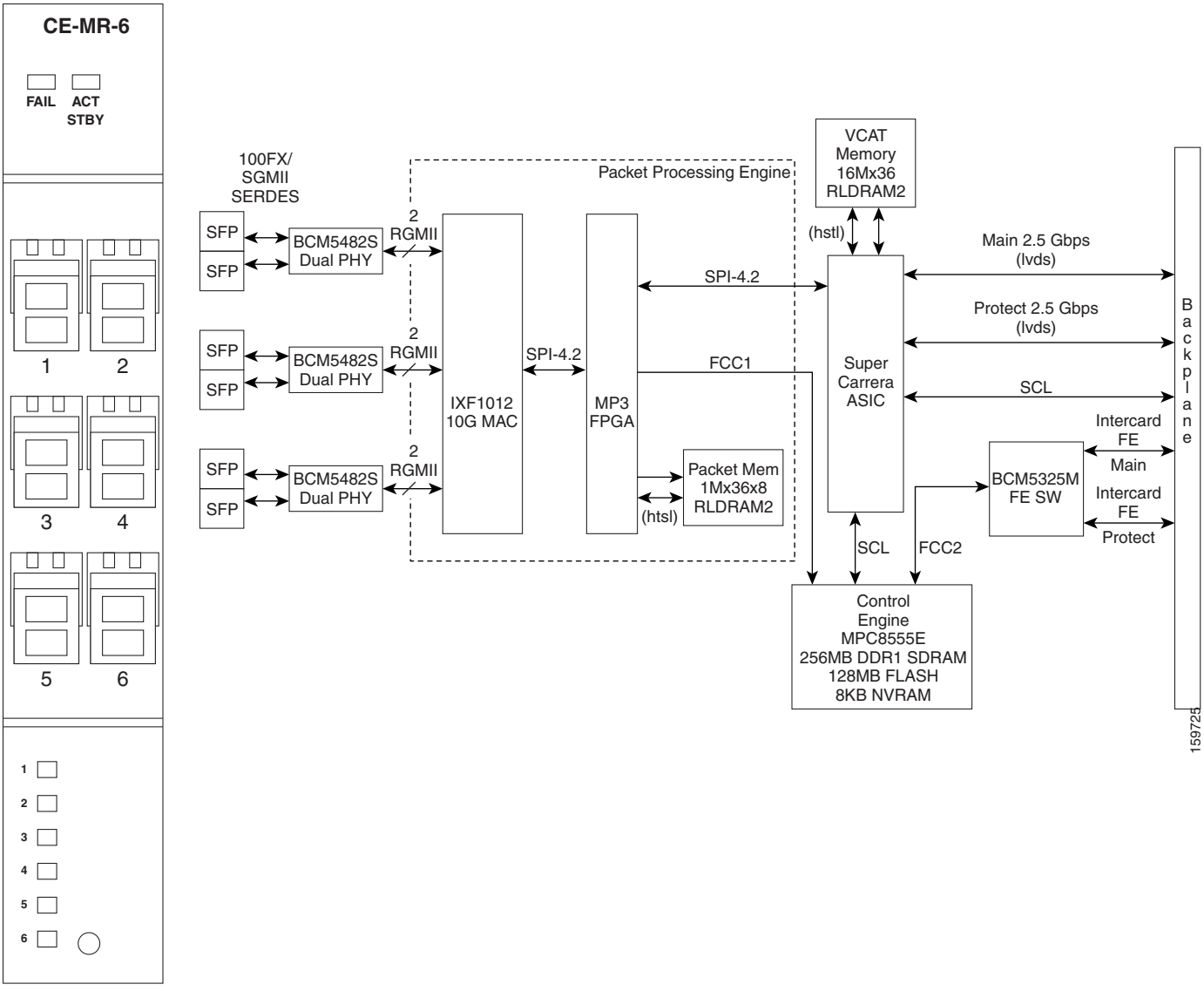
The Ethernet frames can be mapped into:

- T1X1 G.707-based high-order virtual concatenated (HO VCAT) payloads

  - STS-3c-*n*v, where *n* is 1 to 7
  - STS-1-*n*v, where *n* is 1 to 21
- T1X1 G.707-based low-order virtual concatenated (LO VCAT) payloads
  - VT1.5-*n*v, where *n* is 1 to 64
- Contiguously concatenated (CCAT) SONET payloads
  - Standard CCAT sizes (STS-1, STS-3c, STS-12c, STS-24c, and STS-48c)
  - Nonstandard CCAT sizes (STS-6c and STS-9c)

The following figure shows the CE-MR-6 card faceplate and block diagram.

Figure C-69 CE-MR-6 Faceplate and Block Diagram



For the CE-MR-6 card, the slot properties pane displays the following properties: Module View, Identification, Line, Ether Loopback, Thresholds, Alarm Behavior, J1 Path Trace, GBIC Inventory, and Info.

C.4.5.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the card is displayed under Alarm Status. (Moving the mouse pointer over the graphic also displays the alarm counts.) Right-clicking the graphic opens a shortcut menu that allows you to reset, delete, or change the card.

C.4.5.2 Identification

The Identification Properties pane allows you to view and update CE-MR-6 identification information.

Table C-1207 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service, unlocked or locked–maintenance. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Card Mode	Specify the mode setting for the internal STS/VC allocation method on the card. Values are: • Automatic—Implies internal selection of time slot index numbers by the node. • Manual—Implies user-selected index numbers.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.5.3 Line

The Line Properties pane allows you to view and update CE-MR-6 performance monitoring information. The Line Properties pane contains the following tabs:

- C.4.5.3.1 Ether Line Tab, page C-864
- C.4.5.3.2 POS Line Tab, page C-864

C.4.5.3.1 Ether Line Tab

The Ether Line tab allows you to view and change the Ethernet line settings of the CE-MR-6 card.

Table C-1208 Field Descriptions for the Ether Line Tab

Field	Description
Port Number	Displays the port number (1 to 6).
Port Name	Allows you to add a name for the port.
Administration State	Allows you to change the administrative state of the port.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up, Down, or Not Present.
Expected Speed	Displays the expected speed for the Ethernet ports. Values are Auto, 10 Mb/s, 100 Mb/s, and 1000 Mb/s.
Operating Speed	Displays the operating speed for the Ethernet ports.
Expected Duplex	Expected setting of the port. Values are Auto, Full, and Half.
Operating Duplex	Actual setting of the port. Values are Auto, Full, and Half.
Enable Flow Control	Check this check box to enable flow control for the selected port.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
802.1Q VLAN CoS	Sets the IEEE 802.1Q standard VLAN class of service (CoS) threshold for priority queueing. Values are 0 through 7; 0 is the lowest priority and 7 is the highest priority.
IP ToS	Sets the IP type of service (ToS) byte value for priority queueing. Values are 0 through 255.
Enable Auto Negotiate	When checked, the port negotiates with the mating port to set its own rate. If unchecked, the port operating rate does not work with the mate unless the port rates match.
Link Integrity Timer	Set the link integrity timer for the port. Enter a range from 200 to 5000 milliseconds, in increments of 100 milliseconds. Enabling link integrity ensures that links are never broken.

C.4.5.3.2 POS Line Tab

The POS Line tab allows you to view and change POS line settings for the CE-MR-6 card.

Table C-1209 Field Descriptions for the POS Line Tab

Field	Description
Port Number	Displays the port number (1 to 6).
Port Name	Allows you to add a name for the port.

Table C-1209 Field Descriptions for the POS Line Tab (continued)

Field	Description
Administration State	Allows you to change the administrative state of the port.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up and Down.
Framing Type	Shows the encapsulation type. Values are: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • None—No framing type.
Encap CRC	Sets the cyclic redundancy check (CRC) to verify the integrity of the transmitted data.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.

C.4.5.4 Ether Loopback

The Ether Loopback Properties pane allows you to view and update CE-MR-6 loopback information.

Table C-1210 Field Descriptions for the Ether Loopback Properties Pane

Field	Description
Port Number	Displays the port number (1 to 6).
Administration State	Allows you to configure the status of the line.
Loopback	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS MT or locked, maintenance before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.4.5.5 Thresholds

The Thresholds Properties pane allows you to view CE-MR-6 thresholds and create new ones. The Properties pane contains the following tabs:

- C.4.5.5.1 POS Ports Tab, page C-866
- C.4.5.5.2 Ether Ports Tab, page C-866

C.4.5.5.1 POS Ports Tab

The POS Ports tab allows you to view the thresholds for the POS ports.

Table C-1211 Field Descriptions for the POS Ports Tab

Field	Description
Index Number	The index number.
Slot	Select a slot for the new threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	The MIB variable to monitor.
Alarm Type	Select an alarm type for the new threshold. Indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Enter a sample period for the new threshold. The sample period is measured in seconds.
Rising Thresholds	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Thresholds	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).
Create	Click the **Create** button to create a threshold for the POS ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.4.5.5.2 Ether Ports Tab

The Ether Ports tab allows you to view the thresholds for the Ethernet ports.

Table C-1212 Field Descriptions for the Ether Ports Tab

Field	Description
Index Number	The index number.
Slot	Select a slot for the new threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.

Table C-1212 Field Descriptions for the Ether Ports Tab (continued)

Field	Description
Variable	The MIB variable to monitor.
Alarm Type	Select an alarm type for the new threshold. Indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Enter a sample period for the new threshold. The sample period is measured in seconds.
Rising Thresholds	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Thresholds	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).
Create	Click the **Create** button to create RMON thresholds for the Ethernet ports.
Delete	Select an RMON threshold from the list displayed and click the **Delete** button.

C.4.5.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information. The Alarm Behavior Properties pane contains the following tabs:

- C.4.5.6.1 POS Ports Tab, page C-867
- C.4.5.6.2 Ether Ports Tab, page C-868

C.4.5.6.1 POS Ports Tab

The POS Ports tab allows you to view and update POS alarm profile information.

Table C-1213 Field Descriptions for the POS Ports Tab

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.

Table C-1213 Field Descriptions for the POS Ports Tab (continued)

Field	Description
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.5.6.2 Ether Ports Tab

The Ether Ports tab allows you to view and update Ethernet alarm profile information.

Table C-1214 Field Descriptions for the Ether Ports Tab

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.5.7 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1215 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Circuit Type	Displays the circuit type.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
VCAT Member Number	Displays the virtual concatenation (VCAT) member number.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.4.5.8 GBIC Inventory

The GBIC Inventory Properties pane displays GBIC inventory information for new SFPs and old Ethernet SFPs that are plugged into the CE-MR-6 card. The card supports the following SFPs:

- ONS-SE-100-BX10U
- ONS-SE-100-BX10D
- ONS-SI-100-FX
- ONS-SI-100-LX10
- ONS-SI-GE-SX
- ONS-SI-GE-LX
- ONS-SI-GE-ZX
- ONS-SE-ZE-EL

Table C-1216 Field Descriptions for the GBIC Inventory Properties Pane

Field	Description
Port Number	Displays the GBIC card port number.
Equipment Type	Displays the equipment type the slot is provisioned for.
Serial Number	Displays the GBIC serial number that is unique to each GBIC.
CLEI Code	Displays the CLEI code.
Hardware Part Number	Displays the manufacturer's part number.
Hardware Revision Number	Displays the hardware revision number.
Actual Equipment Type	Displays the actual card that is installed in the slot. Values are single mode or multimode.
Vendor ID	Displays the ID of the vendor.

C.4.5.9 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the CE-MR-6 card.

Table C-1217 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.6 Slot Properties—CE-MR-10

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH module that is installed in the slot selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Carrier Ethernet Multirate 10 (CE-MR-10) card provides ten IEEE 802.3-compliant 10/100/1000-Mb/s Gigabit Ethernet ports at the ingress. At the egress, the CE-MR-10 card provides an integrated Ethernet over SDH mapper with ten virtual ports to transfer Ethernet packets over an SDH network.

The CE-MR-10 card uses pluggable SFPs to transport Ethernet traffic over an SDH network. SFP modules are offered as separate orderable products for flexibility.

The Ethernet frames are encapsulated using the ITU-T generic framing procedure (GFP) (with or without CRC) or LEX, the point-to-point protocol (PPP) with high-level data link control (HDLC).

The Ethernet ports automatically configure to operate at either half or full duplex and can determine whether to enable or disable flow control. The Ethernet ports can also be oversubscribed using flow control.

The CE-MR-10 card supports the link capacity adjustment scheme (LCAS), which allows hitless dynamic adjustment of SDH link bandwidth. The CE-MR-10 card's LCAS is hardware-based, but the CE-MR-10 also supports software LCAS (SW-LCAS). This makes it compatible with ML-series cards, which support only SW-LCAS, along with G-series and CE-series cards. The CE-MR-10 card also supports the nonlink capacity adjustment scheme (no-LCAS). The CE-MR-10 card supports both flexible and fixed VCAT groups (VCG). Prime Optical supports the FE payload on RAD SFPs.

The Ethernet frames can be mapped into:

- High-order virtual concatenated (HO VCAT) payloads
  - STS-1-*m*v, where *m* is 1 to 21
  - STS-3c-*m*v where *m* is 1 to 7
  - VC-4-*m*v, where *m* is 1 to 7
- Low-order virtual concatenated (LO VCAT) payloads
  - VC3-*m*v, where *m* is 1 to 21
  - VC12-*m*v, where *m* is 1 to 63
  - VT1.5-*m*v, where *m* is 1 to 64

Note SW-LCAS is not supported on VC12-*m*v or VT1.5-*m*v payloads.

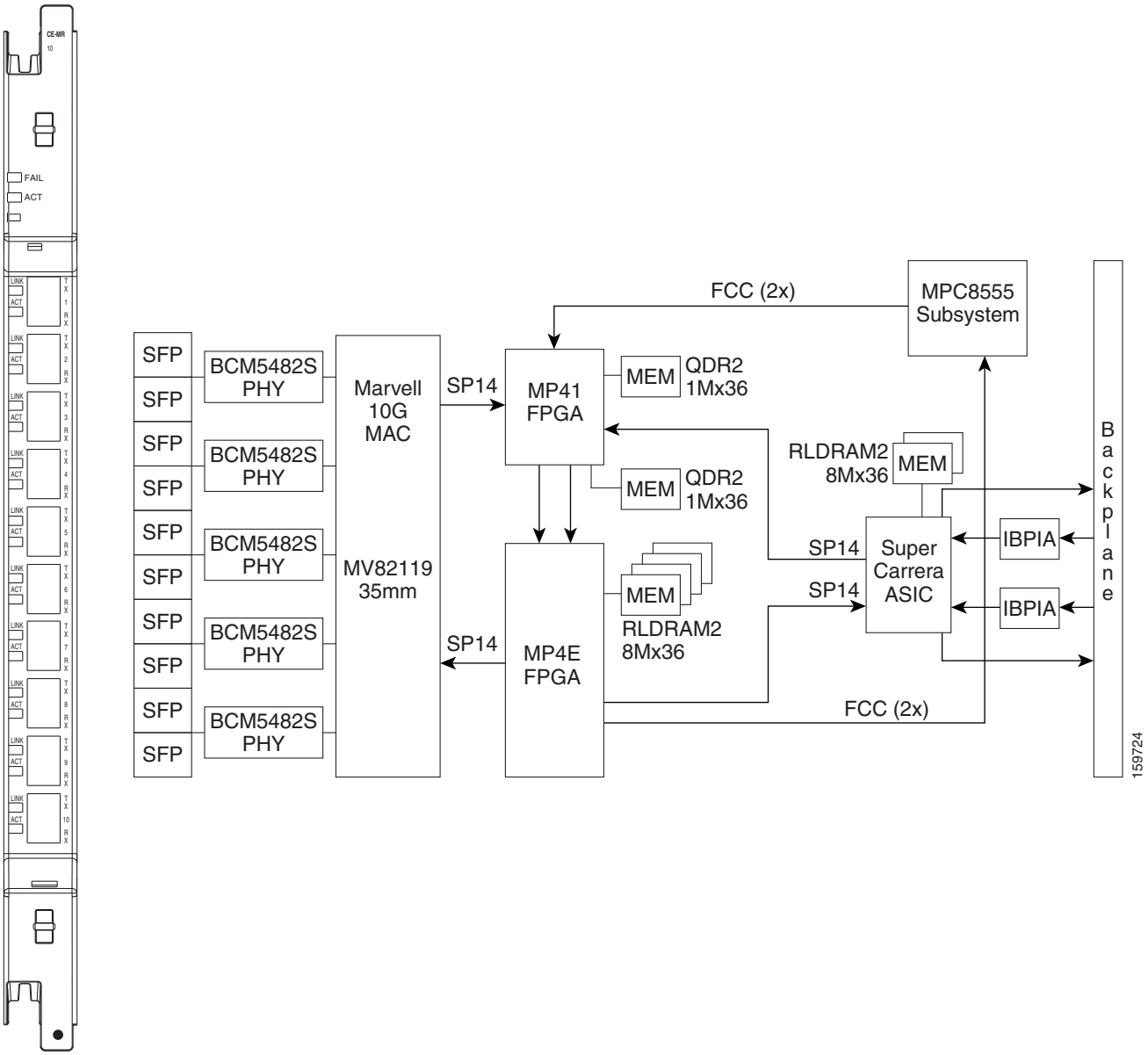
- High-order contiguously concatenated (CCAT) SONET payloads
  - STS-1, STS-3c, STS-6c, STS-9c, STS-12c, STS24c, and STS-48c
- CCAT SDH payloads
  - VC-3, VC-4, VC-4-2c, VC-4-3c, VC-4-4c, VC-4-8c, and VC-4-16c

To configure a CE-MR-10 card circuit, refer to the "Create Circuits and Low-Order Tunnels" chapter in the *Cisco ONS 15454 SDH Procedure Guide.*

The CE-MR-10 card provides multiple management options through CTC, Prime Optical, TL1, and SNMP.

The following figure shows the CE-MR-10 card faceplate and block diagram.

Figure C-70 CE-MR-10 Faceplate and Block Diagram



For the CE-MR-10 card, the slot properties pane displays the following properties: Module View, Identification, Line, Ether Loopback, Thresholds, Alarm Behavior, J1 Path Trace, GBIC Inventory, and Info.

C.4.6.1 Module View

The Module View displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the card is displayed under Alarm Status. (Moving the mouse pointer over the graphic also displays the alarm counts.) Right-clicking the graphic opens a shortcut menu that allows you to reset, delete, or change the card.

C.4.6.2 Identification

The Identification Properties pane allows you to view and update CE-MR-10 identification information.

Table C-1218 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service, unlocked or locked–maintenance. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Card Mode (*ONS 15454 SONET only*)	Specify the mode setting for the internal STS/VC allocation method on the card. Values are: • Automatic—Implies internal selection of time slot index numbers by the node. • Exposed—Implies user-selected index numbers.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.6.3 Line

The Line Properties pane allows you to view and update CE-MR-10 performance monitoring information. The Line Properties pane contains the following tabs:

- C.4.6.3.1 Ether Line Tab, page C-873
- C.4.6.3.2 POS Line Tab, page C-873

C.4.6.3.1 Ether Line Tab

The Ether Line tab allows you to view and change the Ethernet line settings of the CE-MR-10 card.

Table C-1219 Field Descriptions for the Ether Line Tab

Field	Description
Port Number	Displays the port number (1 to 10).
Port Name	Allows you to add a name for the port.
Administration State	Allows you to change the administrative state of the port.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up, Down, or Not Present.
Expected Speed	Displays the expected speed for the Ethernet ports. Values are Auto, 10 Mb/s, 100 Mb/s, and 1000 Mb/s.
Operating Speed	Displays the operating speed for the Ethernet ports.
Expected Duplex	Expected setting of the port. Values are Auto, Full, and Half.
Operating Duplex	Actual setting of the port. Values are Auto, Full, and Half.
Enable Flow Control	Check this check box to enable flow control for the selected port.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
802.1Q VLAN CoS	Sets the IEEE 802.1Q standard VLAN class of service (CoS) threshold for priority queueing. Values are 0 through 7; 0 is the lowest priority and 7 is the highest priority.
IP ToS	Sets the IP type of service (ToS) byte value for priority queueing. Values are 0 through 255.
Enable Auto Negotiate	When checked, the port negotiates with the mating port to set its own rate. If unchecked, the port operating rate does not work with the mate unless the port rates match.
Link Integrity Timer	Set the link integrity timer for the port. Enter a range from 200 to 5000 milliseconds, in increments of 100 milliseconds. Enabling link integrity ensures that links are never broken.

C.4.6.3.2 POS Line Tab

The POS Line tab allows you to view and change POS line settings for the CE-MR-10 card.

Table C-1220 Field Descriptions for the POS Line Tab

Field	Description
Port Number	Displays the port number (1 to 8).
Port Name	Allows you to add a name for the port.
Administration State	Allows you to change the administrative state of the port.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

Table C-1220 Field Descriptions for the POS Line Tab (continued)

Field	Description
AINS Soak	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS_NR state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up and Down.
Framing Type	Shows the encapsulation type. Values are: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • None—No framing type.
Encap CRC	Sets the cyclic redundancy check (CRC) to verify the integrity of the transmitted data.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.

C.4.6.4 Ether Loopback

The Ether Loopback Properties pane allows you to view and update CE-MR-10 loopback information.

Table C-1221 Field Descriptions for the Ether Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	Allows you to configure the status of the line.
Loopback	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS MT or locked, maintenance before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.4.6.5 Thresholds

The Thresholds Properties pane allows you to view CE-MR-10 thresholds and create new ones. The Properties pane contains the following tabs:

- C.4.6.5.1 POS Ports Tab, page C-875
- C.4.6.5.2 Ether Ports Tab, page C-875

C.4.6.5.1 POS Ports Tab

The POS Ports tab allows you to view the thresholds for the POS ports.

Table C-1222 Field Descriptions for the POS Ports Tab

Field	Description
Index Number	The index number.
Slot	Select a slot for the new threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	The MIB variable to monitor.
Alarm Type	Select an alarm type for the new threshold. Indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Enter a sample period for the new threshold. The sample period is measured in seconds.
Rising Thresholds	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Thresholds	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).
Create	Click the **Create** button to create a threshold for the POS ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.4.6.5.2 Ether Ports Tab

The Ether Ports tab allows you to view the thresholds for the Ethernet ports.

Table C-1223 Field Descriptions for the Ether Ports Tab

Field	Description
Index Number	The index number.
Slot	Select a slot for the new threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.

Table C-1223 Field Descriptions for the Ether Ports Tab (continued)

Field	Description
Variable	The MIB variable to monitor.
Alarm Type	Select an alarm type for the new threshold. Indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Enter a sample period for the new threshold. The sample period is measured in seconds.
Rising Thresholds	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Thresholds	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).
Create	Click the **Create** button to create RMON thresholds for the Ethernet ports.
Delete	Select an RMON threshold from the list displayed and click the **Delete** button.

C.4.6.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information. The Alarm Behavior Properties pane contains the following tabs:

- C.4.6.6.1 POS Ports Tab, page C-876
- C.4.6.6.2 Ether Ports Tab, page C-877

C.4.6.6.1 POS Ports Tab

The POS Ports tab allows you to view and update POS alarm profile information.

Table C-1224 Field Descriptions for the POS Ports Tab

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.

Table C-1224 Field Descriptions for the POS Ports Tab (continued)

Field	Description
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.6.6.2 Ether Ports Tab

The Ether Ports tab allows you to view and update Ethernet alarm profile information.

Table C-1225 Field Descriptions for the Ether Ports Tab

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.6.7 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1226 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Circuit Type	Displays the circuit type.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
VCAT Member Number	Displays the virtual concatenation (VCAT) member number.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.4.6.8 GBIC Inventory

The GBIC Inventory Properties pane allows you to view GBIC inventory information for the CE-MR-10 card.

Table C-1227 Field Descriptions for the GBIC Inventory Properties Pane

Field	Description
Port Number	Displays the GBIC card port number.
Equipment Type	Displays the equipment type the slot is provisioned for.
Serial Number	Displays the GBIC serial number that is unique to each GBIC.
CLEI Code	Displays the CLEI code.
Hardware Part Number	Displays the manufacturer's part number.
Hardware Revision Number	Displays the hardware revision number.
Actual Equipment Type	Displays the actual card that is installed in the slot. Values are single mode or multimode.
Vendor ID	Displays the ID of the vendor.

C.4.6.9 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the CE-MR-10 card.

Table C-1228 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.7 Slot Properties—E10/100T-4

The slot properties pane displays information about the Cisco ONS 15327 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The E10/100T-4 card provides four Layer 2 switched, autosensing, 10/100BaseT Ethernet interfaces. Each interface supports full-duplex operation for a maximum bandwidth of 200 Mb/s per port.

For the E10/100T-4 module, the slot properties pane displays the following properties: Module View, Identification, Port, Line, VLAN, Alarm Behavior, Thresholds, and Info.

C.4.7.1 Module View

The Module View displays a graphic of the E10/100T-4 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to delete, change, or reset the module.

C.4.7.2 Identification

The Identification Properties pane allows you to view and update E10/100T-4 identification information.

Table C-1229 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. Choosing an administration state from the drop-down list and clicking Apply changes the port’s service state unless network conditions prevent the change. Administration states include: • IS—In Service. The port service state changes to IS_NR. • OOS, DSBLD—Out of Service, Disabled. The port service state changes to OOS_MA, DSBLD. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT Administration State must be initiated. • IS, AINS—Automatic In Service. The port service state changes to OOS_AU, AINS.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Card Mode	Allows you to select a multicard Ether Switch group, a single-card Ether Switch group, or the Port Mapped mode for E-series cards.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.7.3 Port

The Port Properties pane allows you to view and update E10/100T-4 port information.

Table C-1230 Field Descriptions for the Port Properties Pane

Field	Description
Port Number	Displays the card port number.
Enabled	When checked, the corresponding port is enabled.
Queue Priority	Allows you to select the priority queue for the port.
STP Enabled	When checked, indicates that Spanning Tree Protocol (STP) is enabled for the card.
STP State	Displays the current STP state.

C.4.7.4 Line

The Line Properties pane allows you to view and update E10/100T-4 line performance monitoring information.

Table C-1231 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the port.
Mode	Allows you to select the appropriate mode for each Ethernet port. Valid choices for the E100T-12/E100T-G card are Auto, 10 Half, 10 Full, 100 Half, or 100 Full. Valid choices for the E1000-2/E1000-2-G card are 1000 Full or Auto.
Status	Displays the current optical line status.

C.4.7.5 VLAN

The VLAN Properties pane allows you to view and update E10/100T-4 VLAN information.

Table C-1232 Field Descriptions for the VLAN Properties Pane

Field	Description
VLAN	Displays the name of the VLAN.
Port *x*	If a port is a member of only one VLAN, select Untag from the Port column. The VLAN with Untag selected can connect to the port, but other VLANs cannot access that port. If a port is a trunk port, it connects multiple VLANs to an external device, such as a switch, which also supports trunking. A trunk port must have tagging (802.1Q) enabled for all VLANs that connect to that external device. Select Tagged at all VLAN rows that need to be trunked. Select Untag at one or more VLAN rows in the trunk port column that do not need to be trunked; for example, the default VLAN. Each Ethernet port must be attached to at least one untagged VLAN.

C.4.7.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update E10/100T-4 alarm profile information.

Table C-1233 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Parent Profile	Choose a global alarm profile for the card from the drop-down list.
Port Number	Displays the E10/100T-4 port number.
Alarm Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.7.7 Thresholds

The Thresholds Properties pane allows you to create, view, and delete E10/100T-4 thresholds.

Table C-1234 Field Descriptions for the Threshold Properties

Field	Description
Index #	A unique value that identifies the different thresholds currently existing on the NE.
Slot	Select a slot for the new Ether threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	Select a variable for the new Ether threshold. Available variables will differ based on the type of card selected in the Slot field.
Alarm Type	Select an alarm type for the new Ether threshold. Available alarm types are Rising, Falling, and Rising and Falling.
Sample Type	Select a sample type for the new Ether threshold. Available sample types are Relative and Absolute. **Relative** restricts the threshold to using the number of occurrences in the user-set sample period. **Absolute** sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period	Enter a sample period for the new Ether threshold. The sample period is measured in seconds.
Rising Threshold	Enter a rising threshold for the new Ether threshold. The value must be equal to or greater than the Falling Threshold value.
Falling Threshold	Enter a falling threshold for the new Ether threshold. The value must be equal to or less than the rising threshold value.
Create	Click the **Create** button to create a E10/100T-4 thresholds.
Delete	Select an E10/100T-4 threshold from the list displayed and click the **Delete** button.

C.4.7.8 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the E10/100T-4 card.

Table C-1235 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.8 Slot Properties—E1000-2

The slot properties pane displays information about the Cisco ONS 15454 or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 and ONS 15454 SDH E1000-2 cards incorporate Layer 2 switching, while the G-series card is a straight mapper card. The ONS 15454 E-series cards include the E100T-12/E100T-G and E1000-2/E1000-2-G. E-series cards support VLAN, IEEE 802.1Q, spanning tree, and IEEE 802.1D. An ONS 15454 holds a maximum of ten Ethernet cards, which can be inserted in any multipurpose slot.

For the E1000-2 module, the slot properties pane displays the following properties: Module View, Identification, Port, Line, VLAN, Alarm Behavior, Thresholds, and Info.

C.4.8.1 Module View

The Module View displays a graphic of the E1000-2 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.4.8.2 Identification

The Identification Properties pane allows you to view and update E1000-2 identification information.

Table C-1236 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.

Table C-1236 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Card Mode	Allows you to select a multicard Ether Switch group, a single-card Ether Switch group, or the Port Mapped mode for E-series cards.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.8.3 Port

The Port Properties pane allows you to view and update E1000-2 port information.

Table C-1237 Field Descriptions for the Port Properties Pane

Field	Description
Port Number	Displays the card port number.
Enabled	When checked, the corresponding port is enabled.
Queue Priority	Allows you to select the priority queue for the port.
STP Enabled	When checked, indicates that Spanning Tree Protocol (STP) is enabled for the card.
STP State	Displays the current STP state.

C.4.8.4 Line

The Line Properties pane allows you to view and update E1000-2 line performance monitoring information.

Table C-1238 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the port.

Table C-1238 Field Descriptions for the Line Properties Pane (continued)

Field	Description
Mode	Allows you to select the appropriate mode for each Ethernet port. Valid choices for the E100T-12/E100T-G card are Auto, 10 Half, 10 Full, 100 Half, or 100 Full. Valid choices for the E1000-2/E1000-2-G card are 1000 Full or Auto.
Status	Displays the current optical line status.

C.4.8.5 VLAN

The VLAN Properties pane allows you to view and update E1000-2 VLAN information.

Table C-1239 Field Descriptions for the VLAN Properties Pane

Field	Description
VLAN	Displays the name of the VLAN.
Port *x*	If a port is a member of only one VLAN, select Untag from the Port column. The VLAN with Untag selected can connect to the port, but other VLANs cannot access that port. If a port is a trunk port, it connects multiple VLANs to an external device, such as a switch, which also supports trunking. A trunk port must have tagging (802.1Q) enabled for all VLANs that connect to that external device. Select Tagged at all VLAN rows that need to be trunked. Select Untag at one or more VLAN rows in the trunk port column that do not need to be trunked; for example, the default VLAN. Each Ethernet port must be attached to at least one untagged VLAN.

C.4.8.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update E1000-2 alarm profile information.

Table C-1240 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Parent Profile	Choose a global alarm profile for the card from the drop-down list.
Port Number	Displays the ETH1000-2 port number.
Alarm Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.8.7 Thresholds

The Thresholds Properties pane allows you to create, view, and delete E1000-2 thresholds.

Table C-1241 Field Descriptions for the Threshold Properties

Field	Description
Index #	A unique value that identifies the different thresholds currently existing on the NE.
Slot	Select a slot for the new Ether threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.

Table C-1241 Field Descriptions for the Threshold Properties (continued)

Field	Description
Variable	Select a variable for the new Ether threshold. Available variables will differ based on the type of card selected in the Slot field.
Alarm Type	Select an alarm type for the new Ether threshold. Available alarm types are Rising, Falling, and Rising and Falling.
Sample Type	Select a sample type for the new Ether threshold. Available sample types are Relative and Absolute. **Relative** restricts the threshold to using the number of occurrences in the user-set sample period. **Absolute** sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period	Enter a sample period for the new Ether threshold. The sample period is measured in seconds.
Rising Threshold	Enter a rising threshold for the new Ether threshold. The value must be equal to or greater than the Falling Threshold value.
Falling Threshold	Enter a falling threshold for the new Ether threshold. The value must be equal to or less than the rising threshold value.
Create	Click the **Create** button to create a E1000-2 thresholds.
Delete	Select an E1000-2 threshold from the list displayed and click the **Delete** button.

C.4.8.8 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the E1000-2 card.

Table C-1242 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.9 Slot Properties—E1000-2-G

The slot properties pane displays information about the Cisco ONS 15454 or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 and ONS 15454 SDH E1000-2-G cards incorporate Layer 2 switching, while the G-series card is a straight mapper card. The ONS 15454 E-series cards include the E100T-12/E100T-G and E1000-2/E1000-2-G. E-series cards support VLAN, IEEE 802.1Q, spanning tree, and IEEE 802.1D. An ONS 15454 holds a maximum of ten Ethernet cards, which can be inserted in any multipurpose slot.

For the E1000-2-G module, the slot properties pane displays the following properties: Module View, Identification, Port, Line, VLAN, Alarm Behavior, Thresholds, and Info.

C.4.9.1 Module View

The Module View displays a graphic of the E1000-2-G that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the module.

C.4.9.2 Identification

The Identification Properties pane allows you to view and update E1000-2-G identification information.

Table C-1243 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Card Mode	Allows you to select a multicard Ether Switch group, a single-card Ether Switch group, or the Port Mapped mode for E-series cards.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.9.3 Port

The Port Properties pane allows you to view and update E1000-2-G port information.

Table C-1244 Field Descriptions for the Port Properties Pane

Field	Description
Port Number	Displays the card port number.
Enabled	When checked, the corresponding port is enabled.

Table C-1244 Field Descriptions for the Port Properties Pane (continued)

Field	Description
Queue Priority	Allows you to select the priority queue for the port.
STP Enabled	When checked, indicates that Spanning Tree Protocol (STP) is enabled for the card.
STP State	Displays the current STP state.

C.4.9.4 Line

The Line Properties pane allows you to view and update E1000-2-G line performance monitoring information.

Table C-1245 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the port.
Mode	Allows you to select the appropriate mode for each Ethernet port. Valid choices for the E100T-12/E100T-G card are Auto, 10 Half, 10 Full, 100 Half, or 100 Full. Valid choices for the E1000-2/E1000-2-G card are 1000 Full or Auto.
Status	Displays the current optical line status.

C.4.9.5 VLAN

The VLAN Properties pane allows you to view and update E1000-2-G VLAN information.

Table C-1246 Field Descriptions for the VLAN Properties Pane

Field	Description
VLAN	Displays the name of the VLAN.
Port *x*	If a port is a member of only one VLAN, select Untag from the Port column. The VLAN with Untag selected can connect to the port, but other VLANs cannot access that port. If a port is a trunk port, it connects multiple VLANs to an external device, such as a switch, which also supports trunking. A trunk port must have tagging (802.1Q) enabled for all VLANs that connect to that external device. Select Tagged at all VLAN rows that need to be trunked. Select Untag at one or more VLAN rows in the trunk port column that do not need to be trunked; for example, the default VLAN. Each Ethernet port must be attached to at least one untagged VLAN.

C.4.9.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update E1000-2-G alarm profile information.

Table C-1247 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Parent Profile	Choose a global alarm profile for the card from the drop-down list.
Port Number	Displays the E1000-2-G port number.

Table C-1247 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Alarm Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.9.7 Thresholds

The Thresholds Properties pane allows you to create, view, and delete E1000-2-G thresholds.

Table C-1248 Field Descriptions for the Threshold

Field	Description
Index #	A unique value that identifies the different thresholds currently existing on the NE.
Slot	Select a slot for the new Ether threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	Select a variable for the new Ether threshold. Available variables will differ based on the type of card selected in the Slot field.
Alarm Type	Select an alarm type for the new Ether threshold. Available alarm types are Rising, Falling, and Rising and Falling.
Sample Type	Select a sample type for the new Ether threshold. Available sample types are Relative and Absolute. **Relative** restricts the threshold to using the number of occurrences in the user-set sample period. **Absolute** sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period	Enter a sample period for the new Ether threshold. The sample period is measured in seconds.
Rising Threshold	Enter a rising threshold for the new Ether threshold. The value must be equal to or greater than the Falling Threshold value.
Falling Threshold	Enter a falling threshold for the new Ether threshold. The value must be equal to or less than the rising threshold value.
Create	Click the **Create** button to create a E1000-2-G thresholds.
Delete	Select an E1000-2-G threshold from the list displayed and click the **Delete** button.

C.4.9.8 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the E1000-2-G card.

Table C-1249 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.10 Slot Properties—E100T-12

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 and ONS 15454 SDH E100T-12 cards incorporate Layer 2 switching, while the G-series card is a straight mapper card. The ONS 15454 E-series cards include the E100T-12/E100T-G and E1000-2/E1000-2-G. E-series cards support VLAN, IEEE 802.1Q, spanning tree, and IEEE 802.1D. An ONS 15454 holds a maximum of ten Ethernet cards, which can be inserted in any multipurpose slot.

For the E100T-12 module, the slot properties pane displays the following properties: Module View, Identification, Port, Line, VLAN, Alarm Behavior, Thresholds, and Info.

C.4.10.1 Module View

The Module View displays a graphic of the E100T-12 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.4.10.2 Identification

The Identification Properties pane allows you to view and update E100T-12 identification information.

Table C-1250 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.

Table C-1250 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Card Mode	Allows you to select a multicard Ether Switch group, a single-card Ether Switch group, or the Port Mapped mode for E-series cards.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.10.3 Port

The Port Properties pane allows you to view and update E100T-12 port information.

Table C-1251 Field Descriptions for the Port Properties Pane

Field	Description
Port Number	Displays the card port number.
Enabled	When checked, the corresponding port is enabled.
Queue Priority	Allows you to select the priority queue for the port.
STP Enabled	When checked, indicates that Spanning Tree Protocol (STP) is enabled for the card.
STP State	Displays the current STP state.

C.4.10.4 Line

The Line Properties pane allows you to view and update E100T-12 line performance monitoring information.

Table C-1252 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the port.
Mode	Allows you to select the appropriate mode for each Ethernet port. Valid choices for the E100T-12/E100T-G card are Auto, 10 Half, 10 Full, 100 Half, or 100 Full. Valid choices for the E1000-2/E1000-2-G card are 1000 Full or Auto.
Status	Displays the current optical line status.

C.4.10.5 VLAN

The VLAN Properties pane allows you to view and update E100T-12 VLAN information.

Table C-1253 Field Descriptions for the VLAN Properties Pane

Field	Description
VLAN	Displays the name of the VLAN.
Port *x*	If a port is a member of only one VLAN, select Untag from the Port column. The VLAN with Untag selected can connect to the port, but other VLANs cannot access that port. If a port is a trunk port, it connects multiple VLANs to an external device, such as a switch, which also supports trunking. A trunk port must have tagging (802.1Q) enabled for all VLANs that connect to that external device. Select Tagged at all VLAN rows that need to be trunked. Select Untag at one or more VLAN rows in the trunk port column that do not need to be trunked; for example, the default VLAN. Each Ethernet port must be attached to at least one untagged VLAN.

C.4.10.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update E100T-12 alarm profile information.

Table C-1254 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Parent Profile	Choose a global alarm profile for the card from the drop-down list.
Port Number	Displays the ETH100 port number.
Alarm Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.10.7 Thresholds

The Thresholds Properties pane allows you to create, view, and delete E100T-12 thresholds.

Table C-1255 Field Descriptions for the Threshold Properties

Field	Description
Index #	A unique value that identifies the different thresholds currently existing on the NE.
Slot	Select a slot for the new Ether threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	Select a variable for the new Ether threshold. Available variables will differ based on the type of card selected in the Slot field.
Alarm Type	Select an alarm type for the new Ether threshold. Available alarm types are Rising, Falling, and Rising and Falling.
Sample Type	Select a sample type for the new Ether threshold. Available sample types are Relative and Absolute. **Relative** restricts the threshold to using the number of occurrences in the user-set sample period. **Absolute** sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period	Enter a sample period for the new Ether threshold. The sample period is measured in seconds.

Table C-1255 Field Descriptions for the Threshold Properties (continued)

Field	Description
Rising Threshold	Enter a rising threshold for the new Ether threshold. The value must be equal to or greater than the Falling Threshold value.
Falling Threshold	Enter a falling threshold for the new Ether threshold. The value must be equal to or less than the rising threshold value.
Create	Click the **Create** button to create a E100T-12 thresholds.
Delete	Select an E100T-12 threshold from the list displayed and click the **Delete** button.

C.4.10.8 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the E100T-12 card.

Table C-1256 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.11 Slot Properties—E100T-G

The slot properties pane displays information about the Cisco ONS 15454 or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

Use the E100T-G cards when the XC10G card is in use. The ONS 15454 and ONS 15454 SDH use E100T-G cards for Ethernet (10 Mb/s) and Fast Ethernet (100 Mb/s). Each card provides 12 switched, IEEE 802.3-compliant, 10/100BaseT Ethernet ports that can independently detect the speed of an attached device (autosense) and automatically connect at the appropriate speed. The ports autoconfigure to operate at either half or full duplex and determine whether to enable or disable flow control.

The ONS 15454 and ONS 15454 SDH incorporate Layer 2 switching, while the G-series card is a straight mapper card. The ONS 15454 E-series cards include the E100T-12/E100T-G and E1000-2/E1000-2-G. E-series cards support VLAN, IEEE 802.1Q, spanning tree, and IEEE 802.1D. An ONS 15454 holds a maximum of ten Ethernet cards, which can be inserted in any multipurpose slot.

For the E100T-G module, the slot properties pane displays the following properties: Module View, Identification, Port, Line, VLAN, and Alarm Behavior.

C.4.11.1 Module View

The Module View displays a graphic of the E100T-G that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.4.11.2 Identification

The Identification Properties pane allows you to view and update E100T-G identification information.

Table C-1257 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Card Mode	Allows you to select a multicard Ether Switch group, a single-card Ether Switch group, or the Port Mapped mode for E-series cards.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.11.3 Port

The Port Properties pane allows you to view and update E100T-G port information.

Table C-1258 Field Descriptions for the Port Properties Pane

Field	Description
Port Number	Displays the card port number.
Enabled	When checked, the corresponding port is enabled.
Queue Priority	Allows you to select the priority queue for the port.
STP Enabled	When checked, indicates that Spanning Tree Protocol (STP) is enabled for the card.
STP State	Displays the current STP state.

C.4.11.4 Line

The Line Properties pane allows you to view and update E100T-G line performance monitoring information.

Table C-1259 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the port.
Mode	Allows you to select the appropriate mode for each Ethernet port. Valid choices for the E100T-12/E100T-G card are Auto, 10 Half, 10 Full, 100 Half, or 100 Full. Valid choices for the E1000-2/E1000-2-G card are 1000 Full or Auto.
Status	Displays the current optical line status.

C.4.11.5 VLAN

The VLAN Properties pane allows you to view and update E100T-G VLAN information.

Table C-1260 Field Descriptions for the VLAN Properties Pane

Field	Description
VLAN	Displays the name of the VLAN.
Port *x*	If a port is a member of only one VLAN, select Untag from the Port column. The VLAN with Untag selected can connect to the port, but other VLANs cannot access that port. If a port is a trunk port, it connects multiple VLANs to an external device, such as a switch, which also supports trunking. A trunk port must have tagging (802.1Q) enabled for all VLANs that connect to that external device. Select Tagged at all VLAN rows that need to be trunked. Select Untag at one or more VLAN rows in the trunk port column that do not need to be trunked; for example, the default VLAN. Each Ethernet port must be attached to at least one untagged VLAN.

C.4.11.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update E100T-G alarm profile information.

Table C-1261 Field Descriptions for the Alarm Behavior Properties Pane

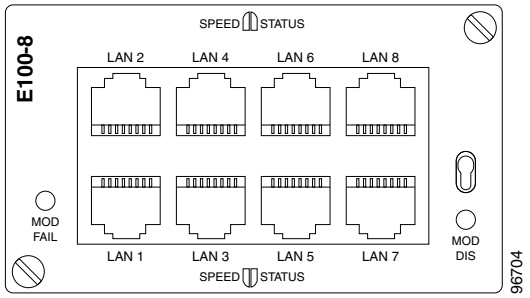
Field	Description
Parent Profile	Choose a global alarm profile for the card from the drop-down list.
Port Number	Displays the ETH100 port number.
Alarm Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.12 Slot Properties—E100-8 (ONS 15305 CTC)

The E100-8 module contains eight Ethernet interfaces that support both 10Base-T and 100Base-TX according to the IEEE 802.3 specification. The interfaces support half- and full-duplex modes. The interfaces are connected to an integrated Ethernet switch. The physical interface uses an RJ-45 connector. Every interface also has an LED that signals the status of the link. The module supports IP interface only. The following figure shows the module diagram.

Figure C-71 LAN 10/100Base TX Module, E100-8



For the E100-8 module, the slot properties pane displays the following properties: Module View, Identification, Port, Line, and VLAN.

C.4.12.1 Module View

The Module View displays a graphic of the E100-8 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.4.12.2 Identification

The Identification Properties pane allows you to view and update E100-8 identification information.

Table C-1262 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.

Table C-1262 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Card Mode	Displays the card mode as multicard Ether Switch group, single-card Ether Switch group, or Port Mapped.
Alarm Profile	Displays the alarm profile for the port.

C.4.12.3 Port

The Port Properties pane allows you to view and update port information.

Note The ONS 15305 supports only a partial Rapid Spanning Tree Protocol (RSTP) implementation that offers the same type of service as, for example, PortFast on Cisco equipment. The partial RSTP implementation does not support creation of a spanning tree among bridges; however, partial RSTP configures customer-facing ports for forwarding mode without having to wait for two times the forwarding delay as is the case with normal Spanning Tree Protocol (STP). To prevent loops in the network, normal STP must be running. RSTP should be used only on ports that face end-user equipment. If the ONS 15305 detects normal STP bridge protocol data units (BPDUs) on an interface configured for RSTP, the node switches back to normal STP for that interface.

Table C-1263 Field Descriptions for the Port Properties Pane

Field	Description
Port Number	Displays the card port number.
Enabled	When checked, the corresponding port is enabled.
Queue Priority	Allows you to select the priority queue for the port. You can select from, 0 (Low), 1 (Low), 2 (Low), 3 (Low), 4 (High), 5 (High), 6 (High), or 7 (High).
STP Enabled	When checked, indicates that STP is enabled for the card.
STP State	Displays the current STP state.

C.4.12.4 Line

The Line Properties pane allows you to view and update line card information.

Table C-1264 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the port.

Table C-1264 Field Descriptions for the Line Properties Pane (continued)

Field	Description
Mode	Allows you to select the appropriate mode for each port. Valid choices are Auto, 10 Half, 10 Full, 100 Half, or 100 Full.
Status	Displays the current optical line status.

C.4.12.5 VLAN

The VLAN Properties pane allows you to view and update VLAN information.

Table C-1265 Field Descriptions for the VLAN Properties Pane

Field	Description
VLAN	Displays the name of the VLAN.
Port *x*	If a port is a member of only one VLAN, select Untag from the Port column. The VLAN with Untag selected can connect to the port, but other VLANs cannot access that port. If a port is a trunk port, it connects multiple VLANs to an external device, such as a switch, which also supports trunking. A trunk port must have tagging (802.1Q) enabled for all VLANs that connect to that external device. Select Tagged at all VLAN rows that need to be trunked. Select Untag at one or more VLAN rows in the trunk port column that do not need to be trunked; for example, the default VLAN. Each Ethernet port must be attached to at least one untagged VLAN.

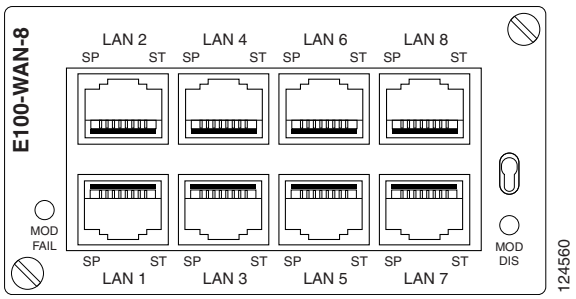
Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.13 Slot Properties—E100-WAN-8 (ONS 15305 CTC)

The E100-WAN-8 module is a tributary module that supports both optical and electrical Ethernet interfaces. The module contains eight LAN Ethernet interfaces that support both 10Base-T and 100Base-TX according to the IEEE 802.3 specification. The interface supports half- and full-duplex modes.

The physical interface is RJ-45 connectors. Every interface has two LEDs; one LED indicates the link status and the other LED indicates the link speed. The module includes up to 16 Ethernet-to-SDH mappers. The module supports both L1 and L2 services. The following figure shows the module diagram.

Figure C-72 LAN 10/100Base-TX Module with Mapper, E100-WAN-8



For the E100-WAN-8 module, the slot properties pane displays the following properties: Module View, Identification, Ether Line, Ether Port, WAN Line, and VLAN.

C.4.13.1 Module View

The Module View displays a graphic of the E100-WAN-8 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.4.13.2 Identification

The Identification Properties pane allows you to view and update E100-WAN-8 identification information.

Table C-1266 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Card Mode	Displays the card mode as multicard Ether Switch group or Port Mapped.
Alarm Profile	Displays the alarm profile for the port.

C.4.13.3 Ether Line

The Ether Line Properties pane allows you to configure Ether line information.

Table C-1267 Field Descriptions for the Ether Line Properties Pane

Field	Description
Port Number	The port number.
Port Name	Allows you to add a name for the port.
Mode	Allows you to select the appropriate mode for each port. Valid choices are Auto, 10 Half, 10 Full, 100 Half, or 100 Full.
Status	Displays the current optical line status.

C.4.13.4 Ether Port

The Ether Port Properties pane allows you to view and update port information.

Table C-1268 Field Descriptions for the Ether Port

Field	Description
Port Number	Displays the card port number.
Enabled	When checked, the corresponding port is enabled.
Queue Priority	Allows you to select the priority queue for the port. You can select from, 0 (Low), 1 (Low), 2 (Low), 3 (Low), 4 (High), 5 (High), 6 (High), or 7 (High).
STP Enabled	When checked, indicates that Spanning Tree Protocol (STP) is enabled for the card.
STP State	Displays the current STP state.

C.4.13.5 WAN Line

The WAN Line Properties pane allows you to view and configure wide-area network (WAN) line information.

Table C-1269 Field Descriptions for the WAN Line

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.

C.4.13.6 VLAN

The VLAN Properties pane allows you to view and update VLAN information.

Table C-1270 Field Descriptions for the VLAN Properties Pane

Field	Description
VLAN	Displays the name of the VLAN.
Port *x*	If a port is a member of only one VLAN, select Untag from the Port column. Select –- for all the other VLAN rows in that Port column. The VLAN with Untag selected can connect to the port, but other VLANs cannot access that port. If a port is a trunk port, it connects multiple VLANs to an external device, such as a switch, which also supports trunking. A trunk port must have tagging (802.1Q) enabled for all VLANs that connect to that external device. Select Tagged at all VLAN rows that need to be trunked. Select Untag at one or more VLAN rows in the trunk port column that do not need to be trunked; for example, the default VLAN. Each Ethernet port must attached to exactly one untagged VLAN.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.14 Slot Properties—ETH1000

The slot properties pane displays information about the Cisco ONS 15327, ONS 15454 SONET, or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 and ONS 15454 SDH ETH1000 cards incorporate Layer 2 switching, while the G-series card is a straight mapper card. The ONS 15454 E-series cards include the E100T-12/E100T-G and E1000-2/E1000-2-G. E-series cards support VLAN, IEEE 802.1Q, spanning tree, and IEEE 802.1D. An ONS 15454 holds a maximum of ten Ethernet cards, which can be inserted in any multipurpose slot.

For the ETH1000 module, the slot properties pane displays the following properties: Module View, Identification, Port, Line, VLAN, and Alarm Behavior.

C.4.14.1 Module View

The Module View displays a graphic of the ETH1000 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.4.14.2 Identification

The Identification Properties pane allows you to view and update ETH1000 identification information.

Table C-1271 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Card Mode	Allows you to select a multicard Ether Switch group, a single-card Ether Switch group, or the Port Mapped mode for E-series cards.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.14.3 Port

The Port Properties pane allows you to view and update ETH1000 port information.

Table C-1272 Field Descriptions for the Port Properties Pane

Field	Description
Port Number	Displays the card port number.
Enabled	When checked, the corresponding port is enabled.
Queue Priority	Allows you to select the priority queue for the port.
STP Enabled	When checked, indicates that Spanning Tree Protocol (STP) is enabled for the port.
STP State	Displays the current STP state.

C.4.14.4 Line

The Line Properties pane allows you to view and update ETH1000 line performance monitoring information.

Table C-1273 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the port.
Mode	Allows you to select the appropriate mode for each Ethernet port. Valid choices for the card are 1000 Full or Auto.
Status	Displays the current optical line status.

C.4.14.5 VLAN

The VLAN Properties pane allows you to view and update ETH1000 VLAN information.

Table C-1274 Field Descriptions for the VLAN Properties Pane

Field	Description
VLAN	Displays the name of the VLAN.
Port *x*	If a port is a member of only one VLAN, select Untag from the Port column. Select –- for all the other VLAN rows in that Port column. The VLAN with Untag selected can connect to the port, but other VLANs cannot access that port. If a port is a trunk port, it connects multiple VLANs to an external device, such as a switch, which also supports trunking. A trunk port must have tagging (802.1Q) enabled for all VLANs that connect to that external device. Select Tagged at all VLAN rows that need to be trunked. Select Untag at one or more VLAN rows in the trunk port column that do not need to be trunked; for example, the default VLAN. Each Ethernet port must attached to exactly one untagged VLAN.

C.4.14.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update ETH1000 alarm profile information.

Table C-1275 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Parent Profile	Choose a global alarm profile for the card from the drop-down list.
Port Number	Displays the ETH1000 port number.
Alarm Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.15 Slot Properties—G1000-2

The slot properties pane displays information about the Cisco ONS 15327 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15327 G1000-2 card reliably transports Ethernet and IP data across a SONET backbone. The G1000-2 card maps up to two Gigabit Ethernet interfaces onto a SONET transport network. A single card provides scalable and provisionable transport bandwidth at the signal levels up to STS-48c per card. The card provides line rate forwarding for all Ethernet frames (unicast, multicast, and broadcast) and can be configured to support jumbo frames (defined as a maximum of 10,000 bytes).

For the G1000-2 module, the slot properties pane displays the following properties: Module View, Identification, Port, Loopback, Thresholds, Alarm Behavior, J1 Path Trace, and Info.

C.4.15.1 Module View

The Module View displays a graphic of the G1000-2 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.4.15.2 Identification

The Identification Properties pane allows you to view and update G1000-2 identification information.

Table C-1276 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.15.3 Port

The Port Properties pane allows you to view and update G1000-2 port information.

Table C-1277 Field Descriptions for the Port Properties Pane

Field	Description
Port Number	Displays the card port number.
Port Name	Allows you to add a name for the optical port.
Max Frame	To permit the acceptance of jumbo-size Ethernet frames, select Jumbo (the default). If you do not want to permit jumbo-size Ethernet frames, select 1548.

Table C-1277 Field Descriptions for the Port Properties Pane (continued)

Field	Description
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
Auto Negotiation	Allows you to enable the card to match the speed and duplex mode of a partner node.
Negotiation Status	Displays the result of the most-recent autonegotiation. The type of flow control that was negotiated will be displayed.
Media Type	Indicates the type of SFP installed.
Administration State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Water Marks	Watermarks can either be Custom, Low Latency, or Default.
Flow Control Low	Displays the minimum flow control.
Flow Control High	Displays the maximum flow control.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

C.4.15.4 Loopback

The Loopback Properties pane allows you to view and update G1000-2 loopback information.

Table C-1278 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	Allows you to select the administration state of the port: In Service (IS) or Out of Service (OOS).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).

C.4.15.5 Thresholds

The Thresholds Properties pane allows you to create, view, and delete G1000-2 thresholds.

Table C-1279 Field Descriptions for the Threshold Properties

Field	Description
Index #	A unique value that identifies the different thresholds currently existing on the NE.
Slot	Select a slot for the new Ether threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	Select a variable for the new Ether threshold. Available variables will differ based on the type of card selected in the Slot field.
Alarm Type	Select an alarm type for the new Ether threshold. Available alarm types are Rising, Falling, and Rising and Falling.

Table C-1279 Field Descriptions for the Threshold Properties (continued)

Field	Description
Sample Type	Select a sample type for the new Ether threshold. Available sample types are Relative and Absolute. **Relative** restricts the threshold to using the number of occurrences in the user-set sample period. **Absolute** sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period	Enter a sample period for the new Ether threshold. The sample period is measured in seconds.
Rising Threshold	Enter a rising threshold for the new Ether threshold. The value must be equal to or greater than the Falling Threshold value.
Falling Threshold	Enter a falling threshold for the new Ether threshold. The value must be equal to or less than the rising threshold value.
Create	Click the **Create** button to create a G1000-2 thresholds.
Delete	Select a G1000-2 threshold from the list displayed and click the **Delete** button.

C.4.15.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update G1000-2 alarm profile information.

Table C-1280 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Parent Profile	Choose a global alarm profile for the card from the drop-down list.
Port Number	Displays the G1000-2 port number.
Alarm Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.15.7 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve G1000-2 J1 path trace information.

Table C-1281 Field Descriptions for the J1 Path Trace Properties Pane

Column	Description
Port Number	Displays the port number.
Circuit Type	Displays the circuit type.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.

C.4.15.8 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the G1000-2 card.

Table C-1282 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.16 Slot Properties—G1000-4

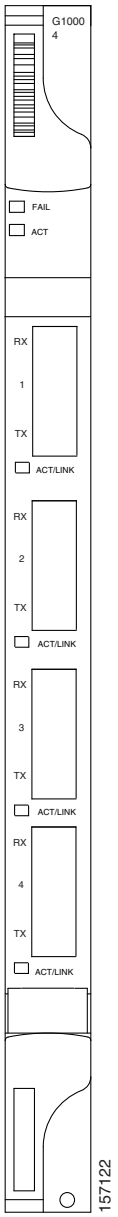
The slot properties pane displays information about the Cisco ONS 15327, ONS 15454 SONET, or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 SONET G1000-4 card reliably transports Ethernet and IP data across a SONET backbone. The G1000-4 card maps up to four Gigabit Ethernet interfaces onto a SONET transport network. A single card provides scalable and provisionable transport bandwidth at the signal levels up to STS-48c per card. The card provides line rate forwarding for all Ethernet frames (unicast, multicast, and broadcast) and can be configured to support jumbo frames (defined as a maximum of 10,000 bytes).

For ONS 15454 SDH NEs, the G1000-4 card provides four ports of IEEE-compliant, 1000-Mb/s interfaces. Each interface supports full-duplex operation for a maximum bandwidth of 1 Gb/s or 2 Gb/s bidirectional per port, and 2.5 Gb/s or 5 Gb/s bidirectional per card. Each port autonegotiates for full duplex and 802.3x flow control. The G1000-4 card uses GBIC modular receptacles for the optical interfaces.

The following figure shows the card faceplate.

Figure C-73 G1000-4 Module



For the G1000-4 module, the slot properties pane displays the following properties: Module View, Identification, Port, Loopback, Thresholds, Alarm Behavior, J1 Path Trace, and Info.

C.4.16.1 Module View

The Module View displays a graphic of the G1000-4 that is installed in the slot. In the module graphic the small arrows indicate the transponder mode. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.4.16.2 Identification

The Identification Properties pane allows you to view and update G1000-4 identification information.

Table C-1283 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Current Bandwidth Usage	Displays the current bandwidth utilization in terms of STS or VC-4 usage.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.16.3 Port

The Port Properties pane allows you to view and update G1000-4 port information.

Table C-1284 Field Descriptions for the Port Properties Pane

Field	Description
Port Number	Displays the card port number.
Port Name	Allows you to add a name for the optical port.
Max Frame	To permit the acceptance of jumbo-size Ethernet frames, select Jumbo (the default). If you do not want to permit jumbo-size Ethernet frames, select 1548.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
Auto Negotiation	Allows you to enable the card to match the speed and duplex mode of a partner node.
Negotiation Status	Displays the result of the most-recent autonegotiation. The type of flow control that was negotiated will be displayed.
Media Type	Indicates the type of SFP installed.

Table C-1284 Field Descriptions for the Port Properties Pane (continued)

Field	Description
Administration State	Displays the status of the line. The line can be In Service (IS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Transponder Port	Ports in the transponding mode.
Transponder Mode	The GigE Ethernet Transponder can be set for 3 different operation modes: • Two ports bidirectional transponder mode (Tx and Rx of one port can be mapped into Rx and Tx of another port) • One port bidirectional transponding mode (Ethernet frames received at port Rx will be transmitted out at the same port Tx) • Two ports unidirectional transponding mode (Ethernet frames received at one port Rx will be transmitted out at another port Tx). In the module view the small arrows indicate the transponder mode (see the module graphic in the Module View description).
Water Marks	Adjustable buffers for flow control.
Flow Control Low	Flow control low value.
Flow Control High	Flow control high value.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Link Integrity Disable	If this check box is checked, the Link Integrity Timer field for the corresponding port number will be disabled.
Link Integrity Timer	Set the link integrity timer for the port. Enter a range from 200 to 5000 milliseconds, in increments of 100 milliseconds. Enabling link integrity ensures that links are never broken.

C.4.16.4 Loopback

The Loopback Properties pane allows you to view and update G1000-4 loopback information.

Table C-1285 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	Allows you to select the administration state of the port: In Service (IS) or Out of Service (OOS).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).

C.4.16.5 Thresholds

The Thresholds Properties pane allows you to create, view, and delete G1000-4 thresholds.

Table C-1286 Field Descriptions for the Thresholds Properties Pane

Field	Description
Index #	A unique value that identifies the different thresholds currently existing on the NE.
Slot	Select a slot for the new Ether threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	Select a variable for the new Ether threshold. Available variables will differ based on the type of card selected in the Slot field.
Alarm Type	Select an alarm type for the new Ether threshold. Available alarm types are Rising, Falling, and Rising and Falling.
Sample Type	Select a sample type for the new Ether threshold. Available sample types are Relative and Absolute. **Relative** restricts the threshold to using the number of occurrences in the user-set sample period. **Absolute** sets the threshold to use the total number of occurrences, regardless of any time period.
Sample Period	Enter a sample period for the new Ether threshold. The sample period is measured in seconds.
Rising Threshold	Enter a rising threshold for the new Ether threshold. The value must be equal or greater than the Falling Threshold value.
Falling Threshold	Enter a falling threshold for the new Ether threshold. The value must be equal or less than the rising threshold value.

C.4.16.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update G1000-4 alarm profile information.

Table C-1287 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Parent Profile	Choose a global alarm profile for the card from the drop-down list.
Port Number	Displays the G1000-4 port number.
Alarm Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.16.7 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve G1000-4 J1 path trace information.

Table C-1288 Field Descriptions for the J1 Path Trace Properties Pane

Column	Description
Port Number	Displays the port number.
Circuit Type	Displays the circuit type.
Expected String	Displays the current expected string.
Received String	Displays the current received string.

Table C-1288 Field Descriptions for the J1 Path Trace Properties Pane (continued)

Column	Description
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.

C.4.16.8 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the G1000-4 card.

Table C-1289 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

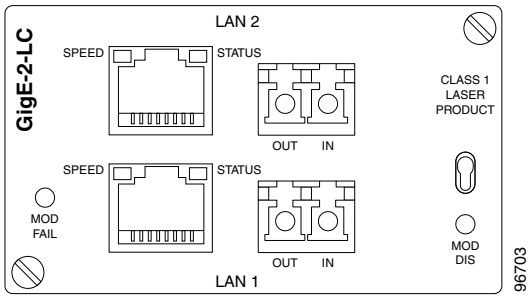
Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.17 Slot Properties—GE-2 (ONS 15305 CTC)

The slot properties pane displays information about the Cisco ONS 15305 CTC slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The GE-2 module contains two Gigabit Ethernet (GE) interfaces that meet the 1000Base-LX specification in IEEE 802.3. This interface is a long-haul interface based on single-mode fiber. The physical connector is an LC connector. The following figure shows the card faceplate.

Figure C-74 Dual Optical LAN 1000BASE-LX, GE-2 Module



For the GE-2 module, the slot properties pane displays the following properties: Module View, Identification, Line, Port, and VLAN.

C.4.17.1 Module View

The Module View displays a graphic of the GE-2 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

C.4.17.2 Identification

The Identification Properties pane allows you to view and update GE-2 identification information.

Table C-1290 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Card Mode	Displays the card mode as, multicard Ether Switch group, a single-card Ether Switch group, or the Port Mapped mode for E-series cards.
Alarm Profile	Displays the alarm profile for the port.

C.4.17.3 Line

The Line Properties pane allows you to view and update line card information.

Table C-1291 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to add a name for the port.
Mode	Allows you to select the appropriate mode for each port. Valid choices are Auto, 10 Half, 10 Full, 100 Half, 100 Full, 1000 Half, or 1000 Full.
Status	Displays the current optical line status.

C.4.17.4 Port

The Port Properties pane allows you to view and update port information.

Table C-1292 Field Descriptions for the Port Properties Pane

Field	Description
Port Number	Displays the card port number.
Enabled	When checked, the corresponding port is enabled.
Queue Priority	Allows you to select the priority queue for the port. You can select from, 0 (Low), 1 (Low), 2 (Low), 3 (Low), 4 (High), 5 (High), 6 (High), or 7 (High).
STP Enabled	When checked, indicates that Spanning Tree Protocol (STP) is enabled for the card.
STP State	Displays the current STP state.

C.4.17.5 VLAN

The VLAN Properties pane allows you to view and update VLAN information.

Table C-1293 Field Descriptions for the VLAN Properties Pane

Field	Description
VLAN	Displays the name of the VLAN.
Port *x*	If a port is a member of only one VLAN, select Untag from the Port column. The VLAN with Untag selected can connect to the port, but other VLANs cannot access that port. If a port is a trunk port, it connects multiple VLANs to an external device, such as a switch, which also supports trunking. A trunk port must have tagging (802.1Q) enabled for all VLANs that connect to that external device. Select Tagged at all VLAN rows that need to be trunked. Select Untag at one or more VLAN rows in the trunk port column that do not need to be trunked; for example, the default VLAN. Each Ethernet port must be attached to at least one untagged VLAN.

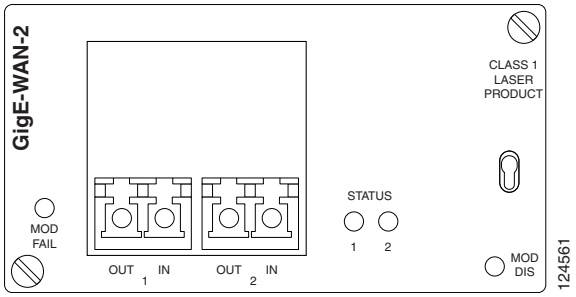
Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.18 Slot Properties—GigE-WAN-2 (ONS 15305 CTC)

The slot properties pane displays information about the Cisco ONS 15305 CTC slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The GigE-WAN-2 module is a tributary module that supports both optical and electrical Gigabit Ethernet interfaces. It supports up to two interfaces and includes up to two Gigabit Ethernet-to-SDH mappers. The module supports both L1 and L2 services. The following figure shows the module diagram.

Figure C-75 Dual Optical LAN 1000Base-LX Module with Mapper, GigE-WAN-2



For the GigE-WAN-2 module, the slot properties pane displays the following properties: Module View, Identification, Ether Line, Ether Port, WAN Line, and VLAN.

C.4.18.1 Module View

The Module View displays a graphic of the GigE-WAN-2 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the card.

C.4.18.2 Identification

The Identification Properties pane allows you to view and update identification information.

Table C-1294 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Card Mode	Displays the card mode as multicard Ether Switch group or Port Mapped.
Alarm Profile	Displays the alarm profile for the port.

C.4.18.3 Ether Line

The Ether Line Properties pane allows you to configure Ether line information.

Table C-1295 Field Descriptions for the Ether Line Properties Pane

Field	Description
Port Number	The port number.
Port Name	Allows you to enter a port name.
Mode	Allows you to set the mode for the port to 1000 Full.
Status	Displays the current optical line status.

C.4.18.4 Ether Port

The Ether Port Properties pane allows you to view and update port information.

Table C-1296 Field Descriptions for the Ether Port Properties Pane

Field	Description
Port Number	Displays the card port number.
Enabled	When checked, the corresponding port is enabled.

C.4.18.5 WAN Line

The WAN Line Properties pane allows you to view and configure wide-area network (WAN) line information.

Table C-1297 Field Descriptions for the WAN Line

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.

C.4.18.6 VLAN

The VLAN Properties pane allows you to view and update VLAN information.

Table C-1298 Field Descriptions for the VLAN Properties Pane

Field	Description
VLAN	Displays the name of the VLAN.
Port *x*	If a port is a member of only one VLAN, select Untag from the Port column. Select –- for all the other VLAN rows in that Port column. The VLAN with Untag selected can connect to the port, but other VLANs cannot access that port. If a port is a trunk port, it connects multiple VLANs to an external device, such as a switch, which also supports trunking. A trunk port must have tagging (802.1Q) enabled for all VLANs that connect to that external device. Select Tagged at all VLAN rows that need to be trunked. Select Untag at one or more VLAN rows in the trunk port column that do not need to be trunked; for example, the default VLAN. Each Ethernet port must attached to exactly one untagged VLAN.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.19 Slot Properties—ML-100T-8

The slot properties pane displays information about the Cisco ONS 15310 CL, Cisco ONS 15310 MA SONET, or Cisco ONS 15310 MA SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ML-100T-8 card provides feature parity with the ONS 15454 ML card features. The ML-100T-8 card interoperates with ML-series cards as a hub node, and also interoperates with other ML cards on an RPR ring. The card also supports concatenation functions to construct transport trails (for example, VC-4-4c) for carrying packet data. The card provides contiguous, low-order, and high-order virtual concatenation. The ML-100T-8 card has its own PID and CLEI, and a port count that ranges from 0 to 7.

For the ML-100T-8 module, the slot properties pane displays the following properties: Module View, Identification, Configuration, POS, Ether, Alarm Behavior, L2 Service Drops, Card Parameters, Thresholds, J1 Path Trace, and Info.

C.4.19.1 Module View

The Module View displays a graphic of the ML-100T-8 module that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.4.19.2 Identification

The Identification Properties pane allows you to view and update ML-100T-8 identification information.

Table C-1299 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.

Table C-1299 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.19.3 Configuration

The Configuration Properties pane allows you to upload or download a configuration file for the ML-100T-8 card.

Table C-1300 Field Descriptions for the Configuration Properties Pane

Field	Description
IOS Startup Config	
Source	Displays the source of the configuration file.
Host	Displays the host machine where the configuration file is stored, or the location where the file will be downloaded.
Filename	Displays the name of the configuration file.
Directory	Displays the directory on the host machine for the configuration file.
Time Stamp	Displays the date and time of the file upload or download. The time stamp shows the time on the NE, not the time on the Prime Optical server. **Note** You can update the time stamp on the NE in the node-level NE Explorer > Identification Properties pane.
IOS Config File	
CTX >> File	Click this button to download the file from the CTX card to the host machine. Select Local or Server in the CTX >> File dialog box to designate a location for the file.
File >> CTX	Click this button to upload the file from the host machine to the CTX card. Select Local or Server in the File >> CTX dialog box to designate a location for the file.
Launch CLI	Click this button to launch the command-line interface (CLI).
Microcode	
Microcode	Configure the ML-series card with one of the following microcode images: • Base—Enables base features, which include IP multicast routing and IP fragmentation. • Enhanced—Enables Ethernet Relay Multipoint Service (ERMS), enhanced packet statistics, and enhanced Dual RPR Interconnect (DRPRI). This disables IP fragmentation and IP multicast routing features supported by the base microcode image. • MPLS—Enables Multiprotocol Label Switching (MPLS). **Note** After changing the microcode, you should reset the card manually.
Hostname	

Table C-1300 Field Descriptions for the Configuration Properties Pane (continued)

Field	Description
Hostname	Enter the hostname of the device where you want to upload or download a configuration file for the card.
IOS Access	
Enable Console Port Access	Allows you to enable access to ML cards through the console port. If this field is disabled, you cannot connect to the ML card through the console port.
Enable RADIUS Relay	Allows you to enable access to ML cards through the RADIUS relay server.

C.4.19.4 POS

The POS Properties pane allows you to view and update ML-100T-8 POS port information.

Table C-1301 Field Descriptions for the POS

Field	Description
POS Ports	
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Enter the soak time in hours from 0 to 48, and in minutes from 0 to 45 (in 15-minute increments).
State	Displays the state of the port. Values are Up and Down.
Link State	Displays the link state. Values are Up and Down.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.
POS Provisioning	
Port Number	Displays the port number.
Interface State	Status of the interface (up or shut down). When the interface is shut down, no traffic can flow through it.
MTU Size	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.
Framing Type	Shows the encapsulation type. Values are: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • None—No framing type.
CoS Accounting	Indicates whether or not PM is enabled on the POS.

C.4.19.5 Ether

The Ether Properties pane allows you to view and update ML-100T-8 Ethernet port information.

Table C-1302 Field Descriptions for the Ether

Field	Description
Ether Ports	
Port Number	Displays the configurable identifier for the port.
Port Name	Displays the name of the port.
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Enter the soak time in hours from 0 to 48, and in minutes from 0 to 45 (in 15-minute increments).
State	Displays the configured administration port state, which is active or inactive. Values are UP and DOWN.
Link State	Displays the physical port state. Values are UP and DOWN.
Operating Speed	Displays the operating speed for the ports.
Operating Duplex	Actual setting of the port. Values are Auto, Full, and Half.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
Fast Ethernet Provisioning	
Port Number	Displays the port number.
Interface State	Status of the interface (up or shut down). When the interface is shut down, no traffic can flow through it.
Speed	Displays the operating speed for the ports.
Duplex	Actual setting of the port. Values are Auto, Full, and Half.
Flow Control (Send)	Negotiated flow control mode, which configures the send traffic flow operation. Flow control works only with policing. Values and their impact on traffic flow are: • Desired—Allow but do not require flow-control packets on port • Off—Disable flow-control packets on port • On—Enable flow-control packets on port (works only with policing)
CoS Accounting	Indicates whether or not PM is enabled on the port.

C.4.19.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information for POS and Ethernet ports.

Table C-1303 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Select the alarm profile for the port.
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Port Number	Displays the port number.
Alarm Profile	Displays the alarm profile for the port.

Table C-1303 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Suppress Alarms	Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.19.7 L2 Service Drops

The L2 Service Drops Properties pane allows you to view L2 service drop configuration settings. Click the **Show QoS Parameters** button to open the QoS for L2 Service Drop Port table, which shows the QoS for the selected drop.

Table C-1304 Field Descriptions for the L2 Service Drops Properties Pane

Field	Description
Port No.	The port number.
Port Sub Interface	The port subinterface.
Topology Name	The topology name.
SP VLAN ID	The service provider VLAN ID.
Customer ID	The customer ID.
Service ID	The service ID.
Bridge Group	The bridge group.
Port Type	The port type (UNI or NNI).
Connection Type	The connection type (Dot1Q, Untagged, or QinQ).
Policing	The QoS policy configured on the selected front port interface or subinterface. Supported values are CIR/PIR and Best Effort.
RSTP	When checked, RSTP is enabled.

C.4.19.8 Card Parameters

The Card Parameters Properties pane allows you to view card parameter settings.

Table C-1305 Field Descriptions for the Card Properties Pane Parameters

Field	Description
Port Number	The port number.
Port Sub Interface	The port subinterface.
Bridge Group	The bridge group.
CIR	The committed information rate. The range is from 96000 to 800000000 bits per second.
CIR Burst	The maximum CIR burst. The default is 8000 bytes; the range is from 8000 to 64000 bytes.
PIR	The peak information rate. The range is from 96000 to 800000000 bits per second. PIR should be greater than or equal to CIR.

Table C-1305 Field Descriptions for the Card Properties Pane Parameters (continued)

Field	Description
PIR Burst	The maximum PIR burst. The default is 64000 bytes; the range is from 8000 to 64000 bytes. PIR burst should be greater than or equal to CIR burst.
CCOSTRANSMIT	This keyword comes from the grammar file for the police command. For confirm action, the set-cos-transmit keyword specifies the set cos value. This value is used to determine the QoS configured on the front port of the ML card. A CCOSTRANSMIT value of 0 means a best effort policy has been configured for this port (FE/GE_IN). Other values are: 1: Best Effort (for Policy_Qos_Out) 2: CIR 3: CONTROL 4: VOICE 5: VIDEO 6: VOICE_VIDEO 7: MISSION_CRITICAL 8: SP_MANAGEMENT The card parameters shown on the NE Explorer are only for Policy_FE/GE_IN, meaning CCOSTRANSMIT is 0 or 2 (what VLAN provisioning supports).

C.4.19.9 Thresholds

The Thresholds Properties pane allows you to view and create RMON thresholds for POS and Ethernet ports.

Table C-1306 Field Descriptions for the Thresholds Properties Pane

Field	Description
Index Number	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Threshold	Displays the number of occurrences for the rising threshold.
Falling Threshold	Displays the number of occurrences for the falling threshold field. In most cases, a falling threshold is set lower than the rising threshold.

Table C-1306 Field Descriptions for the Thresholds Properties Pane (continued)

Field	Description
Create	Click the **Create** button to create RMON thresholds for the port.
Delete	Select an RMON threshold from the list displayed and click the **Delete** button.

C.4.19.10 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1307 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Circuit Type	Displays the circuit type.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.

C.4.19.11 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the ML-100T-8 card.

Table C-1308 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.20 Slot Properties—ML1000-2

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Gigabit Ethernet (ML1000-2) Layer 3 switch processes up to 5.7 Mb/s. The card is integrated into the ONS 15454 SONET or ONS 15454 SDH. An ONS 15454 SONET with a 10-gigabit cross-connect card (XC10G) can host the ML1000-2 card in any traffic card slot, but an ONS 15454 SONET with a

cross-connect card (XC) or cross-connect virtual tributary card (XCVT) can only host the ML1000-2 card in the four traffic slots. An ONS 15454 SDH can host the ML1000-2 card in any traffic card slot with any cross-connect card.

For the ML1000-2 module, the slot properties pane displays the following properties: Module View, Identification, Configuration, POS, Ether, Alarm Behavior, L2 Service Drops, Card Parameters, Thresholds, J1 Path Trace, Info, and Port Channel. The properties shown depend on the NE configuration.

C.4.20.1 Module View

The Module View displays a graphic of the ML1000-2 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.4.20.2 Identification

The Identification Properties pane allows you to view and update ML1000-2 card identification information.

Table C-1309 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

Table C-1309 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Card Mode	Select the card mode. It can be one of the following: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode; maps a client frame into one GFP frame. • RPR 802.17—IEEE 802.17 Resilient Packet Ring (RPR) standard, which specifies the data traffic protection and spatial reuse over ring architecture. The RPR ring architecture is highly scalable and provides efficient transfer of packet-based traffic across a network. It is suitable for data, voice, and video applications. ⚠ **Caution** If you change the card mode to RPR 802.17, you must reload the barebone configuration on the ML card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.20.3 Configuration

The Configuration Properties pane allows you to upload or download a configuration file for the ML1000-2 card.

Table C-1310 Field Descriptions for the Configuration Properties Pane

Field	Description
IOS Startup Config	
Source	Displays the source of the configuration file.
Host	Displays the host machine where the configuration file is stored, or the location where the file will be downloaded.
Filename	Displays the name of the configuration file.
Directory	Displays the directory on the host machine for the configuration file.
Time Stamp	Displays the date and time of the file upload or download. The time stamp shows the time on the NE, not the time on the Prime Optical server. **Note** You can update the time stamp on the NE in the node-level NE Explorer > Identification Properties pane.
IOS Config File	
TCC >> File	Click this button to download the file from the TCC card to the host machine. Select **Local** or **Server** in the TCC >> File dialog box to designate a location for the file. **Note** If you select Server, the file is saved in the $CTMROOT/IosConfig directory.
File >> TCC	Click this button to upload the file from the host machine to the TCC card. Select Local or Server in the File >> TCC dialog box to designate a location for the file.
Launch CLI	Click this button to launch the command-line interface (CLI).
Hostname	

Table C-1310 Field Descriptions for the Configuration Properties Pane (continued)

Field	Description
Hostname	Displays the hostname that was configured through the Cisco IOS CLI. You can enter a different value for the hostname if required.
Microcode	
Microcode	Configure the ML-series card with one of the following microcode images. Select either: • Base—Enables base features, which include IP multicast routing and IP fragmentation. • Enhanced—Enables Ethernet Relay Multipoint Service (ERMS), enhanced packet statistics, and enhanced Dual RPR Interconnect (DRPRI). This disables IP fragmentation and IP multicast routing features supported by the base microcode image. **Note** After changing the microcode, you should reset the card manually.
IOS Access	
Enable Console Port Access	Allows you to enable access to ML cards through the console port. If this field is disabled, you cannot connect to the ML card through the console port.
Enable RADIUS Relay	Allows you to enable access to ML cards through the RADIUS relay server.

C.4.20.4 POS

The POS Properties pane allows you to view and update ML1000-2 POS port information.

Table C-1311 Field Descriptions for the POS Properties Pane

Field	Description
POS Ports	
Port Number	Displays the configurable identifier for the port.
Port Name	Displays the name of the port.
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Enter the soak time in hours from 0 to 48, and in minutes from 0 to 45 (in 15-minute increments).
State	Displays the configured administration port state, which is active or inactive. Values are UP and DOWN. **Note** The Administration State field displays “DOWN” whenever a circuit is not provisioned. To see the actual administration state of the port, view the POS Properties pane > POS Provisioning tab. The Interface State attribute shows the actual Administration State value.
Link State	Displays the physical port state. Values are UP and DOWN.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. Maximum setting is 9000 and the default size is 1500. The MTU value will display 0 until the POS port is used in creating a circuit.

Table C-1311 Field Descriptions for the POS Properties Pane (continued)

Field	Description
Framing Type	Shows the encapsulation type. Values are: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • None—No framing type.
RPR Span	
Port Number	Displays the port number.
Port Name	Displays the name of the port. You can edit the port name.
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Enter the automatic in-service soak time, which is the amount of valid input signal, after which the port is set in service by the software. The range is from 0 to 48 hours, in 15-minute increments.
Span Interface	Displays the direction of the RPR span, either RPR_EAST or RPR_WEST.
State	Displays the state of the east and west spans.
Framing Type	Indicates the framing type, which is RPR 802.17.
Jumbo	Displays a value of true, which indicates that jumbo frame support is applied on all of the ML cards participating in the 802.17 RPR topology. Jumbo frame support is set at the ring level and carried in the attribute discovery messages.
Edge	Indicates the existence of a protection edge in an open ring. Values are: • EDGE—The selected RPR has a protection edge in an open ring. • NO_EDGE—The selected RPR does not have a protection edge in an open ring.
POS Provisioning	
Port Number	Displays the port number.
Interface State	Status of the interface (up or shut down). When the interface is shut down, no traffic can flow through it.
MTU Size	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.
CoS Accounting	Indicates whether or not PM is enabled on the POS.
RPR Span Provisioning	
Port Number	Displays the port number.
Interface State	Check the Interface State check box to bring up the interface. Leave the check box unchecked to shut down the interface. When the interface is shut down, no traffic can flow through it.

C.4.20.5 Ether

The Ether Properties pane allows you to view and update ML1000-2 Ethernet port information.

Table C-1312 Field Descriptions for the Ether

Field	Description
Ether Ports	
Port Number	Displays the configurable identifier for the port.
Port Name	Displays the name of the port.
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Enter the soak time in hours from 0 to 48, and in minutes from 0 to 45 (in 15-minute increments).
State	Displays the configured administration port state, which is active or inactive. Values are UP and DOWN.
Link State	Displays the physical port state. Values are UP and DOWN.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.
Operating Speed	Displays the operating speed for the ports.
Operating Duplex	Actual setting of the port. Values are Auto, Full, and Half.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
Optics	Displays the SFP physical media type. Values are Unplugged, 1000 SX, and 1000 LX.
Gigabit Ethernet Provisioning	
Port Number	Displays the port number.
Interface State	Status of the interface (up or shut down). When the interface is shut down, no traffic can flow through it.
MTU Size	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.
Speed	Displays the operating speed for the ports.
Flow Control (Send)	Negotiated flow control mode, which configures the send traffic flow operation. Flow control works only with policing. Values and their impact on traffic flow are: • Desired—Allow but do not require flow-control packets on port • Off—Disable flow-control packets on port • On—Enable flow-control packets on port (works only with policing)
Flow Control (Receive)	Negotiated flow control mode, which configures the receiving traffic flow operation. Values and their impact on traffic flow are: • Desired—Allow but do not require flow-control packets on port • Off—Disable flow-control packets on port • On—Enable flow-control packets on port (works only with policing)
CoS Accounting	Indicates whether or not PM is enabled on the port.

C.4.20.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update ML1000-2 alarm profile information for the POS and Ethernet ports and RPR spans.

Table C-1313 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Equipment State	Displays the equipment state.
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.20.7 L2 Service Drops

The L2 Service Drops Properties pane allows you to view L2 service drop configuration settings. Click the **Show QoS Parameters** button to open the QoS for L2 Service Drop Port table, which shows the QoS for the selected drop.

Table C-1314 Field Descriptions for the L2 Service Drops Properties Pane

Field	Description
Port No.	The port number.
Port Sub Interface	The port subinterface.
Topology Name	The topology name.
SP VLAN ID	The service provider VLAN ID.
Customer ID	The customer ID.
Service ID	The service ID.
Bridge Group	The bridge group.
Port Type	The port type (UNI or NNI).
Connection Type	The connection type (Dot1Q, Untagged, or QinQ).
Policing	The QoS policy configured on the selected front port interface or subinterface. Supported values are CIR/PIR and Best Effort.
RSTP	When checked, RSTP is enabled.

C.4.20.8 Card Parameters

The Card Parameters Properties pane allows you to view card parameter settings.

Table C-1315 Field Descriptions for the Card Properties Pane Parameters

Field	Description
Port No.	The port number.
Port Sub Interface	The port subinterface.
Bridge Group	The bridge group.
CIR	The committed information rate. The range is from 96000 to 800000000 bits per second.
CIR Burst	The maximum CIR burst. The default is 8000 bytes; the range is from 8000 to 64000 bytes.
PIR	The peak information rate. The range is from 96000 to 800000000 bits per second. PIR should be greater than or equal to CIR.
PIR Burst	The maximum PIR burst. The default is 64000 bytes; the range is from 8000 to 64000 bytes. PIR burst should be greater than or equal to CIR burst.
CCOSTRANSMIT	This keyword comes from the grammar file for the police command. For confirm action, the set-cos-transmit keyword specifies the set cos value. This value is used to determine the QoS configured on the front port of the ML card. A CCOSTRANSMIT value of 0 means a best effort policy has been configured for this port (FE/GE_IN). Other values are: • 1: Best Effort (for Policy_Qos_Out) • 2: CIR • 3: CONTROL • 4: VOICE • 5: VIDEO • 6: VOICE_VIDEO • 7: MISSION_CRITICAL • 8: SP_MANAGEMENT The card parameters shown on the NE Explorer are only for Policy_FE/GE_IN, meaning CCOSTRANSMIT is 0 or 2 (what VLAN provisioning supports).

C.4.20.9 Thresholds

The Thresholds Properties pane allows you to view remote monitoring (RMON) thresholds and create new RMON thresholds to allow Prime Optical to monitor ML POS counts.

Table C-1316 Field Descriptions for the Thresholds Properties Pane

Field	Description
Index Number	The index number.
Interface Name	The interface name. Currently, only POS0 and POS1 are supported.
Direction	The direction of the reported statistics. Currently, only output is supported.
COS	The class of service level. Supported levels are 0 to 7.

Table C-1316 Field Descriptions for the Thresholds Properties Pane (continued)

Field	Description
Sample Period	The sample period, in seconds.
Variable	The MIB variable to monitor. Supported variables are cportQosDropPkts and cportQosDropOctets in the cportQosStatsTable in CISCO-PORT-QOS-MIB.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Rising Threshold	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Threshold	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).

C.4.20.10 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1317 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Circuit Type	Displays the circuit type.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
VCAT Member Number	Displays the virtual concatenation (VCAT) member number.

C.4.20.11 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the ML1000-2.

Table C-1318 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

C.4.20.12 Port Channel

The Port Channel Properties pane allows you to configure the port channel interface on ML1000-2 cards. Port channel (also known as *link aggregation*) is a trunking technology that groups together multiple full-duplex IEEE 802.3 Gigabit Ethernet/Fast Ethernet interfaces to provide fault-tolerant high-speed links between switches, routers, and servers. Port channel forms a single higher bandwidth routing or bridging endpoint and was designed primarily for host-to-switch connectivity.

Table C-1319 Field Descriptions for the Port Channel Properties Pane

Field	Description
Port Channel Table	
Create	Opens the Create Port Channel ID dialog box, which allows you create a new port channel. Each ML1000-2 card supports up to two port channels. A maximum of two Gigabit Ethernet ports can bundle into one Gigabit Ethernet Channel (GEC) and provide 2-Gb/s full-duplex aggregate capacity on the ML1000-2 card. See 7.10.19.1 Creating a Port Channel, page 7-319. **Note** The Create button is dimmed if two port channels have already been created.
Modify	Opens the Modify Port Channel ID dialog box, which allows you to modify an existing port channel. See 7.10.19.2 Modifying a Port Channel, page 7-320.
Delete	Deletes the selected port channel. **Note** You cannot delete an aggregate link that contains active members. You must first disaggregate all of the associated members from the port channel, then delete the empty port channel.
Channel ID	Displays the port channel ID, which identifies the port channel interface. Prime Optical generates the ID automatically; the range is from 1 to 64.
Admin State	Displays the status of the port channel interface (Up or Down).
MTU	Displays the maximum transmission unit (MTU) size, which is the largest acceptable packet size configured for the port channel interface. The range is from 64 to 9000 bytes; the default is 1500 bytes.
Hold Queue In	Displays the size of the memory packets input queue. The range is from 0 to 4096 bytes.
Hold Queue Out	Displays the size of the memory packets output queue. The range is from 0 to 4096 bytes.
Port Channel Members Table	
Add	Opens the Add Port Channel Member on Port Channel ID dialog box, which allows you to add members to a port channel. See 7.10.19.4 Creating a Port Channel Member, page 7-321.
Modify	Opens the Modify Port Channel Member on Port Channel ID dialog box, which allows you to modify an existing port channel member. See 7.10.19.5 Modifying a Port Channel Member, page 7-322.
Remove	Removes the selected member from the port channel.
Port No.	Displays the port number, which identifies the port channel member.

Table C-1319 Field Descriptions for the Port Channel Properties Pane (continued)

Field	Description
LACP Priority	Displays the number that Link Aggregation Control Protocol (LACP) uses with the port number to form the port identifier. The port priority determines which ports should be put in standby mode when there is a hardware limitation that prevents all compatible ports from aggregating. The range is from 1 to 65535.
LACP Mode	Defines the LACP packets exchange mode between different ports: • Transparent—LACP is not enabled. • Active—Places a port into an active negotiating state, in which the port initiates negotiations with remote ports by sending LACP packets. • Passive—Places a port into a passive negotiating state, in which the port responds to LACP packets it receives but does not initiate LACP negotiation. In this mode, the port channel group attaches the interface to the bundle.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.21 Slot Properties—ML100T-12

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Fast Ethernet (ML100T-12) Layer 3 switch processes up to 5.7 Mb/s. The card is integrated into the ONS 15454 SONET or ONS 15454 SDH. An ONS 15454 SONET with a 10-gigabit cross-connect card (XC10G) can host the ML100T-12 card in any traffic card slot, but an ONS 15454 SONET with a cross-connect card (XC) or cross-connect virtual tributary card (XCVT) can only host the ML100T-12 card in the four traffic slots. An ONS 15454 SDH can host the ML100T-12 card in any traffic card slot with any cross-connect card.

For the ML100T-12 module, the slot properties pane displays the following properties: Module View, Identification, Configuration, POS, Ether, Alarm Behavior, L2 Service Drops, Card Parameters, Thresholds, J1 Path Trace, Info, and Port Channel. The properties shown depend on the NE configuration.

C.4.21.1 Module View

The Module View displays a graphic of the ML100T-12 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.4.21.2 Identification

The Identification Properties pane allows you to view and update ML100T-12 card identification information.

Table C-1320 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Card Mode	Select the card mode. It can be one of the following: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode; maps a client frame into one GFP frame. • RPR 802.17—IEEE 802.17 Resilient Packet Ring (RPR) standard, which specifies the data traffic protection and spatial reuse over ring architecture. The RPR ring architecture is highly scalable and provides efficient transfer of packet-based traffic across a network. It is suitable for data, voice, and video applications. **Caution** If you change the card mode to RPR 802.17, you must reload the barebone configuration on the ML card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.21.3 Configuration

The Configuration Properties pane allows you to upload or download a configuration file for the ML100T-12 card.

Table C-1321 Field Descriptions for the Configuration Properties Pane

Field	Description
IOS Startup Config	
Source	Displays the source of the configuration file.
Host	Displays the host machine where the configuration file is stored, or the location where the file will be downloaded.
Filename	Displays the name of the configuration file.
Directory	Displays the directory on the host machine for the configuration file.
Time Stamp	Displays the date and time of the file upload or download. The time stamp shows the time on the NE, not the time on the Prime Optical server. **Note** You can update the time stamp on the NE in the node-level NE Explorer > Identification Properties pane.
IOS Config File	
TCC >> File	Click this button to download the file from the TCC card to the host machine. Select **Local** or **Server** in the TCC >> File dialog box to designate a location for the file. **Note** If you select Server, the file is saved in the $CTMROOT/IosConfig directory.
File >> TCC	Click this button to upload the file from the host machine to the TCC card. Select Local or Server in the File >> TCC dialog box to designate a location for the file.
Launch CLI	Click this button to launch the command-line interface (CLI).
Microcode	
Microcode	Configure the ML-series card with one of the following microcode images. Select either: • Base—Enables base features, which include IP multicast routing and IP fragmentation. • Enhanced—Enables Ethernet Relay Multipoint Service (ERMS), enhanced packet statistics, and enhanced Dual RPR Interconnect (DRPRI). This disables IP fragmentation and IP multicast routing features supported by the base microcode image. **Note** After changing the microcode, you should reset the card manually.
IOS Access	
Enable Console Port Access	Allows you to enable access to ML cards through the console port. If this field is disabled, you cannot connect to the ML card through the console port.
Enable RADIUS Relay	Allows you to enable access to ML cards through the RADIUS relay server.

C.4.21.4 POS

The POS Properties pane allows you to view and update ML100T-12 POS port information.

Table C-1322 Field Descriptions for the POS Properties Pane

Field	Description
POS Ports	
Port Number	Displays the configurable identifier for the port.
Port Name	Displays the port name.
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Enter the soak time in hours from 0 to 48, and in minutes from 0 to 45 (in 15-minute increments).
State	Displays the configured administration port state, which is active or inactive. Values are UP and DOWN. **Note** The Administration State field displays "DOWN" whenever a circuit is not provisioned. To see the actual administration state of the port, view the POS Properties pane > POS Provisioning tab. The Interface State attribute shows the actual Administration State value.
Link State	Displays the physical port state. Values are UP and DOWN.
MTU	Maximum transmission unit, which is the largest acceptable packet size configured for that port. The maximum setting is 9000; the default size is 1500. The MTU value will display 0 until the POS port is used to create a circuit.
Framing Type	Shows the encapsulation type. Values are: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • None—No framing type.
RPR Span	
Port Number	Displays the port number.
Port Name	Displays the name of the port. You can edit the port name.
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Enter the automatic in-service soak time, which is the amount of valid input signal, after which the port is set in service by the software. The range is from 0 to 48 hours, in 15-minute increments.
Span Interface	Displays the direction of the RPR span, either RPR_EAST or RPR_WEST.
State	Displays the state of the east and west spans.
Framing Type	Indicates the framing type, which is RPR 802.17.
Jumbo	Displays a value of true, which indicates that jumbo frame support is applied on all of the ML cards participating in the 802.17 RPR topology. Jumbo frame support is set at the ring level and carried in the attribute discovery messages.
Edge	Indicates the existence of a protection edge in an open ring. Values are: • EDGE—The selected RPR has a protection edge in an open ring. • NO_EDGE—The selected RPR does not have a protection edge in an open ring.

Table C-1322 Field Descriptions for the POS Properties Pane (continued)

Field	Description
POS Provisioning	
Port Number	Displays the port number.
Interface State	Status of the interface (up or shut down). When the interface is shut down, no traffic can flow through it.
MTU Size	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.
CoS Accounting	Indicates whether or not PM is enabled on the POS.
RPR Span Provisioning	
Port Number	Displays the port number.
Interface State	Check the Interface State check box to bring up the interface. Leave the check box unchecked to shut down the interface. When the interface is shut down, no traffic can flow through it.

C.4.21.5 Ether

The Ether Properties pane allows you to view and update ML100T-12 Ethernet port information.

Table C-1323 Field Descriptions for the Ether

Field	Description
Ether Ports	
Port Number	Displays the configurable identifier for the port.
Port Name	Displays the port name.
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Enter the soak time in hours from 0 to 48, and in minutes from 0 to 45 (in 15-minute increments).
State	Displays the configured administration port state, which is active or inactive. Values are UP and DOWN.
Link State	Displays the physical port state. Values are UP and DOWN.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.
Operating Speed	Displays the operating speed for the ports. Values are Auto, 10 Mb/s, and 100 Mb/s.
Operating Duplex	Actual setting of the port. Values are Auto, Full, and Half.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
Fast Ethernet Provisioning—This area displays the ML card attributes retrieved and provisioned through the IOS CLI interface.	
Port Number	Displays the port number.
Interface State	Status of the interface (up or shut down). When the interface is shut down, no traffic can flow through it.
MTU Size	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.
Speed	Displays the administrative speed value set into the card.
Duplex	Actual setting of the port. Values are Auto, Full, and Half.

Table C-1323 Field Descriptions for the Ether (continued)

Field	Description
Flow Control (Send)	Negotiated flow control mode, which configures the send traffic flow operation. Flow control works only with policing. Values and their impact on traffic flow are: • Desired—Allow but do not require flow-control packets on port • Off—Disable flow-control packets on port • On—Enable flow-control packets on port (works only with policing)
CoS Accounting	Indicates whether or not PM is enabled on the POS.

C.4.21.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update ML100T-12 alarm profile information for the POS and Ethernet ports and RPR spans.

Table C-1324 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Equipment State	Displays the equipment state.
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.21.7 L2 Service Drops

The L2 Service Drops Properties pane allows you to view L2 service drop configuration settings. Click the **Show QoS Parameters** button to open the QoS for L2 Service Drop Port table, which shows the QoS for the selected drop.

Table C-1325 Field Descriptions for the L2 Service Drops Properties Pane

Field	Description
Port Number	The port number.
Port Sub Interface	The port subinterface.
Topology Name	The topology name.
SP VLAN ID	The service provider VLAN ID.
Customer ID	The customer ID.
Service ID	The service ID.
Bridge Group	The bridge group.

Table C-1325 Field Descriptions for the L2 Service Drops Properties Pane (continued)

Field	Description
Port Type	The port type (UNI or NNI).
Connection Type	The connection type (Dot1Q, Untagged, or QinQ).
Policing	The QoS policy configured on the selected front port interface or subinterface. Supported values are CIR/PIR and Best Effort.
RSTP	When checked, RSTP is enabled.
CIR	The committed information rate (CIR) range is from 96000 to 800000000 bits per second.
CIR Burst	The CIR burst default value is 8000 bytes; the range is from 8000 to 64000 bytes.
PIR	The peak information rate (PIR) range is from 96000 to 800000000 bits per second. PIR should be greater than or equal to CIR.
PIR Burst	The PIR burst default value is 64000 bytes; the range is from 8000 to 64000 bytes. PRI burst should be greater than or equal to CIR burst.
Best Effort Max Value	The Cisco best effort maximum value default is 96000 bits per second.
Best Effort Burst	Max CIR burst value. The default is 8000 bytes.

C.4.21.8 Card Parameters

The Card Parameters Properties pane allows you to view card parameter settings.

Table C-1326 Field Descriptions for the Card Properties Pane Parameters

Field	Description
Port Number	The port number.
Port Sub Interface	The port subinterface.
Bridge Group	The bridge group.
CIR	The committed information rate. The range is from 96000 to 800000000 bits per second.
CIR Burst	The maximum CIR burst. The default is 8000 bytes; the range is from 8000 to 64000 bytes.
PIR	The peak information rate. The range is from 96000 to 800000000 bits per second. PIR should be greater than or equal to CIR.

Table C-1326 Field Descriptions for the Card Properties Pane Parameters (continued)

Field	Description
PIR Burst	The maximum PIR burst. The default is 64000 bytes; the range is from 8000 to 64000 bytes. PIR burst should be greater than or equal to CIR burst.
CCOSTRANSMIT	This keyword comes from the grammar file for the police command. For confirm action, the set-cos-transmit keyword specifies the set cos value. This value is used to determine the QoS configured on the front port of the ML card. A CCOSTRANSMIT value of 0 means a best effort policy has been configured for this port (FE/GE_IN). Other values are: • 1: Best Effort (for Policy_Qos_Out) • 2: CIR • 3: CONTROL • 4: VOICE • 5: VIDEO • 6: VOICE_VIDEO • 7: MISSION_CRITICAL • 8: SP_MANAGEMENT The card parameters shown on the NE Explorer are only for Policy_FE/GE_IN, meaning CCOSTRANSMIT is 0 or 2 (what VLAN provisioning supports).

C.4.21.9 Thresholds

The Thresholds Properties pane allows you to view remote monitoring (RMON) thresholds and create new RMON thresholds to allow Prime Optical to monitor ML POS counts.

Table C-1327 Field Descriptions for the Thresholds Properties Pane

Field	Description
Index Number	The index number.
Interface Name	The interface name. Currently, only POS0 and POS1 are supported.
Direction	The direction of the reported statistics. Currently, only output is supported.
COS	The class of service level. Supported levels are 0 to 7.
Sample Period	The sample period, in seconds.
Variable	The MIB variable to monitor. Supported variables are cportQosDropPkts and cportQosDropOctets in the cportQosStatsTable in CISCO-PORT-QOS-MIB.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.

Table C-1327 Field Descriptions for the Thresholds Properties Pane (continued)

Field	Description
Rising Threshold	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Threshold	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).

C.4.21.10 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1328 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Circuit Type	Displays the circuit type.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
VCAT Member Number	Displays the virtual concatenation (VCAT) member number.

C.4.21.11 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the ML100T-12 card.

Table C-1329 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

C.4.21.12 Port Channel

The Port Channel Properties pane allows you to configure the port channel interface on ML100T-12 cards. Port channel (also known as *link aggregation*) is a trunking technology that groups together multiple full-duplex IEEE 802.3 Gigabit Ethernet/Fast Ethernet interfaces to provide fault-tolerant high-speed links between switches, routers, and servers. Port channel forms a single higher bandwidth routing or bridging endpoint and was designed primarily for host-to-switch connectivity.

Table C-1330 Field Descriptions for the Port Channel Properties Pane

Field	Description
Port Channel Table	
Create	Opens the Create Port Channel ID dialog box, which allows you create a new port channel. Each ML100T-12 card supports up to six Fast Ethernet Channels (FECs). A maximum of four Fast Ethernet ports can bundle into one FEC and provide bandwidth scalability up to 400-Mb/s full-duplex Fast Ethernet for the ML100T-12 card. See 7.10.19.1 Creating a Port Channel, page 7-319. **Note** The Create button is dimmed if six port channels have already been created.
Modify	Opens the Modify Port Channel ID dialog box, which allows you to modify an existing port channel. See 7.10.19.2 Modifying a Port Channel, page 7-320.
Delete	Deletes the selected port channel. **Note** You cannot delete an aggregate link that contains active members. You must first disaggregate all of the associated members from the port channel, then delete the empty port channel.
Channel ID	Displays the port channel ID, which identifies the port channel interface. Prime Optical generates the ID automatically; the range is from 1 to 64.
Admin State	Displays the status of the port channel interface (Up or Down).
MTU	Displays the maximum transmission unit (MTU) size, which is the largest acceptable packet size configured for the port channel interface. The range is from 64 to 9000 bytes; the default is 1500 bytes.
Hold Queue In	Displays the size of the memory packets input queue. The range is from 0 to 4096 bytes.
Hold Queue Out	Displays the size of the memory packets output queue. The range is from 0 to 4096 bytes.
Port Channel Members Table	
Add	Opens the Add Port Channel Member on Port Channel ID dialog box, which allows you to add members to a port channel. See 7.10.19.4 Creating a Port Channel Member, page 7-321.
Modify	Opens the Modify Port Channel Member on Port Channel ID dialog box, which allows you to modify an existing port channel member. See 7.10.19.5 Modifying a Port Channel Member, page 7-322.
Remove	Removes the selected member from the port channel.
Port No.	Displays the port number, which identifies the port channel member.

Table C-1330 Field Descriptions for the Port Channel Properties Pane (continued)

Field	Description
LACP Priority	Displays the number that Link Aggregation Control Protocol (LACP) uses with the port number to form the port identifier. The port priority determines which ports should be put in standby mode when there is a hardware limitation that prevents all compatible ports from aggregating. The range is from 1 to 65535.
LACP Mode	Defines the LACP packets exchange mode between different ports: • Transparent—LACP is not enabled. • Active—Places a port into an active negotiating state, in which the port initiates negotiations with remote ports by sending LACP packets. • Passive—Places a port into a passive negotiating state, in which the port responds to LACP packets it receives but does not initiate LACP negotiation. In this mode, the port channel group attaches the interface to the bundle.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.22 Slot Properties—ML100X-8

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH card slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ML100X-8 card is functionally equivalent to the ML-100T-12 card but with eight SFP Ethernet ports. The FX feature is an 8-port 100 Mb/s ML module and two corresponding 802.3ah-compliant optical SFPs that operate in the ONS 15454.

For the ML100X-8 module, the slot properties pane displays the following properties: Module View, Identification, Configuration, POS, Ether, Alarm Behavior, L2 Service Drops, Card Parameters, Thresholds, J1 Path Trace, Info, and Port Channel. The properties shown depend on the NE configuration.

C.4.22.1 Module View

The Module View displays a graphic of the ML100X-8 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.4.22.2 Identification

The Identification Properties pane allows you to view and update ML100X-8 card identification information.

Table C-1331 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Card Mode	Select the card mode. It can be one of the following: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode; maps a client frame into one GFP frame. • RPR 802.17—IEEE 802.17 Resilient Packet Ring (RPR) standard, which specifies the data traffic protection and spatial reuse over ring architecture. The RPR ring architecture is highly scalable and provides efficient transfer of packet-based traffic across a network. It is suitable for data, voice, and video applications. **Caution** If you change the card mode to RPR 802.17, you must reload the barebone configuration on the ML card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.22.3 Configuration

The Configuration Properties pane allows you to upload or download a configuration file for the ML100X-8 card.

Table C-1332 Field Descriptions for the Configuration Properties Pane

Field	Description
IOS Startup Config	
Source	Displays the source of the configuration file.
Host	Displays the host machine where the configuration file is stored, or the location where the file will be downloaded.
Filename	Displays the name of the configuration file.
Directory	Displays the directory on the host machine for the configuration file.
Time Stamp	Displays the date and time of the file upload or download. The time stamp shows the time on the NE, not the time on the Prime Optical server. **Note** You can update the time stamp on the NE in the node-level NE Explorer > Identification Properties pane.
IOS Config File	
TCC >> File	Click this button to download the file from the TCC card to the host machine. Select **Local** or **Server** in the TCC >> File dialog box to designate a location for the file. **Note** If you select Server, the file is saved in the $CTMROOT/IosConfig directory.
File >> TCC	Click this button to upload the file from the host machine to the TCC card. Select Local or Server in the File >> TCC dialog box to designate a location for the file.
Launch CLI	Click this button to launch the command-line interface (CLI).
Microcode	
Microcode	Configure the ML-series card with one of the following microcode images. Select either: • Base—Enables base features, which include IP multicast routing and IP fragmentation. • Enhanced—Enables Ethernet Relay Multipoint Service (ERMS), enhanced packet statistics, and enhanced Dual RPR Interconnect (DRPRI). This disables IP fragmentation and IP multicast routing features supported by the base microcode image. **Note** After changing the microcode, you should reset the card manually.
IOS Access	
Enable Console Port Access	Allows you to enable access to ML cards through the console port. If this field is disabled, you cannot connect to the ML card through the console port.
Enable RADIUS Relay	Allows you to enable access to ML cards through the RADIUS relay server.

C.4.22.4 POS

The POS Properties pane allows you to view and update ML100X-8 POS port information.

Table C-1333 Field Descriptions for the POS Properties Pane

Field	Description
POS Ports	
Port Number	Displays the configurable identifier for the port.
Port Name	Displays the name of the port.
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Enter the soak time in hours from 0 to 48, and in minutes from 0 to 45 (in 15-minute increments).
State	Displays the configured administration port state, which is active or inactive. Values are UP and DOWN. **Note** The State field displays "Down" whenever a circuit is not provisioned. To see the actual administration state of the port, view the POS Properties pane > POS Provisioning tab. The Interface State attribute shows the actual Administration State value.
Link State	Displays the physical port state. Values are UP and DOWN.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. Maximum setting is 9000 and the default size is 1500. The MTU value will display 0 until the POS port is used in creating a circuit.
Framing Type	Shows the encapsulation type. Values are: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • None—No framing type.
RPR Span	
Port Number	Displays the port number.
Port Name	Displays the name of the port. You can change the port name.
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Enter the automatic in-service soak time, which is the amount of valid input signal, after which the port is set in service by the software. The range is from 0 to 48 hours, in 15-minute increments.
Span Interface	Displays the direction of the RPR span, either RPR_EAST or RPR_WEST.
State	Displays the state of the east and west spans.
Framing Type	Indicates the framing type, which is RPR 802.17.
Jumbo	Displays a value of true, which indicates that jumbo frame support is applied on all of the ML cards participating in the 802.17 RPR topology. Jumbo frame support is set at the ring level and carried in the attribute discovery messages.
Edge	Indicates the existence of a protection edge in an open ring. Values are: • EDGE—The selected RPR has a protection edge in an open ring. • NO_EDGE—The selected RPR does not have a protection edge in an open ring.

Table C-1333 Field Descriptions for the POS Properties Pane (continued)

Field	Description
POS Provisioning	
Port Number	Displays the port number.
Interface State	Status of the interface (up or shut down). When the interface is shut down, no traffic can flow through it.
MTU Size	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.
CoS Accounting	Indicates whether or not PM is enabled on the POS.
RPR Span Provisioning	
Port Number	Displays the port number.
Interface State	Check the Interface State check box to bring up the interface. Leave the check box unchecked to shut down the interface. When the interface is shut down, no traffic can flow through it.

C.4.22.5 Ether

The Ether Properties pane allows you to view and update ML100X-8 Ethernet port information.

Table C-1334 Field Descriptions for the Ether

Field	Description
Ether Ports	
Port Number	Displays the configurable identifier for the port.
Port Name	Displays the name of the port.
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Enter the soak time in hours from 0 to 48, and in minutes from 0 to 45 (in 15-minute increments).
State	Displays the configured administration port state, which is active or inactive. Values are UP and DOWN.
Link State	Displays the physical port state. Values are UP and DOWN.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.
Operating Speed	Displays the operating speed for the ports. Values are Auto, 10 Mb/s, and 100 Mb/s.
Operating Duplex	Actual setting of the port. Values are Auto, Full, and Half.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
Optics	Displays the SFP physical media type. Values are Unplugged, Plugged In, 1000 SX, and 1000 LX. Pluggables to the ML100X-8 card are not noted in the Equipment Inventory table. Instead, pluggables are indicated in the Optics field. The Optics field displays “Unknown” if there are no pluggables, and “Plugged In” if there is pluggable equipment. The Optics field does not specify the exact equipment.
Fast Ethernet Provisioning	
Port Number	Displays the port number.
Interface State	Status of the interface (up or shut down). When the interface is shut down, no traffic can flow through it.
MTU Size	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.

Table C-1334 Field Descriptions for the Ether (continued)

Field	Description
Flow Control (Send)	Negotiated flow control mode, which configures the send traffic flow operation. Flow control works only with policing. Values and their impact on traffic flow are: • Desired—Allow but do not require flow-control packets on port • Off—Disable flow-control packets on port • On—Enable flow-control packets on port (works only with policing)
CoS Accounting	Indicates whether or not PM is enabled on the POS.

C.4.22.6 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update ML100X-8 alarm profile information for the POS and Ethernet ports and RPR spans.

Table C-1335 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Equipment State	Displays the equipment state.
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.22.7 L2 Service Drops

The L2 Service Drops Properties pane allows you to view L2 service drop configuration settings. Click the **Show QoS Parameters** button to open the QoS for L2 Service Drop Port table, which shows the QoS for the selected drop.

Table C-1336 Field Descriptions for the L2 Service Drops Properties Pane

Field	Description
Port No.	The port number.
Port Sub Interface	The port subinterface.
Topology Name	The topology name.
SP VLAN ID	The service provider VLAN ID.
Customer ID	The customer ID.
Service ID	The service ID.
Bridge Group	The bridge group.

Table C-1336 Field Descriptions for the L2 Service Drops Properties Pane (continued)

Field	Description
Port Type	The port type (UNI or NNI).
Connection Type	The connection type (Dot1Q, Untagged, or QinQ).
Policing	The QoS policy configured on the selected front port interface or subinterface. Supported values are CIR/PIR and Best Effort.
RSTP	When checked, RSTP is enabled.

C.4.22.8 Card Parameters

The Card Parameters Properties pane allows you to view card parameter settings.

Table C-1337 Field Descriptions for the Card Properties Pane Parameters

Field	Description
Port	The port number.
Port Sub Interface	The port subinterface.
Bridge Group	The bridge group.
CIR	The committed information rate. The range is from 96000 to 800000000 bits per second.
CIR Burst	The maximum CIR burst. The default is 8000 bytes; the range is from 8000 to 64000 bytes.
PIR	The peak information rate. The range is from 96000 to 800000000 bits per second. PIR should be greater than or equal to CIR.
PIR Burst	The maximum PIR burst. The default is 64000 bytes; the range is from 8000 to 64000 bytes. PIR burst should be greater than or equal to CIR burst.
CCOSTRANSMIT	This keyword comes from the grammar file for the police command. For confirm action, the set-cos-transmit keyword specifies the set cos value. This value is used to determine the QoS configured on the front port of the ML card. A CCOSTRANSMIT value of 0 means a best effort policy has been configured for this port (FE/GE_IN). Other values are: • 1: Best Effort (for Policy_Qos_Out) • 2: CIR • 3: CONTROL • 4: VOICE • 5: VIDEO • 6: VOICE_VIDEO • 7: MISSION_CRITICAL • 8: SP_MANAGEMENT The card parameters shown on the NE Explorer are only for Policy_FE/GE_IN, meaning CCOSTRANSMIT is 0 or 2 (what VLAN provisioning supports).

C.4.22.9 Thresholds

The Thresholds Properties pane allows you to view remote monitoring (RMON) thresholds and create new RMON thresholds to allow Prime Optical to monitor ML POS counts.

Table C-1338 Field Descriptions for the Thresholds Properties Pane

Field	Description
Index Number	The index number.
Interface Name	The interface name. Currently, only POS0 and POS1 are supported.
Direction	The direction of the reported statistics. Currently, only output is supported.
COS	The class of service level. Supported levels are 0 to 7.
Sample Period	The sample period, in seconds.
Variable	The MIB variable to monitor. Supported variables are cportQosDropPkts and cportQosDropOctets in the cportQosStatsTable in CISCO-PORT-QOS-MIB.
Sample Type	The sample type (relative or absolute). Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Rising Threshold	The number of occurrences for the rising threshold. **Note** For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
Falling Threshold	The number of occurrences for the falling threshold. In most cases, a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over 1000 per 15-minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).

C.4.22.10 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1339 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS/VC Number	Displays the STS or VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).

Table C-1339 Field Descriptions for the J1 Path Trace Properties Pane (continued)

Field	Description
C2	Represents a machine-generated J1/J2 payload label byte.
VCAT Member Number	Displays the virtual concatenation (VCAT) member number.

C.4.22.11 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the ML100X-8.

Table C-1340 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

C.4.22.12 Port Channel

The Port Channel Properties pane allows you to configure the port channel interface on ML100X-8 cards. Port channel (also known as *link aggregation*) is a trunking technology that groups together multiple full-duplex IEEE 802.3 Gigabit Ethernet/Fast Ethernet interfaces to provide fault-tolerant high-speed links between switches, routers, and servers. Port channel forms a single higher bandwidth routing or bridging endpoint and was designed primarily for host-to-switch connectivity.

Table C-1341 Field Descriptions for the Port Channel Properties Pane

Field	Description
Port Channel Table	
Create	Opens the Create Port Channel ID dialog box, which allows you create a new port channel. Each ML100X-8 card supports up to four Fast Ethernet Channels (FECs). A maximum of four Fast Ethernet ports can bundle into one FEC and provide bandwidth scalability up to 400-Mb/s full-duplex Fast Ethernet for the ML100X-8 card. See 7.10.19.1 Creating a Port Channel, page 7-319. **Note** The Create button is dimmed if four port channels have already been created.
Modify	Opens the Modify Port Channel ID dialog box, which allows you to modify an existing port channel. See 7.10.19.2 Modifying a Port Channel, page 7-320.
Delete	Deletes the selected port channel. **Note** You cannot delete an aggregate link that contains active members. You must first disaggregate all of the associated members from the port channel, then delete the empty port channel.
Channel ID	Displays the port channel ID, which identifies the port channel interface. Prime Optical generates the ID automatically; the range is from 1 to 64.
Admin State	Displays the status of the port channel interface (Up or Down).
MTU	Displays the maximum transmission unit (MTU) size, which is the largest acceptable packet size configured for the port channel interface. The range is from 64 to 9000 bytes; the default is 1500 bytes.
Hold Queue In	Displays the size of the memory packets input queue. The range is from 0 to 4096 bytes.

Table C-1341 Field Descriptions for the Port Channel Properties Pane (continued)

Field	Description
Hold Queue Out	Displays the size of the memory packets output queue. The range is from 0 to 4096 bytes.
Port Channel Members Table	
Add	Opens the Add Port Channel Member on Port Channel ID dialog box, which allows you to add members to a port channel. See 7.10.19.4 Creating a Port Channel Member, page 7-321.
Modify	Opens the Modify Port Channel Member on Port Channel ID dialog box, which allows you to modify an existing port channel member. See 7.10.19.5 Modifying a Port Channel Member, page 7-322.
Remove	Removes the selected member from the port channel.
Port No.	Displays the port number, which identifies the port channel member.
LACP Priority	Displays the number that Link Aggregation Control Protocol (LACP) uses with the port number to form the port identifier. The port priority determines which ports should be put in standby mode when there is a hardware limitation that prevents all compatible ports from aggregating. The range is from 1 to 65535.
LACP Mode	Defines the LACP packets exchange mode between different ports: • Transparent—LACP is not enabled. • Active—Places a port into an active negotiating state, in which the port initiates negotiations with remote ports by sending LACP packets. • Passive—Places a port into a passive negotiating state, in which the port responds to LACP packets it receives but does not initiate LACP negotiation. In this mode, the port channel group attaches the interface to the bundle.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.23 Slot Properties—ML-MR-10

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH card slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Multilayer 2 (ML2) card (also known as ML-MR-10) is a Layer 2 switch that processes up to 10 Gb/s. With its 10 Ethernet ports, the card is integrated into the ONS 15454 SONET and ONS 15454 SDH platforms.

An ONS 15454 SONET with a 10-gigabit cross-connect card (XC10G) can host the ML2 card in any traffic card slot, but an ONS 15454 SONET with a cross-connect card (XC) or cross-connect virtual tributary card (XCVT) can only host the ML2 card in the four traffic slots. An ONS 15454 SDH can host the ML2 card in any traffic card slot with any cross-connect card.

You can provision VCAT, CCAT, or LCAS circuits on 10 POS ports on the ML-MR-10 card. POS ports are used for aggregation and serve as the source or destination for Ethernet circuits. Prime Optical supports FE payload on RAD SFPs.

VCAT circuits on POS ports can have the following circuit sizes:

- VT1.5-*n*v, where *n* is 1 to 64
- STS-1-*n*v, where *n* is 1 to 192
- STS-3c-*n*v, where *n* is 1 to 64

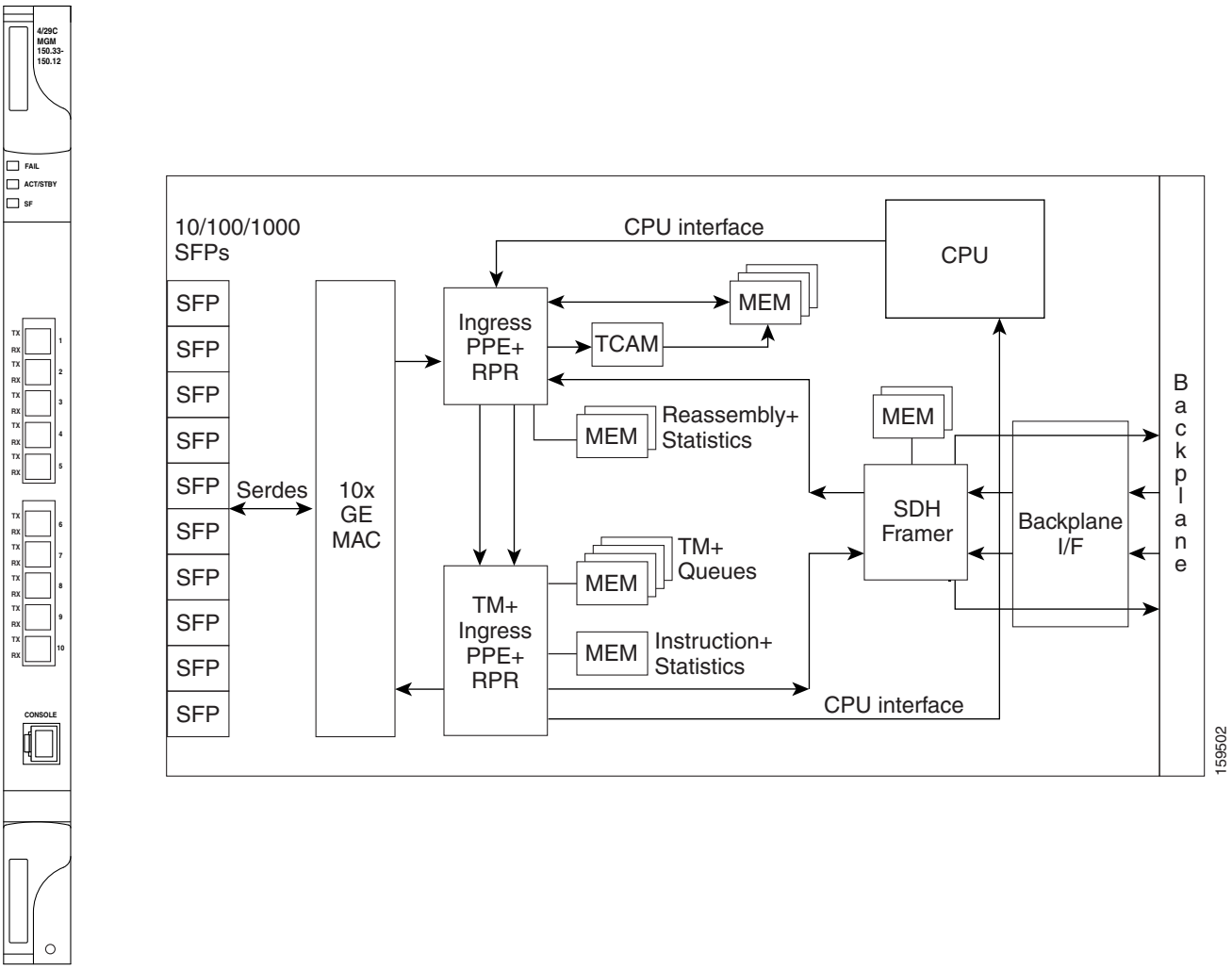
CCAT circuits on POS ports can have the following circuit sizes:

- STS-1, STS-3, STS-6, STS-9, STS-12, STS-24, STS-48, and STS-192

The SDH equivalents of these circuit sizes are also supported.

The following figure shows the card faceplate and block diagram.

Figure C-76 ML-MR-10 Faceplate and Block Diagram



For the ML-MR-10 (ML2) module, the slot properties pane displays the following properties: Module View, Identification, Line, Thresholds, Alarm Behavior, J1 Path Trace, GBIC Inventory, and Info. The properties shown depend on the NE configuration.

C.4.23.1 Module View

The Module View displays a graphic of the ML-MR-10 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.4.23.2 Identification

The Identification Properties pane allows you to view and update ML-MR-10 card identification information.

Table C-1342 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Card Mode	Specify the mode setting for the internal STS/VC allocation method on the card. Values are: • Exposed—Implies automatic internal selection of time slot index numbers by the node. • Manual—Implies user-selected index numbers.
Equipment State	Displays the state of the card that is installed in the slot.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.23.3 Line

The Line Properties pane allows you to view and update line performance monitoring information. The Line Properties pane contains the following tabs:

- C.4.23.3.1 Ether Line Properties Tab, page C-954

- C.4.23.3.2 POS Port Tab, page C-954
- C.4.23.3.3 RPR Span Tab, page C-955

C.4.23.3.1 Ether Line Properties Tab

The Ether Line tab allows you to view and change the Ethernet line settings on the ML-MR-10 card.

Table C-1343 Field Descriptions for the Ether Line Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a name for the port.
Administration State	Shows the administrative state of the port: In Service (IS), Out of Service–Maintenance (OOS MT), Out of Service–Disabled (OOS DSBLD), or In Service–Auto In Service Soak (IS AINS).
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Displays the automatic in-service soak, which is the amount of time left before the traffic/termination transitions to the IS_NR state.
AINS Soak Count Down	Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Link State	Displays the physical port state. Values are Up or Down.
Operating Speed	Displays the operating speed for the Ethernet ports. Values are Auto, 10 Mb/s, 100 Mb/s, or 1000 Mb/s.
Operating Duplex	Displays the actual setting of the port. Values are Auto, Full, or Half.
Flow Control	Displays the negotiated flow control mode. Values are On, Off, or None.

C.4.23.3.2 POS Port Tab

The POS Port tab allows you to view and change the POS port settings on the ML-MR-10 card.

Table C-1344 Field Descriptions for the POS Port Tab

Field	Description
Port No.	Displays the port number.
Port Name	Allows you to add a name for the port.
Administration State	Shows the administrative state of the port: In Service (IS), Out of Service–Maintenance (OOS MT), Out of Service–Disabled (OOS DSBLD), or In Service–Auto In Service Soak (IS AINS).
AINS Suppress Alarms	Choose ON to suppress alarms for the selected port; choose OFF to switch alarm suppression off for the selected port.
AINS Soak	Displays the automatic in-service soak, which is the amount of time left before the traffic/termination transitions to the IS_NR state.
Link State	Displays the physical port state. Values are Up or Down.
MTU	Displays the maximum transmission unit, which is the largest acceptable packet size configured for that port. The default value is 1500.

C.4.23.3.3 RPR Span Tab

The RPR Span tab allows you to view and change the RPR settings on the ML-MR-10 card.

Table C-1345 Field Descriptions for the RPR Span Tab

Field	Description
Port	Displays the port number.
Port Name	Allows you to add a name for the port.
AINS Soak	Displays the automatic in-service soak, which is the amount of time left before the traffic/termination transitions to the IS_NR state.
Administration State	Shows the administrative state of the port: In Service (IS), Out of Service–Maintenance (OOS MT), Out of Service–Disabled (OOS DSBLD), or In Service–Auto In Service Soak (IS AINS).
Framing Type	Shows the encapsulation type set on the card. Values are: • HDLC—High-level data link control; does not support VLAN trunking. Standard on most Cisco data devices. • GFP-F—Frame-mapped generic framing procedure; a protocol data unit (PDU)-oriented adaptation mode that maps a client frame into one GFP frame. • RPR 802.17—802.17 resilient packet ring, which is IEEE compliant.
Span Interface	Displays the direction of the RPR span, either RPR_EAST or RPR_WEST.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Edge	Displays whether or not a span has a neighboring active node or active connection. Possible values are Yes and No.

C.4.23.4 Thresholds

The Thresholds Properties pane allows you to view and create ML-MR-10 thresholds. The Thresholds Properties pane contains the following tabs:

- C.4.23.4.1 POS Port Tab, page C-955
- C.4.23.4.2 RPR Span Tab, page C-956
- C.4.23.4.3 Ether Ports Tab, page C-956

C.4.23.4.1 POS Port Tab

The POS Port tab allows you to view the thresholds for the POS ports.

Table C-1346 Field Descriptions for the POS Port Tab

Field	Description
Index Number	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.

Table C-1346 Field Descriptions for the POS Port Tab (continued)

Field	Description
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Thresholds	Displays the number of occurrences for the rising threshold.
Falling Thresholds	Displays the number of occurrences for the falling threshold field. In most cases, a falling threshold is set lower than the rising threshold.
Create	Click the **Create** button to create a threshold for the POS ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.4.23.4.2 RPR Span Tab

The RPR Span tab allows you to view the thresholds for the RPR spans.

Table C-1347 Field Descriptions for the RPR Span Tab

Field	Description
Index Number	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Thresholds	Displays the number of occurrences for the rising threshold.
Falling Thresholds	Displays the number of occurrences for the falling threshold field. In most cases, a falling threshold is set lower than the rising threshold.
Create	Click the **Create** button to create a threshold for the RPR span.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.4.23.4.3 Ether Ports Tab

The Ether Ports tab allows you to view the thresholds for the Ethernet ports.

Table C-1348 Field Descriptions for the Ether Ports Tab

Field	Description
Index Number	Displays the selected interface number.
Slot	Displays the selected card.

Table C-1348 Field Descriptions for the Ether Ports Tab (continued)

Field	Description
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Thresholds	Displays the number of occurrences for the rising threshold.
Falling Thresholds	Displays the number of occurrences for the falling threshold field. In most cases, a falling threshold is set lower than the rising threshold.
Create	Click the **Create** button to create a threshold for the Ethernet ports.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.4.23.5 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update ML-MR-10 alarm profile information for the RPR span and Ethernet ports.

Table C-1349 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Equipment State	Displays the equipment state.
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port	Displays the card port number or RPR span.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.23.6 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table C-1350 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Circuit Type	Displays the type of circuit.

Table C-1350 Field Descriptions for the J1 Path Trace Properties Pane (continued)

Field	Description
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

C.4.23.7 GBIC Inventory

The GBIC Inventory Properties pane allows you to view GBIC inventory information.

Table C-1351 Field Descriptions for the GBIC Inventory Properties Pane

Field	Description
Port Number	Displays the GBIC card port number.
Equipment Type	Displays the equipment type the slot is provisioned for.
Serial Number	Displays the GBIC serial number that is unique to each GBIC.
CLEI Code	Displays the CLEI code.
Hardware Part Number	Displays the manufacturer's part number.
Hardware Revision Number	Displays the hardware revision number.
Actual Equipment Type	Displays the actual card that is installed in the slot. Values are single mode or multimode.
Vendor ID	Displays the ID of the vendor.

C.4.23.8 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the ML-MR-10 card.

Table C-1352 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.24 Slot Properties—MS-ISC-100T

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Fast Ethernet (MS-ISC-100T) Layer 3 switch processes up to 5.7 Mb/s. The card is integrated into the ONS 15454 SONET or ONS 15454 SDH.

For the MS-ISC-100T module, the slot properties pane displays the following properties: Module View, Identification, Ether Ports, Alarm Behavior, and Info. The properties shown depend on the NE configuration.

C.4.24.1 Module View

The Module View displays a graphic of the MS-ISC-100T that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.4.24.2 Identification

The Identification Properties pane allows you to view and update MS-ISC-100T card identification information.

Table C-1353 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the state of the card that is installed in the slot.

Table C-1353 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Card Mode	Specifies the card mode. The card mode is HDLC (high-level data link control). HDLC does not support VLAN trunking and is standard on most Cisco data devices. This value cannot be changed.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.24.3 Ether Ports

The Ether Ports Properties pane allows you to view and update MS-ISC-100T Ethernet port information.

Table C-1354 Field Descriptions for the Ether Ports Properties Panes

Field	Description
Ether Ports	
Port Number	Displays the configurable identifier for the port.
Port Name	Displays the port name.
State	Displays the configured administration port state, which is active or inactive. Values are UP and DOWN.
Link State	Displays the physical port state. Values are UP and DOWN.
MTU	Displays the maximum transmission unit, which is the largest acceptable packet size configured for that port. The default value is 1500.
Operating Speed	Displays the operating speed for the ports. Values are Auto, 10 Mb/s, and 100 Mb/s.
Operating Duplex	Displays the actual setting of the port. Values are Auto, Full, and Half.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
Optics	Displays the SFP physical media type. Values are Unplugged, Plugged In, 1000 SX, and 1000 LX. Pluggables to the ML100X-8 card are not noted in the Equipment Inventory table. Instead, pluggables are indicated in the Optics field. The Optics field displays “Unknown” if there are no pluggables, and “Plugged In” if there is pluggable equipment. The Optics field does not specify the exact equipment.

C.4.24.4 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update MS-ISC-100T alarm profile information for Ethernet ports.

Table C-1355 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Equipment State	Displays the equipment state.
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.

Table C-1355 Field Descriptions for the Alarm Behavior Properties Pane (continued)

Field	Description
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.24.5 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the MS-ISC-100T card.

Table C-1356 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.25 Slot Properties—RAN-SVC

The slot properties pane displays information about the ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Radio Access Network Service (RAN-SVC) card performs circuit emulation and optimization on traffic from 3rd Generation Partnership Project (3GPP) RAN nodes and provides IP-based backhaul of the optimized traffic to other peer nodes. The RAN-SVC card, when combined with the DS1/E1-56 and OC-3/STM-1 cards, provides a high-rack-density aggregation function for the Cisco RAN optimization solution. When the RAN-SVC is used with a Cisco MWR-1941-DC-A, it provides transparent RAN aggregation and optimization services.

The optimized traffic is received by the RAN-SVC card from peer cell site routers on VT1.5 circuits via the cross-connect card or from native GE ports on the RAN-SVC card. Optimized traffic can be received on the ONS 15454 node over a variety of rate interfaces higher than VT1.5, such as OC-3 through OC-192. The data is then reconstructed by the RAN-SVC card onto VT1.5 circuits and sent back through the cross-connect card. The reconstructed traffic is externally delivered to the 3GPP RAN nodes over DS-1 and OC-3 interfaces.

The RAN-SVC card is a multiprocessor card. It consists of three traffic-forwarding CPUs and one service CPU, which performs the control plane function for the card. Each traffic forwarding processor is equipped with one front-side 10/100/1000 Gigabit Ethernet (GE) port, one OC-3 ATM port, one OC-3 POS port, two STM-1, and 42 E1 interfaces. The OC-3 ATM port, OC-3 POS port, STM-1, and E1 interfaces are connected to the backplane.The service CPU is equipped with one Gigabit Ethernet, ATM, and POS interface.

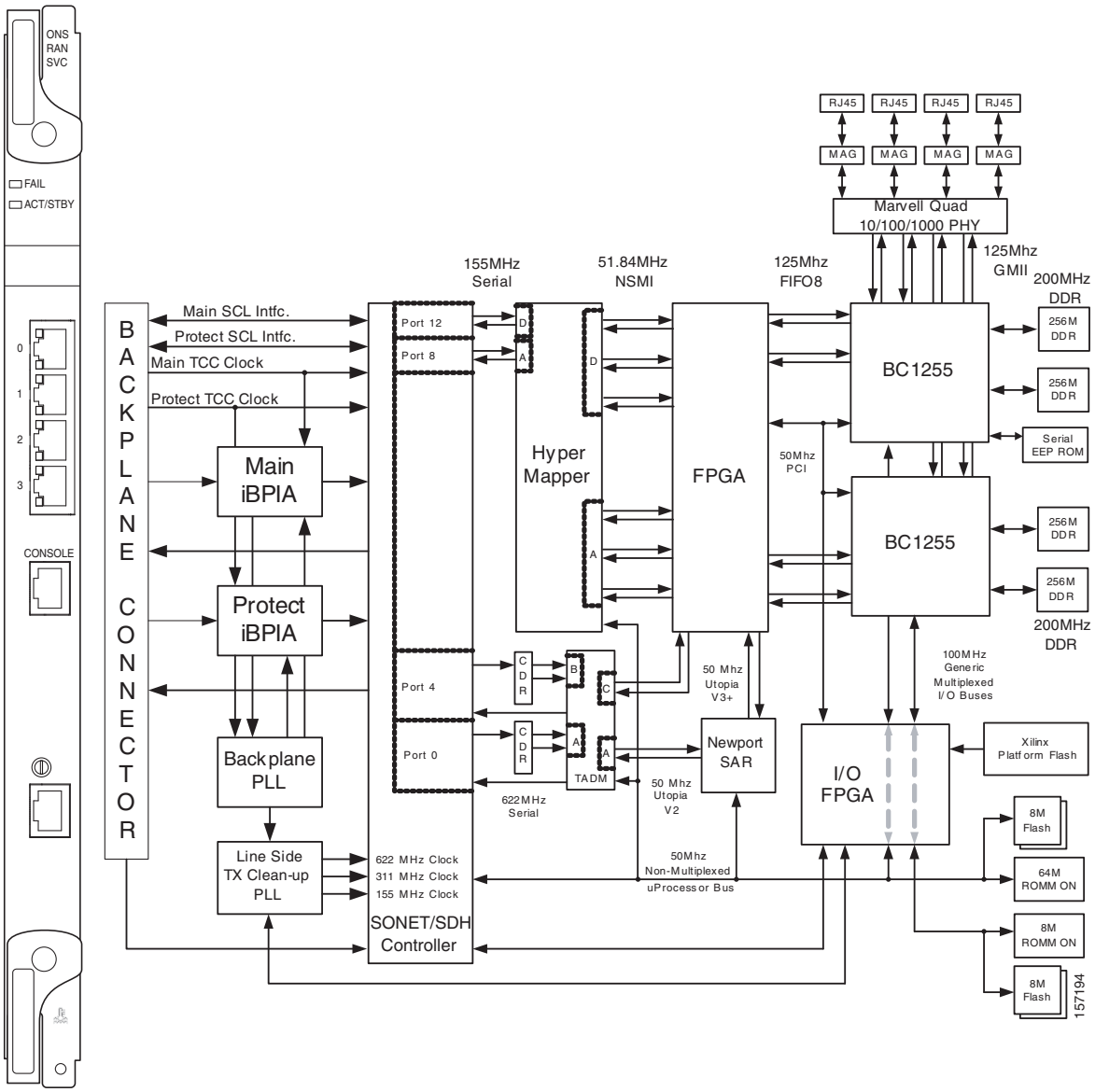
In the ONS 15454, the RAN-SVC card transmits and receives T1 data streams (for GSM applications) and OC-3 data streams (for UMTS applications) via the cross-connect cards. For T1 connections (GSM and/or backhaul), up to 126 T1 interfaces from multiple T1-56 cards can be aggregated by the cross-connect card to form two STS-1 data streams, which are terminated on the RAN-SVC card. For OC-3 interfaces (POS and/or ATM), up to eight OC-3 interfaces from multiple OC-3 cards can be aggregated by the cross-connect cards to form two STS-4 data streams, which are terminated on the RAN-SVC card.

The RAN-SVC card supports 1:N protection. This allows a single RAN-SVC card to protect up to nine working RAN-SVC cards. A RAN-SVC protect card can be installed in any slot and can protect working cards on either side of the shelf.

The RAN-SVC IOS card is present in the ONS 15454 chassis. It combines multiple E1, POS, and ATM streams routed over its GE interfaces for transmission over long-haul access networks. It can be plugged into any ONS 15454 service slot (1-6, 12-17), and is supported on ONS15454 ETSI/SDH and ONS 15454 ANSI/SONET platforms.

The following figure shows the card faceplate and block diagram.

Figure C-77 RAN-SVC Faceplate and Block Diagram



For the RAN-SVC card, the slot properties pane displays the following properties: Module View, Identification, Configuration, Protection, Line, and Info. The properties shown depend on the NE configuration.

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C.4.25.1 Module View

The Module View displays a graphic of the RAN-SVC that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

C.4.25.2 Identification

The Identification Properties pane allows you to view and update RAN-SVC identification information.

Table C-1357 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the serial number that is unique to each card.
CLEI Code	Displays the Common Language Equipment Identifier (CLEI) code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.25.3 Configuration

The Configuration Properties pane allows you to upload or download a configuration file for RAN-SVC card.

Table C-1358 Field Descriptions for the Configuration Properties Pane

Field	Description
IOS Config File	
TCC >> File	Click this button to download the file from the TCC card to the host machine. Select Local or Server in the TCC >> File dialog box to designate a location for the file.
File >> TCC	Click this button to upload the file from the host machine to the TCC card. Select Local or Server in the File >> TCC dialog box to designate a location for the file.
Launch CLI	Click this button to launch the command-line interface (CLI).
IOS Access	
Enable Console Port Access	Allows you to enable access to ML cards through console ports. If this field is disabled, you cannot connect to the ML card through the console port.
Enable RADIUS Relay	Allows you to enable access to ML cards through the RADIUS relay server.

C.4.25.4 Protection

The Protection Properties pane allows you to view and update RAN-SVC protection group information.

Table C-1359 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays the list of available protection groups.
Protection Group Details	Displays details about the selected protection group, such as which port is the protected port and which port is the working port. Also allows you to execute switch commands.
Switch Commands	Allows you to perform a manual switch or clear the existing command switching.
Inhibit Switching	Allows you to inhibit unlock switching, lock out switching, or lock on switching.

C.4.25.5 Line

The Line Properties pane allows you to view and update line performance monitoring information. The Line Properties pane contains the following tabs:

- C.4.25.5.1 OC3 Tab, page C-965
- C.4.25.5.2 DS1 Tab, page C-966

C.4.25.5.1 OC3 Tab

The OC3 tab allows you to view and change the OC3 line settings on the RAN-SVC card.

Table C-1360 Field Descriptions for the OC3 Tab

Field	Description
Port Number	Displays the card port number.
Port Name	Displays the port name.
Admin State	Displays the administration port state, which is active or inactive. Values are Up and Down.
Link State	Displays the physical port state. Values are Up and Down.

C.4.25.5.2 DS1 Tab

The DS1 tab allows you to view and change the DS1 line settings on the RAN-SVC card.

Table C-1361 Field Descriptions for the DS1 Tab

Field	Description
Port Number	Displays the card port number.
Port Name	Displays the port name.
Admin State	Displays the administration port state, which is active or inactive. Values are Up and Down.
Link State	Displays the physical port state. Values are Up and Down.

C.4.25.6 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the RAN-SVC card.

Table C-1362 Field Descriptions for the Info Properties Pane

Field	Descriptions
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

C.4.26 Slot Properties—PT_10GE_4

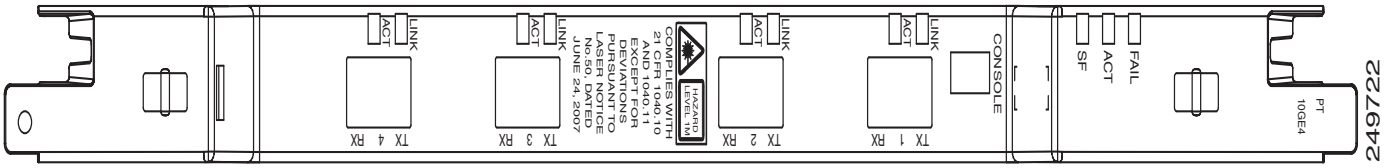
The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The PT_10GE_4 card has four 10GE SFP+ ports. The SFP+ ports on the PT_10GE_4 card serve as normal ports or InterConnect (IC) ports. When PTF_10GE_4 and PT_10GE_4 cards are installed on the shelf, a bidirectional 2 * 16G connection is set up between each PTF_10GE_4 card and PT_10GE_4 card, and between two PTF_10GE_4 cards.

On the CPT 600 shelf, install the PT_10GE_4 cards in slot 2, 3, 6, or 7. There can be up to four PT_10GE_4 cards on the CPT 600 shelf. On the CPT 200 shelf, install the PT_10GE_4 card in slot 2 or 3. There can be a single PT_10GE_4 card on the CPT 200 shelf.

The following figure shows the PT_10GE_4 card faceplate.

Figure C-78 PT_10GE_4 Card Faceplate



For the PT_10GE_4 card, the slot properties pane displays the following properties: Identification. Module View, Alarm Behavior, Ether Ports, Info, Loopback, Optical Thresh, PPM, and RMON Thresholds.

C.4.26.1 Identification

The Identification Properties pane allows you to view and update the PT_10GE_4 identification information.

Table C-1363 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
HW Revision	Displays the hardware version number of the card.
Serial No.	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Admin State	The port administration state. It can be: • IS—In Service • OOS, MT—Out of Service, Maintenance
Service State	*Display only.* Sets the service state that indicates the operational state of the channel group. The Service State can be: • IS-NR—In Service–Normal. • OOS-MA, DSBLD—Out of Service and Management, Disabled.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. You can choose an alarm profile for the card from the drop-down list. Values are Default and Inherited. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.26.2 Module View

The Module View displays a graphic of the PT_10GE_4 card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.4.26.3 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-1364 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Payload	
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.26.4 Ether Ports

The Ether Ports contains the following tabs:

- C.2.44.4.1 Ports Tab, page C-579
- C.2.44.4.2 Ethernet Tab, page C-580
- C.2.44.4.3 Layer 2 Protocols, page C-581

C.4.26.4.1 Ports Tab

Table C-1365 Field Descriptions for the Ports Tab

Field	Description
Port	Displays the port number.
Port Name	Displays the name of the port.

Table C-1365 Field Descriptions for the Ports Tab (continued)

Field	Description
Admin State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak (H:M)	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS state.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • EW • LW • SW • LRM • ER • LR • SR (short reach, up to 2 km distance) • ZR • IR 2 • LR 2 • DWDM • CWDM40km
Wavelength	Allows you to provision the wavelength frequency.

C.4.26.4.2 Ethernet Tab

The Ethernet tab allows you to view Ethernet line information.

Table C-1366 Field Descriptions for the Ethernet Tab

Field	Description
Port	Displays the port number.
MTU	Displays the maximum transfer unit, which is the largest acceptable packet size configured for that port. The maximum setting is 9000 and the default size is 1500. The MTU value is 0 until the packet-over-SONET (POS) port is used in creating a circuit.

Table C-1366 Field Descriptions for the Ethernet Tab (continued)

Field	Description
Link State	Displays the physical port state. Possible values are Up and Down.
Expected Speed	Displays the expected speed. Possible values are 10 Mbps, 100 Mbps, and Auto. If expected speed is set to Auto, you cannot enable selective autonegotiation.
Expected Duplex	Displays the port's expected duplex setting. Possible values are Full, Half, and Auto. If expected duplex is set to Auto, you cannot enable selective autonegotiation.
Flow Control	Displays the negotiated flow control mode. Possible values are None, Symmetrical, and Asymmetrical.
Interconnect Mode	—
Operating Speed	Displays the actual operating speed.
Operating Duplex	Displays the expected duplex setting of the port.
Operating Flow Control	Displays the value of the flow control.
Carrier Delays (ms)	—

C.4.26.4.3 Layer 2 Protocols

The Layer 2 Protocols tab allows you to view and modify actions for Layer 2 protocols.

Table C-1367 Field Descriptions for the Layer 2 Protocols Tab

Field	Description
Port	Displays the port number.
CDP	Displays the Layer 2 action configured for CDP. To modify the action, click the cell and select the action from the drop-down list.
DOT1X	Displays the Layer 2 action configured for DOT1X. To modify the action, click the cell and select the action from the drop-down list.
DTP	Displays the Layer 2 action configured for DTP. To modify the action, click the cell and select the action from the drop-down list.
LACP	Displays the Layer 2 action configured for LACP. To modify the action, click the cell and select the action from the drop-down list.
PAGP	Displays the Layer 2 action configured for PAGP. To modify the action, click the cell and select the action from the drop-down list.
VTP	Displays the Layer 2 action configured for VTP. To modify the action, click the cell and select the action from the drop-down list.
STP	Displays the Layer 2 action configured for STP. To modify the action, click the cell and select the action from the drop-down list.

C.4.26.5 Info

The Info Properties pane allows you to view nominal operating values set for the card during manufacturing.

Table C-1368 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.
Units	Displays the unit of measure (when applicable) of the object that is inventoried.

C.4.26.6 Loopback

The Loopback Properties pane allows you to view and update PT_10GE_4 loopback information.

Table C-1369 Field Descriptions for the Loopback Properties Pane

Field	Description
Port	Displays the port number.
Admin State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).

C.4.26.7 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane contains the following tabs:

- C.2.44.7.1 TCA 15 Min Tab, page C-582
- C.2.44.7.2 TCA 1 Day Tab, page C-583
- C.2.44.7.3 Alarm Thresh Tab, page C-583

C.4.26.7.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-1370 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.

Table C-1370 Field Descriptions for the TCA 15 Min Tab (continued)

Field	Description
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.4.26.7.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-1371 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port No.	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.4.26.7.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-1372 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port No.	Displays the port number.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.
Reset to Defaults button	Resets the value of the port parameters to the default value.

C.4.26.8 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-1373 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules (PPM)	
PPM No.	Displays the identifier of the plugin module.

Table C-1373 Field Descriptions for the PPM Properties Pane (continued)

Field	Description
Actual Equipment Type	Displays the actual card that is installed in the slot. Values are single mode or multimode.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	
Port	Displays the port number for the PPM in the Pluggable Port Modules area.
Rate	Displays the port rate for the PPM in the Pluggable Port Modules area.

C.4.26.8.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.4.26.9 RMON Thresholds

The RMON Thresholds Properties pane allows you to view RMON thresholds for the PT_10GE_4 card.

Table C-1374 Field Descriptions for the RMON Thresholds Properties Pane

Field	Description
Index No.	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Thresholds	Displays the number of occurrences for the rising threshold.
Falling Thresholds	Displays the number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold.

Table C-1374 Field Descriptions for the RMON Thresholds Properties Pane (continued)

Field	Description
Create	Allows you to create an RMON threshold. Click the **Create** button to create a threshold for the POS ports. **Note** You can select a Channel Group when you create a threshold. For more information, see 6.5.4 Creating RMON Thresholds, page 6-11.
Delete	Select a threshold from the list displayed and click the **Delete** button.

C.4.27 Slot Properties—PTSA_GE

The PTSA_GE panel is a standalone unit and can be connected to the PT System. The PTSA_GE panel enables the number of ports to be scaled on the PT System. The PTSA_GE panel has 4 10GE SFP+ ports and 44 GE SFP ports.

The PTSA_GE panel cannot operate independently. After connecting the PTSA_GE panel to the PTF_10GE_4 card or the PT_10GE_4 card, the PTSA_GE panel is automatically discovered and registered. The discovery operation is performed using the Satellite Discovery Protocol (SDP) and the registration operation is performed using the Satellite Registration Protocol (SRP).

The four SFP+ ports on the PTSA_GE panel can be connected to the SFP+ ports on the PTF_10GE_4 card or the PT_10GE_4 card. The four SFP+ ports on the PTSA_GE panel can be connected to only one card (PTF_10GE_4 or PT_10GE_4) at a time.

PTSA_GE shelf supports ONE-GE and FE for 1 to 44 ports and supports TEN-GE for 45 to 48 ports. By default, the 45 to 48 ports are in IC mode and cannot be changed.

The following figures show the four variations of the PTSA_GE panel faceplate.

Figure C-79 PTSA_GE Panel With AC Power Faceplate

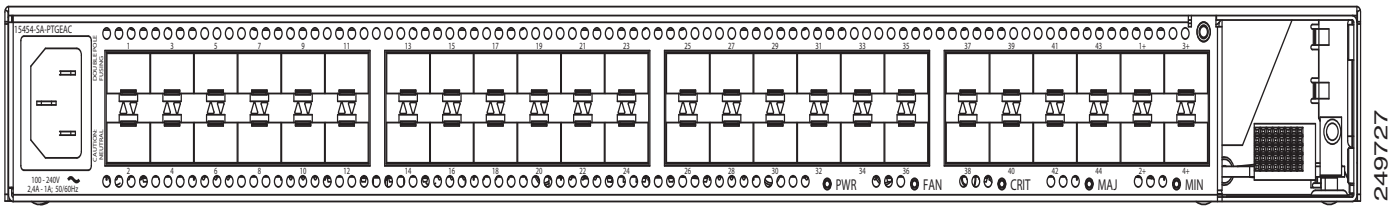


Figure C-80 PTSA_GE Panel With DC ETSI 48 V Faceplate

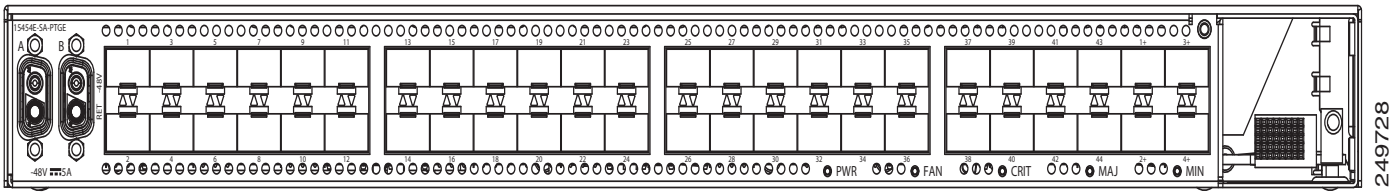


Figure C-81 PTSA_GE Panel With DC ANSI 48 V Faceplate

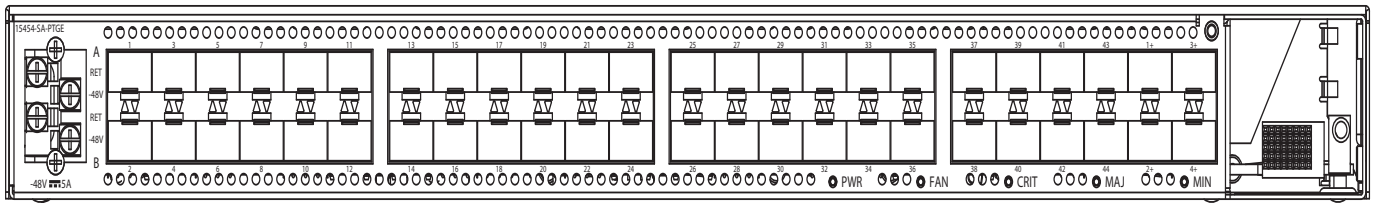
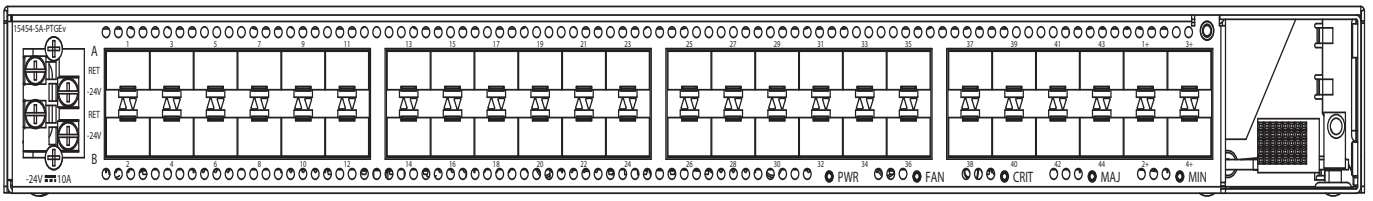


Figure C-82 PTSA_GE Panel With DC ANSI 24 V Faceplate



For the PTSA_GE panel, the slot properties pane displays the following properties: Identification, Module View, Alarm Behavior, Ether Ports, Info, Loopback, Optical Thresh, PPM, and RMON Thresholds.

C.4.27.1 Identification

The Identification Properties pane allows you to view and update the PTSA_GE identification information.

Table C-1375 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the part number that is printed on the top of the card.
HW Revision	Displays the hardware version number of the card.
Serial No.	Displays the serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Admin State	The port administration state. It can be: • IS—In Service • OOS, MT—Out of Service, Maintenance

Table C-1375 Field Descriptions for the Identification Properties Pane (continued)

Field	Description
Service State	*Display only.* Sets the service state that indicates the operational state of the channel group. The Service State can be: • IS-NR—In Service–Normal. • OOS-MA, DSBLD—Out of Service and Management, Disabled.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. You can choose an alarm profile for the card from the drop-down list. Values are Default and Inherited. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

C.4.27.2 Module View

The Module View displays a graphic of the PTSA_GE panel that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset or delete the card.

C.4.27.3 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update card alarm profile information.

Table C-1376 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Payload	
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

C.4.27.4 Ether Ports

The Ether Ports contains the following tabs:

- C.2.44.4.1 Ports Tab, page C-579
- C.2.44.4.2 Ethernet Tab, page C-580
- C.2.44.4.3 Layer 2 Protocols, page C-581

C.4.27.4.1 Ports Tab

Table C-1377 Field Descriptions for the Ports Tab

Field	Description
Port No.	Displays the port number.
Port Name	Displays the name of the port.
Admin State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak (H:M)	Automatic in-service soak. The amount of time left before the traffic/termination transitions to the IS state.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distance options that appear in the drop-down list depend on the card selected. • EW • LW • SW • LRM • ER • LR • SR (short reach, up to 2 km distance) • ZR • IR 2 • LR 2 • DWDM • CWDM40km
Wavelength	Allows you to provision the wavelength frequency.

C.4.27.4.2 Ethernet Tab

The Ethernet tab allows you to view Ethernet line information.

Table C-1378 Field Descriptions for the Ethernet Tab

Field	Description
Port	Displays the port number.
MTU	Displays the maximum transfer unit, which is the largest acceptable packet size configured for that port. The maximum setting is 9000 and the default size is 1500. The MTU value is 0 until the packet-over-SONET (POS) port is used in creating a circuit.
Link State	Displays the physical port state. Possible values are Up and Down.
Expected Speed	Displays the expected speed. Possible values are 10 Mbps, 100 Mbps, and Auto. If expected speed is set to Auto, you cannot enable selective autonegotiation.
Expected Duplex	Displays the port's expected duplex setting. Possible values are Full, Half, and Auto. If expected duplex is set to Auto, you cannot enable selective autonegotiation.
Flow Control	Displays the negotiated flow control mode. Possible values are None, Symmetrical, and Asymmetrical.
Interconnect Mode	—
Operating Speed	Displays the actual operating speed.
Operating Duplex	Displays the expected duplex setting of the port.
Operating Flow Control	Displays the value of the flow control.
Carrier Delays(ms)	—

C.4.27.4.3 Layer 2 Protocols Tab

The Layer 2 Protocols tab allows you to view and modify actions for Layer 2 protocols.

Table C-1379 Field Descriptions for the Layer 2 Protocols Tab

Field	Description
Port	Displays the port number.
CDP	Displays the Layer 2 action configured for CDP. To modify the action, click the cell and select the action from the drop-down list.
DOT1X	Displays the Layer 2 action configured for DOT1X. To modify the action, click the cell and select the action from the drop-down list.
DTP	Displays the Layer 2 action configured for DTP. To modify the action, click the cell and select the action from the drop-down list.
LACP	Displays the Layer 2 action configured for LACP. To modify the action, click the cell and select the action from the drop-down list.
PAGP	Displays the Layer 2 action configured for PAGP. To modify the action, click the cell and select the action from the drop-down list.
VTP	Displays the Layer 2 action configured for VTP. To modify the action, click the cell and select the action from the drop-down list.
STP	Displays the Layer 2 action configured for STP. To modify the action, click the cell and select the action from the drop-down list.

C.4.27.5 Loopback

The Loopback Properties pane allows you to view and update PTSA_GE loopback information.

Table C-1380 Field Descriptions for the Loopback Properties Pane

Field	Description
Port	Displays the port number and the name of the port.
Admin State	The port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

C.4.27.6 Optical Thresh

The Optical Thresh Properties pane allows you to view and provision optical threshold settings. The Properties pane contains the following tabs:

- C.2.44.7.1 TCA 15 Min Tab, page C-582
- C.2.44.7.2 TCA 1 Day Tab, page C-583
- C.2.44.7.3 Alarm Thresh Tab, page C-583

C.4.27.6.1 TCA 15 Min Tab

The TCA 15 Min tab allows you to set thresholds for 15-minute threshold crossing alert generation.

Table C-1381 Field Descriptions for the TCA 15 Min Tab

Field	Description
Port	Displays the port number and the name of the port.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.

C.4.27.6.2 TCA 1 Day Tab

The TCA 1 Day tab allows you to set thresholds for 1-day threshold crossing alert generation.

Table C-1382 Field Descriptions for the TCA 1 Day Tab

Field	Description
Port	Displays the port number and the name of the port.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.

C.4.27.6.3 Alarm Thresh Tab

The Alarm Thresh tab allows you to select thresholds for alarm generation.

Table C-1383 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port	Displays the port number and the name of the port.
Laser Bias High (%)	Displays the upper laser bias threshold.
Rx Power High (dBm)	Displays the upper receive power threshold.
Rx Power Low (dBm)	Displays the lower receive power threshold.
Tx Power High (dBm)	Displays the upper transmit power threshold.
Tx Power Low (dBm)	Displays the lower transmit power threshold.

C.4.27.7 PPM

The PPM Properties pane allows you to view and provision the PPM and the ports inside the PPM.

Table C-1384 Field Descriptions for the PPM Properties Pane

Field	Description
Pluggable Port Modules (PPM)	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the equipment type that the slot is provisioned for.
Equipment State	Displays the equipment state of the plugin module.
Admin State	Displays the port administration state. It can be: • IS—In Service • IS, AINS—Automatic In Service • OOS, DSBLD—Out of Service, Disabled • OOS, MT—Out of Service, Maintenance
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
PPM	

Table C-1384 Field Descriptions for the PPM Properties Pane (continued)

Field	Description
Port	Displays the identifier of the plugin module and the port number.
Rate	Displays the rate of the port inside the pluggable entity.

C.4.27.7.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. This dialog box allows you to provision the PPM and to create the ports inside this entity. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

C.4.27.8 RMON Thresholds

The RMON Thresholds Properties pane allows you to view RMON thresholds for the PTSA_GE panel.

Table C-1385 Field Descriptions for the RMON Thresholds Properties Pane

Field	Description
Index No.	Displays the selected interface number.
Slot	Displays the selected card.
Port	Displays the port on the selected card.
Variable	Displays the MIB variable that is being monitored.
Alarm Type	Indicates whether the event is triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Indicates whether the sample type is relative or absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Displays the sample period, in seconds.
Rising Thresholds	Displays the number of occurrences for the rising threshold.
Falling Thresholds	Displays the number of occurrences for the falling threshold. In most cases, the falling threshold is set lower than the rising threshold.
Create	Allows you to create an RMON threshold. Click the **Create** button to create a threshold for the POS ports. **Note** You can select a Channel Group when you create a threshold. For more information, see 6.5.4 Creating RMON Thresholds, page 6-11.
Delete	Select a threshold from the list displayed and click the **Delete** button.

Slot Property Information—FC_MR-4, FMEC, Multirate, and Optical Cards

This appendix provides information on the cards supported in Cisco Prime Optical. This appendix contains the following sections:

- D.1 FC_MR-4 Card, page D-1
- D.2 FMEC Cards, page D-7
- D.3 Multirate Cards, page D-16
- D.4 Optical Cards, page D-84

Note

- In the Prime Optical GUI, display-only fields have a gray background.
- Slot properties are alphabetically displayed under the Overview and Provisioning drawers in the NE Explorer. See "1.5.7 NE Explorer" section on page 1-30 for more information.

D.1 FC_MR-4 Card

This section describes the FC_MR-4 card supported in Prime Optical.

D.1.1 Slot Properties—FC_MR-4

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH card slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Fiber Channel 4-port (FC_MR-4) card is a 1.0625- or 2.125-Gb/s Fiber Channel/Fiber Connectivity (FICON) card that integrates non-SONET or non-SDH framed protocols into a SONET or SDH time-division multiplexing (TDM) platform through virtually concatenated payloads.

The FC_MR-4 card uses pluggable Gigabit Interface Converters (GBICs) to transport non-SONET/SDH-framed, block-coded protocols over SONET/SDH in virtually concatenated or contiguously concatenated payloads. The FC_MR-4 can transport fiber channel over SONET/SDH using fiber-channel client interfaces and allows transport of one of the following at a time:

- Two contiguously concatenated (CCAT) STS-24c/VC4-8c circuits
- One STS-48c/VC4-16c CCAT

- Two virtually concatenated (VCAT) circuits (STC3c-8V/VC4-8v) compliant with ITU-T G.7041 GFP-T and Telcordia GR-253-CORE
- One STS-24c/VC4-8c CCAT and one STS-24c/VC4-8c VCAT

For the FC_MR module, the slot properties pane displays the following tabs: Module View, Identification, Card, Port, Alarm Behavior, RMON Thresholds, J1 Path Trace, GBIC Inventory, and Info.

D.1.1.1 Module View

The Module View Properties pane displays a graphic of the FC_MR that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.1.1.2 Identification

The Identification Properties pane allows you to view and update FC_MR identification information.

Table D-1 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.1.1.3 Card

The Card Properties pane allows you to view and update card information.

Table D-2 Field Descriptions for the Card Properties Pane

Field	Description
Card Mode	Select the card mode. It can be either of the following: • Distance Extension (default) • Line Rate Only
Current Bandwidth Usage	Displays the current bandwidth utilization in terms of STS or VC-4 usage.

D.1.1.4 Port

The Port Properties pane allows you to view and update FC_MR port information. The Properties pane contains the following tabs:

- D.1.1.4.1 General Tab, page D-3
- D.1.1.4.2 Distance Extension Tab, page D-4
- D.1.1.4.3 Enhanced FC/FICON Tab, page D-4

D.1.1.4.1 General Tab

The General tab allows you to view and update general port information.

Table D-3 Field Descriptions for the General Tab

Field	Description
Port Number	Displays the card port number. Values are 1 to 4.
Port Name	Allows you to assign the specified port a name. The name can be up to 32 alphanumeric or special characters and is blank by default.
Admin State	Displays the administration state. The state can either be Unlocked or Locked, Maintenance.
Media Type	Set the media type for each port. Options are: • FICON - 2 Gb/s—Available when Distance Extension card mode is selected or distance extension is enabled on the port. • FICON - 1 Gb/s—Available when Distance Extension card mode is selected or distance extension is enabled on the port. • Fibre Channel - 1 Gb/s—Fiber channel interface. • Fibre Channel - 2 Gb/s—Fiber channel interface. • Undefined—This is the default media type when the card is inserted.
Link Rate	Displays the actual rate of the port.
Max GBIC Rate	Displays the maximum GBIC rate. Cisco supports two GBICs for the FC_MR-4 card (ONS-GX-2FC-SML and ONS-GX-2FC-MMI). If used with another GBIC, “See GBIC vendor” displays.

Table D-3 Field Descriptions for the General Tab (continued)

Field	Description
Enable Link Recovery	Enables or disables link recovery if a local port is inoperable. If enabled, a link reset occurs when there is a loss of transport from a cross-connect switch, a protection switch, or an upgrade.
State	Places the port in service (IS), out of service (OOS), or out of service–maintenance (OOS_MT).

D.1.1.4.2 Distance Extension Tab

The Distance Extension tab allows you to enable the buffer-to-buffer extension between the client and the FC_MR-4 card. This increases the dense wavelength division multiplexing (DWDM) distance without affecting the throughput.

Table D-4 Field Descriptions for the Distance Extension Tab

Field	Description
Port No.	Displays the port number.
Enable Distance Extension	Check to enable end-to-end distances of up to 1600 km for 1 GFC and up to 800 km for 2 GFC. When enabled, all the fields for the port are enabled.
Auto Detect Credits	Check to enable automatic detection of buffer credits for flow control.
Credits Available	Displays the number of credits available. You can set the credits available only if the Auto Detect Credits field is disabled on the port. Values should be in multiples of 2. The minimum value is 2 and the maximum value is 256.
Autoadjust GFP Buffer Threshold	Check to automatically adjust the threshold of the GFP buffer.
GFP Buffers Available	Displays the number of GFP buffers. You can set the GFP buffers as available only if the Autoadjust GFP Buffer Threshold field is disabled. Values should be in multiples of 16. The minimum value is 16 and the maximum value is 1200.

D.1.1.4.3 Enhanced FC/FICON Tab

The Enhanced FC/FICON ISL tab allows you to enable FPGA to drop duplicate frames.

Table D-5 Field Descriptions for the Enhanced FC/FICON Tab

Field	Description
Port No.	Displays the port number.
Ingress Idle Filtering	Enable or disable ingress idle filtering.
Maximum Frame Size	Allows you to select the maximum frame size supported by the FICON/FC. Valid range is from 2148 to 2172.

D.1.1.5 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update FC_MR alarm profile information.

Table D-6 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Card Profile	Choose a global alarm profile for the card from the drop-down list.
Port Number	Displays the FC_MR port number (1 to 4).
Alarm Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed.
Force to All Ports	Forces the selected alarm profile to all FC_MR ports.

D.1.1.6 RMON Thresholds

The RMON Thresholds Properties pane allows you to create, view, and delete FC_MR-4 thresholds.

Table D-7 Field Descriptions for the RMON Thresholds Properties Pane

Field	Description
Index Number	A unique value that identifies the different thresholds currently existing on the NE.
Slot	Select a slot for the new FC_MR threshold.
Port	Select a port for the selected slot. If you select All, the threshold will be created on all ports for that slot. This operation may take several minutes to complete.
Variable	Select a variable for the new FC_MR threshold. Available variables will differ based on the type of card selected in the Slot field.
Alarm Type	Select an alarm type for the new FC_MR threshold. Indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
Sample Type	Select a sample type for the new FC_MR threshold. Available sample types are relative and absolute. Relative restricts the threshold to using the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
Sample Period	Enter a sample period for the new FC_MR threshold. The sample period is measured in seconds.
Rising Threshold	Enter a rising threshold for the new FC_MR threshold. The value must be equal to or greater than the falling threshold value.
Falling Threshold	Enter a falling threshold for the new FC_MR threshold. The value must be equal to or less than the rising threshold value.
Create	Click the **Create** button to create an FC_MR threshold.
Delete	Select an FC_MR threshold from the list displayed and click the **Delete** button.

D.1.1.7 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve FC_MR-4 J1 path trace information.

Table D-8 Field Descriptions for the J1 Path Trace Properties Pane

Column	Description
Port Number	Displays the port number.
STS Number/VC4 Number	Displays the STS or VC4 number.

Table D-8 Field Descriptions for the J1 Path Trace Properties Pane (continued)

Column	Description
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Mem Num	Displays the virtual concatenation (VCAT) member number.

D.1.1.8 GBIC Inventory

The GBIC Inventory Properties pane allows you to view GBIC inventory information.

Table D-9 Field Descriptions for the GBIC Inventory Properties Pane

Field	Description
Port Number	Displays the GBIC card port number.
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot. Values are single mode or multimode.
Hardware Part Number	Displays the manufacturer's part number.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the GBIC serial number that is unique to each GBIC.
CLEI Code	Displays the CLEI code.
Application Filename	The application filename is not supported; therefore, this field displays “unknown.”

D.1.1.9 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the FC_MR-4 card.

Table D-10 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.2 FMEC Cards

This section describes the following FMEC cards supported within Prime Optical:

- D.2.1 Slot Properties—FMEC-DS-1/E1, page D-7
- D.2.2 Slot Properties—FMEC-DS-3/E3, page D-8
- D.2.3 Slot Properties—FMEC-E1, page D-9
- D.2.4 Slot Properties—FMEC-E1-120NP, page D-11
- D.2.5 Slot Properties—FMEC-STM1E 1:1, page D-12
- D.2.6 Slot Properties—MIC-A/P, page D-14
- D.2.7 Slot Properties—MIC-C/T/P, page D-15

D.2.1 Slot Properties—FMEC-DS-1/E1

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 SDH FMEC-DS-1/E1 card provides front-mount electrical connection for 14 ITU-compliant, G.703 E-1 ports. With the FMEC-DS-1/E1 card, each E1-N-14 port operates at 2.048 Mb/s over a 120-ohm, balanced cable through two 37-pin DB connectors.

For the FMEC DS-1/E1 module, the slot properties pane displays the following tabs: Module View and Identification.

D.2.1.1 Module View

The Module View Properties pane displays a graphic of the FMEC DS-1/E1 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.2.1.2 Identification

The Identification Properties pane allows you to view and update FMEC DS-1/E1 identification information.

Table D-11 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the card serial number that is unique to each card.

Table D-11 Field Descriptions for the Identification Properties Pane

Field	Description
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.2.2 Slot Properties—FMEC-DS-3/E3

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 SDH FMEC-DS-3/E3 card provides front-mount electrical connection for 14 ITU-compliant, G.703 E-1 ports. With the FMEC-DS-3/E3 card, each E1-N-14 port operates at 2.048 Mb/s over a 120-ohm, balanced cable through two 37-pin DB connectors.

For the FMEC DS-3/E3 module, the slot properties pane displays the following tabs: Module View, Identification, and Info.

D.2.2.1 Module View

The Module View Properties pane displays a graphic of the FMEC DS-3/E3 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.2.2.2 Identification

The Identification Properties pane allows you to view and update FMEC DS-3/E3 identification information.

Table D-12 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.

Table D-12 Field Descriptions for the Identification Properties Pane

Field	Description
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.2.2.3 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the FMEC DS-3/E3 card.

Table D-13 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.2.3 Slot Properties—FMEC-E1

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 SDH FMEC-E1 card provides front-mount electrical connection for fourteen ITU-compliant, G.703 E-1 ports. With the FMEC-E1 card, each E1-N-14 port operates at 2.048 Mb/s over a 75-ohm unbalanced coaxial 1.0/2.3 miniature coaxial connector.

For the FMEC-E1 module, the slot properties pane displays the following tabs: Module View, Identification, and Info.

D.2.3.1 Module View

The Module View Properties pane displays a graphic of the FMEC-E1 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.2.3.2 Identification

The Identification Properties pane allows you to view and update FMEC-E1 identification information.

Table D-14 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.2.3.3 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the FMEC-E1 card.

Table D-15 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.2.4 Slot Properties—FMEC-E1-120NP

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 SDH FMEC-E1-120NP (Unprotected) card provides front-mount electrical connection for 42 ITU-compliant, G.703 E-1 ports. With the FMEC E1-120NP card, each E1-42 port operates at 2.048 Mb/s over a 120-ohm, balanced interface. Twenty-one interfaces are led through one common Molex 96-pin LFH connector.

The ONS 15454 SDH FMEC E1-120PROA (1:3 Protect A) card provides front-mount electrical connection for 42 ITU-compliant, G.703 E-1 ports. With the FMEC E1-120PROA card, each E1-42 port operates at 2.048 Mb/s over a 120-ohm, balanced interface. Twenty-one interfaces are led through one common Molex 96-pin LFH connector.

The ONS 15454 SDH FMEC E1-120PROB (1:3 Protect B) card provides front-mount electrical connection for 42 ITU-compliant, G.703 E-1 ports. With the FMEC E1-120PROB card, each E1-42 port operates at 2.048 Mb/s over a 120-ohm, balanced interface. Twenty-one interfaces are led through one common Molex 96-pin LFH connector.

For the FMEC-E1-120NP module, the slot properties pane displays the following tabs: Module View, Identification, and Info.

D.2.4.1 Module View

The Module View Properties pane displays a graphic of the FMEC-E1-120NP that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.2.4.2 Identification

The Identification Properties pane allows you to view and update FMEC-E1-120NP identification information.

Table D-16 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.

Table D-16 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.2.4.3 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the FMEC-E1-120NP card.

Table D-17 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.2.5 Slot Properties—FMEC-STM1E 1:1

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 SDH FMEC-STM1E 1:1 card provides front-mount electrical connection for 2 x 12 ITU-compliant, G.703 STM1E ports. With the FMEC-STM1E 1:1 card, each interface of an STM1E-12 card operates at 155.52 Mb/s for STM-1 over a 75-ohm unbalanced coaxial 1.0/2.3 miniature coaxial connector. The FMEC STM1E 1:1 card is required if you want to use the STM1E-12 card in 1:1 protection mode or for connection to two unprotected STM1E-12 cards.

For the FMEC-STM1E card, the slot properties pane displays the following tabs: Module View, Identification, and Info.

D.2.5.1 Module View

The Module View Properties pane displays a graphic of the FMEC-STM1E 1:1 card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.2.5.2 Identification

The Identification Properties pane allows you to view and update the FMEC-STM1E 1:1 card identification information.

Table D-18 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.2.5.3 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the FMEC-STM1E 1:1 card.

Table D-19 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.2.6 Slot Properties—MIC-A/P

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The MIC-A/P card provides connection for the BATTERY B input, one of the two possible redundant power supply inputs. It also provides connection for eight alarm outputs (coming from the TCC2 card), sixteen alarm inputs, and four configurable alarm inputs/outputs. Its position is in slot 23 in the center of the ONS 15454 SDH subrack EFCA area.

For the MIC-A/P module, the slot properties pane displays the following tabs: Module View and Identification.

D.2.6.1 Module View

The Module View Properties pane displays a graphic of the MIC-A/P that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.2.6.2 Identification

The Identification Properties pane allows you to view and update MIC-A/P identification information.

Table D-20 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.2.7 Slot Properties—MIC-C/T/P

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The MIC-C/T/P card provides connection for the BATTERY A input, one of the two possible redundant power supply inputs. It also provides connection for system management serial port, system management LAN port, modem port (for future use), and system timing inputs and outputs.

For the MIC-C/T/P module, the slot properties pane displays the following tabs: Module View and Identification.

D.2.7.1 Module View

The Module View Properties pane displays a graphic of the MIC-C/T/P that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.2.7.2 Identification

The Identification Properties pane allows you to view and update MIC-C/T/P identification information.

Table D-21 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.3 Multirate Cards

This section describes the following multirate cards supported within Prime Optical:

- D.3.1 Slot Properties—ASAP_4, page D-16
- D.3.2 Slot Properties—MRC-12, page D-32
- D.3.3 Slot Properties—MRC25G-4, page D-56
- D.3.4 Slot Properties—MRC25G-12, page D-70

D.3.1 Slot Properties—ASAP_4

The slot properties pane displays information about the Cisco ONS 15600 SONET or ONS 15600 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15600 SONET/SDH Any Service Any Port (ASAP_4) card provides up to 16 optical network interface ports, depending on the configuration. When configured for OC-192 XFP, the card provides a maximum of 4 OC-192 optical network interface ports. When the ASAP_4 card is configured with a combination of OC-192 XFP and lower-rate plugins such as OC-48, OC-12, or OC-3, the number of optical network interfaces is factored by 4 for each OC-192. For example, if the ASAP_4 card is configured with 1 OC-192, the card provides a maximum of 13 optical network interfaces (1 for OC-192 and 12 for lower-rate plugins). If the ASAP_4 card is configured with 2 OC-192s, the card provides a maximum of 10 optical network interfaces (2 for OC-192 and 8 for lower-rate plugins). The card can be installed in any I/O module card slot. The card provides 16 optical interfaces on the front panel. When configured for Ethernet, an ASAP port forwards Ethernet frames by encapsulating them in Cisco HDLC or GFP and transports them over SONET/SDH to the far-end GE port, where the unencapsulation is performed.

The OC-192 XFP feature adds the capability to the existing ONS 15600 ASAP card to support 10 GB small form factor pluggable (XFP) optics. This functionality augments the ASAP card with an OC-192 line rate and allows the ASAP card to provide a range of optical service rates that scale from OC-3 to OC-192.

Note The OC-192 XFP cannot be modified once it is configured.

The slot properties pane for the ASAP_4 card displays the following tabs: Module View, Card Identification, Pluggable Provisioning, Line, STS, VC4, Loopback, Protection, Alarm Behavior, J1 Path Trace, Info, Ether Line, Ether Loopback, Ether Alarm Behavior, POS Alarm Behavior, POS Line, Transceiver, Section Trace, and Auto Laser Shutdown. The tabs shown depend on the NE configuration.

D.3.1.1 Module View

The Module View Properties pane displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Moving the mouse pointer over the graphic also displays the alarm counts.) Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.3.1.2 Card Identification

The Card Identification Properties pane allows you to view and update identification information.

Table D-22 Field Descriptions for the Card Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
User Code	Allows you to enter an ASCII string to identify the card. The user code is stored in nonvolatile memory so that it is not lost when the unit is moved or stored as a spare.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The card administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.3.1.3 Pluggable Provisioning

The Pluggable Provisioning Properties pane allows you to view and provision pluggable entities; for example, pluggable port modules (PPMs) and the ports inside these entities.

Table D-23 Field Descriptions for the Pluggable Provisioning Properties Pane

Field	Description
Pluggable IO Module	
Pluggable Number	Displays the identifier of the plugin module.
Equipment Type	Displays the equipment type that the pluggable slot is provisioned for.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each pluggable I/O module.
CLEI Code	Displays the CLEI code.
Actual Equipment Type	Displays the actual pluggable I/O module that is installed in the pluggable slot.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the pluggable I/O module.
User Code	Allows you to enter an ASCII string to identify the pluggable I/O module. The user code is stored in nonvolatile memory so that it is not lost when the unit is moved or stored as a spare.
Product ID	Displays a product ID string of 63 characters maximum. If the pluggable I/O module does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Admin State	Displays the port administration state. Values include: • unlocked—Puts the port in service. The port service state changes to unlocked-enabled. • unlocked,automaticInService—Puts the port in automatic in-service. The port service state changes to unlocked-disabled,automaticInService. • locked-disabled—Removes the port from service and disables it. The port service state changes to locked-enabled,disabled. • locked,maintenance—Removes the port from service for maintenance. The port service state changes to locked-enabled,maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the pluggable I/O module.
Pluggable Port Module	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual pluggable port module that is installed in the pluggable slot.
Equipment State	Displays the equipment state of the pluggable port module.
Admin State	Displays the port administration state. Values include: • unlocked—Puts the port in service. The port service state changes to unlocked-enabled. • unlocked,automaticInService—Puts the port in automatic in-service. The port service state changes to unlocked-disabled,automaticInService. • locked-disabled—Removes the port from service and disables it. The port service state changes to locked-enabled,disabled. • locked,maintenance—Removes the port from service for maintenance. The port service state changes to locked-enabled,maintenance.

Table D-23 Field Descriptions for the Pluggable Provisioning Properties Pane

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Optical Ports	
Pluggable Number	Displays the identifier of the plugin module.
Rate	Displays the rate that the port is provisioned for.
Ether Ports	
Pluggable Number	Displays the identifier of the plugin module.
Equipment Type	Displays the equipment type that the Ethernet port is provisioned for.

D.3.1.3.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. The Provision Pluggable dialog box allows you to provision pluggable entities—for example, the PPM and PIM—and to create the ports inside these entities. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

D.3.1.4 Line

The Line Properties pane allows you to view and update optical line performance monitoring information. The Line Properties pane contains the following tabs:

- D.3.1.4.1 Line Config Tab, page D-19
- D.3.1.4.2 Line Thresh 15 Min Tab, page D-21
- D.3.1.4.3 Line Thresh 1 Day Tab, page D-21
- D.3.1.4.4 Physical Thresh 15 Min Tab, page D-22
- D.3.1.4.5 Physical Thresh 1 Day Tab, page D-23
- D.3.1.4.6 Section Thresh 15 Min Tab, page D-23
- D.3.1.4.7 Section Thresh 1 Day Tab, page D-24
- D.3.1.4.8 Alarm Thresh Tab, page D-24

D.3.1.4.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the ASAP_4 card.

Table D-24 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Port Rate	Displays the rate that the port is provisioned for.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.

Table D-24 Field Descriptions for the Line Config Tab (continued)

Field	Description
EnableSyncMsg	When checked, enables synchronization status messages, which allow the node to choose the best timing source.
Send Do Not Use	When checked, sends a do not use (DUS) message on the S1 byte.
Administration State	The port administration state.
Synchronization Status Message	Allows you to view the incoming synchronization status message.
BLSR Ext. Byte, MS-SPRing Ext. Byte	Select an alternate BLSR or MS-SPRing byte.
Type	Defines the port.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distances options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

Table D-24 Field Descriptions for the Line Config Tab (continued)

Field	Description
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.

D.3.1.4.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute near- and far-end line thresholds of the ASAP_4 card.

Table D-25 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations–line.
ES-L	Displays the errored seconds–line.
SES-L	Displays the severely errored seconds–line.
UAS-L	Displays the unavailable seconds–line.
FC-L	Displays the failure count–line.
PSC	Displays the protection switching count.
PSD	Displays the protection switching duration.
PSC-W	Displays the protection switching count–working.
PSD-W	Displays the protection switching duration–working.
PSC-S	Displays the protection switching count–span.
PSD-S	Displays the protection switching duration–span.
PSC-R	Displays the protection switching count–ring.
PSD-R	Displays the protection switching duration–ring.
Far End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations–line.
ES-L	Displays the errored seconds–line.
SES-L	Displays the severely errored seconds–line.
UAS-L	Displays the unavailable seconds–line.
FC-L	Displays the failure count–line.

D.3.1.4.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day near- and far-end line thresholds of the ASAP_4 card.

Table D-26 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations–line.
ES-L	Displays the errored seconds–line.
SES-L	Displays the severely errored seconds–line.
UAS-L	Displays the unavailable seconds–line.
FC-L	Displays the failure count–line.
PSC	Displays the protection switching count–line.
PSD	Displays the protection switching duration–line.
PSC-W	Displays the protection switching count–working.
PSD-W	Displays the protection switching duration–working.
PSC-S	Displays the protection switching count–span.
PSD-S	Displays the protection switching duration–span.
PSC-R	Displays the protection switching count–ring.
PSD-R	Displays the protection switching duration–ring.
Far End	
Port Number	Displays the optical port number.
CV-L	Displays the coding violations–line.
ES-L	Displays the errored seconds–line.
SES-L	Displays the severely errored seconds–line.
UAS-L	Displays the unavailable seconds–line.
FC-L	Displays the failure count–line.

D.3.1.4.4 Physical Thresh 15 Min Tab

The Physical Thresh 15 Min tab allows you to view and change the 15-minute near-end physical thresholds of the ASAP_4 card.

Table D-27 Field Descriptions for the Physical Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.

Table D-27 Field Descriptions for the Physical Thresh 15 Min Tab (continued)

Field	Description
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the optical power received (OPR) establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.1.4.5 Physical Thresh 1 Day Tab

The Physical Thresh 1 Day tab allows you to view and change the 1-day near-end physical thresholds of the ASAP_4 card.

Table D-28 Field Descriptions for the Physical Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.1.4.6 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the 15-minute near-end section thresholds of the ASAP_4 card.

Table D-29 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations–section.
ES-S	Displays the errored seconds–section.
SES-S	Displays the severely errored seconds–section.
SEFS-S	Displays the severely errored framing seconds–section.

D.3.1.4.7 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the 1-day near-end section thresholds of the ASAP_4 card.

Table D-30 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations–section.
ES-S	Displays the errored seconds–section.
SES-S	Displays the severely errored seconds–section.
SEFS-S	Displays the severely errored framing seconds–section.

D.3.1.4.8 Alarm Thresh Tab

The Alarm Thresh tab allows you to select the thresholds for the alarms.

Table D-31 Field Descriptions for the Alarm Thresh Tab

Field	Description
Port No.	Port number.
LBC-HIGH	Maximum laser bias current.
LBC-LOW	Minimum laser bias current.
OPT-HIGH	Maximum optical power transmitted.
OPT-LOW	Minimum optical power transmitted.
OPR-HIGH	Maximum optical power received.
OPR-LOW	Minimum optical power received.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.1.5 STS

The STS Properties pane allows you to view and update ASAP_4 STS information. The STS Properties pane contains the following tabs:

- D.3.1.5.1 STS Config Tab, page D-24
- D.3.1.5.2 Path Thresh 15 Min Tab, page D-25
- D.3.1.5.3 Path Thresh 1 Day Tab, page D-25
- D.3.1.5.4 Customer Info Tab, page D-26

D.3.1.5.1 STS Config Tab

The STS Config tab allows you to view and change the STS settings of the ASAP_4 card.

Table D-32 Field Descriptions for the STS Config Tab

Field	Description
STS Number	Displays the synchronous transport signal number information.
IPPM Enabled	Check to enable IPPM and uncheck to disable IPPM.
XC Loopback	Displays the cross-connect loopback status.

D.3.1.5.2 Path Thresh 15 Min Tab

The Path Thresh 15 Min tab allows you to view and change the 15-minute path thresholds of the ASAP_4 card.

Table D-33 Field Descriptions for the Path Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.
PPJC-Pdet	Displays positive pointer justification count, STS path detected.
NPJC-Pdet	Displays negative pointer justification count, STS path detected.
PPJC-Pgen	Displays positive pointer justification count, STS path generated.
NPJC-Pgen	Displays negative pointer justification count, STS path generated.
Far End	
STS No	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
FC-P	Displays failure count–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.

D.3.1.5.3 Path Thresh 1 Day Tab

The Path Thresh 1 Day tab allows you to view and change the 1-day path thresholds of the ASAP_4 card.

Table D-34 Field Descriptions for the Path Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number information.

Table D-34 Field Descriptions for the Path Thresh 1 Day Tab (continued)

Field	Description
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.
PPJC-Pdet	Displays positive pointer justification count, STS path detected.
NPJC-Pdet	Displays negative pointer justification count, STS path detected.
PPJC-Pgen	Displays positive pointer justification count, STS path generated.
NPJC-Pgen	Displays negative pointer justification count, STS path generated.
Far End	
STS No	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
FC-P	Displays failure count–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.

D.3.1.5.4 Customer Info Tab

The Customer Info tab allows you to view the customer information.

Table D-35 Field Descriptions for the Customer Info Tab

Field	Description
STS No.	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.3.1.6 Loopback

The Loopback Properties pane allows you to view and update loopback information.

Table D-36 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

Table D-36 Field Descriptions for the Loopback Properties Pane

Field	Description
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

D.3.1.7 Protection

The Protection Properties pane allows you to view and update ASAP_4 protection group information.

Table D-37 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.3.1.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update alarm profile information.

Table D-38 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.3.1.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update J1 path trace information.

Table D-39 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.

Table D-39 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.

D.3.1.10 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the ASAP_4 card.

Table D-40 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

D.3.1.11 Ether Line

The Ether Line Properties pane allows you to configure Ether line information.

Table D-41 Field Descriptions for the Ether Line Properties Pane

Field	Description
Port Number	The port number.
Port Name	Allows you to enter a port name.
Admin State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Link State	Displays the physical port state. Values are Up, Down, or Not Present.
Flow Control	Displays the negotiated flow control mode. Values are None, Symmetrical, and Asymmetrical.
Negotiation Status	Displays the result of the most-recent auto-negotiation. The type of flow control that was negotiated will be displayed.
Auto Negotiation	Allows you to enable the card to match the speed and duplex mode of a partner node.
Max Frame	Sets the maximum frame size.
Flow Control Low	Sets the low flow control buffer level.
Flow Control High	Sets the high flow control buffer level.

Table D-41 Field Descriptions for the Ether Line Properties Pane

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distances options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.
AINS Soak (H:M)	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down (H:M)	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.

D.3.1.12 Ether Loopback

The Ether Loopback Properties pane allows loopback to be configured in the Ethernet port. The Ether Loopback Properties pane contains the following tabs:

- D.3.1.12.1 Ether Loopback Port Tab, page D-30
- D.3.1.12.2 SONET STS (Ether) Tab, page D-30

D.3.1.12.1 Ether Loopback Port Tab

The Ether Loopback Port tab allows you to configure Ethernet loopback port information.

Table D-42 Field Descriptions for the Ether Loopback Port Tab

Field	Description
Port Number	The port number.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

D.3.1.12.2 SONET STS (Ether) Tab

The SONET STS (Ether) tab allows you to configure loopback on cross-connects.

Table D-43 Field Descriptions for the SONET STS (Ether) Tab

Field	Description
STS	Displays the STS number.
XC Loopback	Displays the cross-connect loopback status.

D.3.1.13 Alarm Behavior Property

The Alarm Behavior Properties pane contains the following tabs:

- D.3.1.13.1 Ether Alarm Behavior Tab, page D-30
- D.3.1.13.2 POS Alarm Behavior Tab, page D-31

D.3.1.13.1 Ether Alarm Behavior Tab

The Ether Alarm Behavior tab allows you to view and update Ether alarm profile information.

Table D-44 Field Descriptions for the Ether Alarm Behavior Tab

Field	Description
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.

Table D-44 Field Descriptions for the Ether Alarm Behavior Tab (continued)

Field	Description
Suppress Alarms	When checked, all alarms are suppressed for the port.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.3.1.13.2 POS Alarm Behavior Tab

The POS Alarm Behavior tab allows you to view and update POS alarm profile information.

Table D-45 Field Descriptions for the POS Alarm Behavior Tab

Field	Description
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.3.1.14 POS Line

The POS Line Properties pane allows you to view and update alarm profile information.

Table D-46 Field Descriptions for the POS Line Properties Pane

Field	Description
Port Number	Displays the card port number.
Port Name	Allows you to enter a port name.
Admin State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Encap CRC	Sets the cyclic redundancy check (CRC) to verify the integrity of the transmitted data.
Framing Type	Allows you to select the line framing type.
Link State	Displays the physical port state. Values are Up and Down.
MTU	Maximum transmission unit. The largest acceptable packet size configured for that port. The default value is 1500.

D.3.1.15 Transceiver

The Transceiver Properties pane allows you to view and update ASAP_4 transceiver information.

Table D-47 Field Descriptions for the Transceiver Properties Pane

Field	Description
Port No.	PIM number, PPM number, or port number.
Non-normalized LBC (mA)	The actual operating value of laser bias current (in mA) for the specified card port.
Non-normalized OPT (dBm)	The actual operating value of optical power transmitted (in dBm) for the specified card port.
Non-normalized OPR (dBm)	The actual operating value of optical power received (in dBm) for the specified card port.

D.3.1.16 Section Trace

The Section Trace Properties pane allows you to change the section trace settings for the ASAP_4 card.

Table D-48 Field Descriptions for the Section Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.3.2 Slot Properties—MRC-12

The slot properties pane displays information about the Cisco ONS 15454 SONET and ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The MRC-12 multirate card (MRC) provides up to 12 OC-3/STM-1 ports, 12 OC-12/STM-4 ports, or 4 OC-48/STM-16 ports using small form factor pluggables (SFPs), in any combination of line rates. All ports are Telcordia GR-253 compliant. The SFP optics can use SR, IR, LR, coarse wavelength division multiplexing (CWDM), and DWDM SFPs to support unrepeated spans.

The ports operate at up to 2488.32 Mb/s over a single-mode fiber. The MRC-12 card has 12 physical connector adapters with 2 fibers per connector adapter (Tx and Rx). The card supports VT payloads, STS-1 payloads, and concatenated payloads at STS-3c, STS-6c, STS-9c, STS-12c, STS-18c, STS-24c, STS-36c, or STS-48c signal levels. It is fully interoperable with the ONS 15454 G-Series Ethernet cards.

The card supports 1+1 unidirectional and bidirectional facility protection. It also supports 1+1 protection in 4-fiber BLSR applications for the ONS 15454 SONET and in 4-fiber MS-SPRing applications for the ONS 15454 SDH, where both span switching and ring switching might occur. You can provision this card as part of a BLSR, UPSR, or 1+1 linear configuration for the ONS 15454 SONET or an MS-SPRing, SNCP, or linear configuration for the ONS 15454 SDH.

Note Longer distances are possible in an amplified system using dispersion compensation.

Note MRC-12 cards can only protect another MRC-12 card if the card is in the same speed slot (drop or trunk slot) and if both ports have matching line rates. For example, port 1 of the MRC-12 card 1 will protect port 1 of the MRC-12 card 2 only if both ports are provisioned with the same rate (for example, OC-12/STM-4). If the ports are provisioned with different rates, you cannot set a 1+1 protection.

You can install MRC-12 cards in slots 1 to 6 and slots 12 to 17 with an XCVT, XC10G, XC-VXL-2.5G, XC-VXL-10G, or XC-VXC-10G card.

Note The MRC-12 card supports an errorless software-initiated cross-connect card switch when used in a shelf equipped with XC-VXL-2.5G, XC-VXL-10G, or XC-VXC-10G cards.

The maximum bandwidth of the MRC-12 card is determined by the cross-connect card, as shown in the following table.

Table D-49 Maximum Bandwidth by Shelf Slot for the MRC-12 in Different Cross-Connect Configurations

XC Card Type	Maximum Bandwidth in the Drop Slot[1] (Slots 1 to 4 and Slots 14 to 17)	Maximum Bandwidth in the Trunk Slot[2] (Slots 5, 6, 12, or 13)
XCVT	OC-12	OC-48
XC10G/XC-VXC-10G	OC-48	OC-192
XC-VXL-2.5G	STM-16	STM-16
XC-VXC-10G/XC-VXL-10G	STM-16	STM-64

1. Drop slots are low-speed slots.
2. Trunk slots are high-speed slots.

The twelve ports of the MRC-12 card are divided into four groups, with each group having a master port as shown in the following table.

Table D-50 Port Grouping

Group	Ports Included	Master Port
1	1	1
2	2, 3, 4	4
3	5, 6, 7, 8	7
4	9, 10, 11, 12	10

Following are the general port rate configuration rules:

- The maximum bandwidth for each port is OC-48.
- Port 1 can occupy all possible backplane bandwidth but cannot exceed OC-48.
- Each port group can have a maximum of 25% backplane bandwidth, except for group 1.
- Only a master port can occupy all possible bandwidth assigned to the group.

Based on the cross-connect card and slot limitations shown in Table D-49, the following rules apply for various synchronous transport signal (STS) available bandwidths:

- STS-12
  - Port 1 is the only port that is usable as an OC-12/STM-4. If port 1 is used as an OC-12/STM-4, all other ports are disabled.
  - Ports 1, 4, 7, and 10 are the only ports usable as OC-3/STM-1. If any of these ports is used as an OC-3/STM-1, Ports 2, 3, 5, 6, 8, 9, 11, and 12 are disabled.
- STS-48
  - Port 1 is the only port usable as an OC-48/STM-16. If port 1 is used as an OC-48/STM-16, all other ports are disabled.
  - Ports 1, 4, 7, and 10 are the only ports usable as OC-12/STM-4.
  - If port 4 is used as an OC-12/STM-4, Ports 2 and 3 are disabled.
  - If port 7 is used as an OC-12/STM-4, Ports 5, 6, and 8 are disabled.
  - If port 10 is used as an OC-12/STM-4, Ports 9, 11, and 12 are disabled.
  - Any port can be used as an OC-3/STM-1 as long as all of the above rules are followed.
- STS-192
  - Ports 1, 4, 7, and 10 are the only ports usable as OC-48/STM-16.
  - If port 4 is used as an OC-48/STM-16, Ports 2 and 3 are disabled.
  - If port 7 is used as an OC-48/STM-16, Ports 5, 6, and 8 are disabled.
  - If port 10 is used as an OC-48/STM-16, Ports 9, 11, and 12 are disabled.
  - If port 4 is used as an OC-12/STM-4, Ports 2 and 3 can be used as an OC-12/STM-4 or OC-3/STM-1.
  - If port 7 is used as an OC-12/STM-4, Ports 5, 6, and 8 can be used as an OC-12/STM-4 or OC-3/STM-1.
  - If Port 10 is as used as an OC-12/STM-4, Ports 9, 11, and 12 can be used as an OC-12/STM-4 or OC-3/STM-1.
  - If port 4 is used as an OC-3/STM-1, Ports 2 and 3 can be used as an OC-12/STM-4 or OC-3/STM-1.
  - If port 7 is used as an OC-3/STM-1, Ports 5, 6, and 8 can be used as an OC-12/STM-4 or OC-3/STM-1.
  - If port 10 is used as an OC-3/STM-1, Ports 9, 11, and 12 can be used as an OC-12/STM-4 or OC-3/STM-1.
  - Any port can be used as an OC-12/STM-4 or OC-3/STM-1, as long as all of the above rules are followed.

For the MRC-12 card, the slot properties pane displays the following tabs: Module View, Identification, Pluggable Provisioning, Line, STS, VC-4 (available only on the ONS 15454 SDH), Loopback, Protection, Alarm Behavior, Transceiver, Auto Laser Shutdown, Section Trace, J1 Path Trace, and Info. The tabs shown depend on the NE configuration.

D.3.2.1 Module View

The Module View Properties pane displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the card is displayed under Alarm Status. (Moving the mouse pointer over the graphic also displays the alarm counts.) Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.3.2.2 Identification

The Identification Properties pane allows you to view and update MRC-12 card identification information.

Table D-51 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Admin State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.3.2.3 Pluggable Provisioning

The Pluggable Provisioning Properties pane allows you to view and provision pluggable entities; for example, pluggable port module (PPM) and the ports inside these entities.

Table D-52 Field Descriptions for the Pluggable Provisioning Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual pluggable I/O module that is installed in the pluggable slot.
Equipment State	Displays the equipment state of the card.
Admin State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Pluggable Ports	
Pluggable Number	Displays the identifier of the plugin module.
Rate	Displays the rate of the port inside the pluggable entity.

D.3.2.3.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. The Provision Pluggable dialog box allows you to provision pluggable entities—for example, the PPM and PIM—and to create the ports inside these entities. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

D.3.2.3.2 Create Port Dialog Box

Use the Create Port dialog box to configure the port rate for a particular pluggable port module (PPM). In the Port Rate field, use the drop-down list to select the new port rate and click **OK**.

D.3.2.4 Line (ONS 15454 SONET)

The Line Properties pane allows you to view and update optical line performance monitoring information. The Line Properties pane contains the following tabs:

- D.3.2.4.1 Line Config Tab, page D-37
- D.3.2.4.2 Line Thresh 15 Min Tab, page D-38
- D.3.2.4.3 Line Thresh 1 Day Tab, page D-39
- D.3.2.4.4 Physical Thresh 15 Min Tab, page D-40
- D.3.2.4.5 Physical Thresh 1 Day Tab, page D-40
- D.3.2.4.6 Section Thresh 15 Min Tab, page D-41

- D.3.2.4.7 Section Thresh 1 Day Tab, page D-41
- D.3.2.4.8 Alarm Thresholds Tab, page D-42

D.3.2.4.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the MRC-12 card.

Table D-53 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Port Rate	Sets the rate of the new port.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Provide Sync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	When checked, enables synchronization status messages, which allow the node to choose the best timing source.
Send Do Not Use	When checked, sends a do not use (DUS) message on the S1 byte.
BLSR Ext. Byte	Select an alternate BLSR byte.
Type	Defines the port.
AINS Soak (H:M)	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down (H:M)	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4

Table D-53 Field Descriptions for the Line Config Tab (continued)

Field	Description
Send <FF> DoNotUse	When checked, sends a special do not use (DUS) (0xff) message on the S1 byte.
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default) - 3 (OC3, per port) • 0 (default) - 12 (OC-12)
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distances options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

D.3.2.4.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute near- and far-end line thresholds of the MRC-12 card.

Table D-54 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds–line.
SES-L	Displays the severely errored seconds–line.
CV-L	Displays the coding violations–line.
UAS-L	Displays the unavailable seconds–line.
FC-L	Displays the failure count–line.
PSC	Protection switching count–line.
PSD	Protection switching duration–line.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
PSC-S	Protection switching count–span.
PSD-S	Protection switching duration–span.
PSC-R	Protection switching count–ring.
PSD-R	Protection switching duration–ring.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds–line.
SES-L	Displays the severely errored seconds–line.
CV-L	Displays the coding violations–line.
UAS-L	Displays the unavailable seconds–line.
FC-L	Displays the failure count–line.

D.3.2.4.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day near- and far-end line thresholds of the MRC-12 card.

Table D-55 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds–line.
SES-L	Displays the severely errored seconds–line.
CV-L	Displays the coding violations–line.
UAS-L	Displays the unavailable seconds–line.
FC-L	Displays the failure count–line.

Table D-55 Field Descriptions for the Line Thresh 1 Day Tab (continued)

Field	Description
PSC	Protection switching count–line.
PSD	Protection switching duration–line.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
PSC-S	Protection switching count–span.
PSD-S	Protection switching duration–span.
PSC-R	Protection switching count–ring.
PSD-R	Protection switching duration–ring.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds–line.
SES-L	Displays the severely errored seconds–line.
CV-L	Displays the coding violations–line.
UAS-L	Displays the unavailable seconds–line.
FC-L	Displays the failure count–line.

D.3.2.4.4 Physical Thresh 15 Min Tab

The Physical Thresh 15 Min tab allows you to view and change the 15-minute near-end physical thresholds of the MRC-12 card.

Table D-56 Field Descriptions for the Physical Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the optical power received (OPR) establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.2.4.5 Physical Thresh 1 Day Tab

The Physical Thresh 1 Day tab allows you to view and change the 1-day near-end physical thresholds of the MRC-12 card.

Table D-57 Field Descriptions for the Physical Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.2.4.6 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the 15-minute near-end section thresholds of the MRC-12 card.

Table D-58 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations–section.
ES-S	Displays the errored seconds–section.
SES-S	Displays the severely errored seconds–section.
SEFS-S	Displays the severely errored framing seconds–section.

D.3.2.4.7 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the 1-day near-end section thresholds of the MRC-12 card.

Table D-59 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations–section.
ES-S	Displays the errored seconds–section.
SES-S	Displays the severely errored seconds–section.
SEFS-S	Displays the severely errored framing seconds–section.

D.3.2.4.8 Alarm Thresholds Tab

The Alarm Thresholds tab allows you to select the thresholds for the alarms.

Table D-60 Field Descriptions for the Alarm Thresholds Tab

Field	Description
Port No.	Port number.
LBC-HIGH	Maximum laser bias current.
LBC-LOW	Minimum laser bias current.
OPT-HIGH	Maximum optical power transmitted.
OPT-LOW	Minimum optical power transmitted.
OPR-HIGH	Maximum optical power received.
OPR-LOW	Minimum optical power received.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.2.5 Line (ONS 15454 SDH)

The Line Properties pane allows you to view and update optical line performance monitoring information. The Line Properties pane contains the following tabs:

- D.3.2.5.1 Line Config Tab, page D-42
- D.3.2.5.2 MS Thresh 15 Min Tab, page D-44
- D.3.2.5.3 MS Thresh 1 Day Tab, page D-45
- D.3.2.5.4 Physical Thresh 15 Min Tab, page D-46
- D.3.2.5.5 Physical Thresh 1 Day Tab, page D-46
- D.3.2.5.6 RS Thresh 15 Min, page D-47
- D.3.2.5.7 RS Thresh 1 Day Tab, page D-47
- D.3.2.5.8 Alarm Thresholds Tab, page D-48

D.3.2.5.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the MRC-12 card.

Table D-61 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.

Table D-61 Field Descriptions for the Line Config Tab (continued)

Field	Description
Admin State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Port Rate	Sets the rate of the new port.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Provide Sync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	When checked, enables synchronization status messages, which allow the node to choose the best timing source.
Send Do Not Use	When checked, sends a do not use (DUS) message on the S1 byte.
MS-SPRing Ext. Byte	Select an alternate MS-SPRing byte.
Type	Defines the port.
AINS Soak (H:M)	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down (H:M)	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4
Send <FF> DoNotUse	When checked, sends a special do not use (DUS) (0xff) message on the S1 byte.
PJ VC-4 Mon#	Sets the VC that will be used for pointer justification. If set to 0, no VC is monitored. Only one VC can be monitored on each STM port.

Table D-61 Field Descriptions for the Line Config Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distances options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

D.3.2.5.2 MS Thresh 15 Min Tab

The MS Thresh 15 Min tab allows you to view and change the 15-minute near- and far-end line thresholds of the MRC-12 card.

Table D-62 Field Descriptions for the MS Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.

Table D-62 Field Descriptions for the MS Thresh 15 Min Tab (continued)

Field	Description
EB-MS	Displays the errored block–multiplex section.
BBE-MS	Displays the background block errors–multiplex section.
ES-MS	Displays the errored seconds–multiplex section.
SES-MS	Displays the severely errored seconds–multiplex section.
UAS-MS	Displays the unavailable seconds–multiplex section.
PSC	Displays the protection switching count.
PSD	Displays the protection switching duration.
PSC-W	Displays the protection switching count–working.
PSD-W	Displays the protection switching duration–working.
PSC-S	Displays the protection switching count–span.
PSD-S	Displays the protection switching duration–span.
PSC-R	Displays the protection switching count–ring.
PSD-R	Displays the protection switching duration–ring.
Far End	
Port Number	Displays the optical port number.
EB-MS	Displays the errored block–multiplex section.
BBE-MS	Displays the background block errors–multiplex section.
ES-MS	Displays the errored seconds–multiplex section.
SES-MS	Displays the severely errored seconds–multiplex section.
UAS-MS	Displays the unavailable seconds–multiplex section.

D.3.2.5.3 MS Thresh 1 Day Tab

The MS Thresh 1 Day tab allows you to view and change the 1-day near- and far-end line thresholds of the MRC-12 card.

Table D-63 Field Descriptions for the MS Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
EB-MS	Displays the errored block–multiplex section.
BBE-MS	Displays the background block errors–multiplex section.
ES-MS	Displays the errored seconds–multiplex section.
SES-MS	Displays the severely errored seconds–multiplex section.
UAS-MS	Displays the unavailable seconds–multiplex section.
PSC	Displays the protection switching count.
PSD	Displays the protection switching duration.

Table D-63 Field Descriptions for the MS Thresh 1 Day Tab (continued)

Field	Description
PSC-W	Displays the protection switching count–working.
PSD-W	Displays the protection switching duration–working.
PSC-S	Displays the protection switching count–span.
PSD-S	Displays the protection switching duration–span.
PSC-R	Displays the protection switching count–ring.
PSD-R	Displays the protection switching duration–ring.
Far End	
Port Number	Displays the optical port number.
EB-MS	Displays the errored block–multiplex section.
BBE-MS	Displays the background block errors–multiplex section.
ES-MS	Displays the errored seconds–multiplex section.
SES-MS	Displays the severely errored seconds–multiplex section.
UAS-MS	Displays the unavailable seconds–multiplex section.

D.3.2.5.4 Physical Thresh 15 Min Tab

The Physical Thresh 15 Min tab allows you to view and change the 15-minute near-end physical thresholds of the MRC-12 card.

Table D-64 Field Descriptions for the Physical Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.2.5.5 Physical Thresh 1 Day Tab

The Physical Thresh 1 Day tab allows you to view and change the 1-day near-end physical thresholds of the MRC-12 card.

Table D-65 Field Descriptions for the Physical Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.2.5.6 RS Thresh 15 Min

The RS Thresh 15 Min tab allows you to view and change the 15-minute near-end section thresholds of the MRC-12 card.

Table D-66 Field Descriptions for the RS Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
EB-RS	Displays the errored block–regenerator section.
BBE-RS	Displays the background block errors–regenerator section.
ES-RS	Displays the errored seconds–regenerator section.
SES-RS	Displays the severely errored seconds–regenerator section.
UAS-RS	Displays the unavailable seconds–regenerator section.
OFS-RS	Displays the out of framing seconds–regenerator section.

D.3.2.5.7 RS Thresh 1 Day Tab

The RS Thresh 1 Day tab allows you to view and change the 1-day near-end section thresholds of the MRC-12 card.

Table D-67 Field Descriptions for the RS Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
EB-RS	Displays the errored block–regenerator section.
BBE-RS	Displays the background block errors–regenerator section.

Table D-67 Field Descriptions for the RS Thresh 1 Day Tab (continued)

Field	Description
ES-RS	Displays the errored seconds–regenerator section.
SES-RS	Displays the severely errored seconds–regenerator section.
UAS-RS	Displays the unavailable seconds–regenerator section.
OFS-RS	Displays the out of framing seconds–regenerator section.

D.3.2.5.8 Alarm Thresholds Tab

The Alarm Thresholds tab allows you to select the thresholds for the alarms.

Table D-68 Field Descriptions for the Alarm Thresholds Tab

Field	Description
Port No.	Port number.
LBC-HIGH	Maximum laser bias current.
LBC-LOW	Minimum laser bias current.
OPT-HIGH	Maximum optical power transmitted.
OPT-LOW	Minimum optical power transmitted.
OPR-HIGH	Maximum optical power received.
OPR-LOW	Minimum optical power received.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.2.6 STS (ONS 15454 SONET)

The STS Properties pane allows you to view and update MRC-12 STS information. The STS Properties pane contains the following tabs:

- D.3.2.6.1 STS Config Tab, page D-48
- D.3.2.6.2 Path Thresh 15 Min Tab, page D-49
- D.3.2.6.3 Path Thresh 1 Day Tab, page D-49
- D.3.2.6.4 Customer Info Tab, page D-50

D.3.2.6.1 STS Config Tab

The STS Config tab allows you to view and change the STS settings of the MRC-12 card.

Table D-69 Field Descriptions for the STS Config Tab

Field	Description
STS Number	Displays the synchronous transport signal number information.
IPPM Enabled	Check to enable IPPM and uncheck to disable IPPM.
XC Loopback	Displays the cross-connect loopback status.

D.3.2.6.2 Path Thresh 15 Min Tab

The Path Thresh 15 Min tab allows you to view and change the 15-minute path thresholds of the MRC-12 card.

Table D-70 Field Descriptions for the Path Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.
PPJC-Pdet	Displays positive pointer justification count, STS path detected.
NPJC-Pdet	Displays negative pointer justification count, STS path detected.
PPJC-Pgen	Displays positive pointer justification count, STS path generated.
NPJC-Pgen	Displays negative pointer justification count, STS path generated.
PJCS-Pdet	Displays positive pointer justification count, STS path detected.
PJCS-Pgen	Displays positive pointer justification count, STS path generated.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS No.	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.

D.3.2.6.3 Path Thresh 1 Day Tab

The Path Thresh 1 Day tab allows you to view and change the 1-day path thresholds of the MRC-12 card.

Table D-71 Field Descriptions for the Path Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.

Table D-71 Field Descriptions for the Path Thresh 1 Day Tab (continued)

Field	Description
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.
PPJC-Pdet	Displays positive pointer justification count, STS path detected.
NPJC-Pdet	Displays negative pointer justification count, STS path detected.
PPJC-Pgen	Displays positive pointer justification count, STS path generated.
NPJC-Pgen	Displays negative pointer justification count, STS path generated.
PJCS-Pdet	Displays positive pointer justification count, STS path detected.
PJCS-Pgen	Displays positive pointer justification count, STS path generated.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS No.	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.

D.3.2.6.4 Customer Info Tab

The Customer Info tab allows you to view the customer information.

Table D-72 Field Descriptions for the Customer Info Tab

Field	Description
STS No.	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.3.2.7 VC-4 (ONS 15454 SDH)

The VC-4 Properties pane allows you to view and update MRC-12 VC-4 information. The VC-4 Properties pane contains the following tabs:

- D.3.2.7.1 VC-4 Config Tab, page D-51
- D.3.2.7.2 SDH Path Thresh 15 Min Tab, page D-51
- D.3.2.7.3 SDH Path Thresh 1 Day Tab, page D-52
- D.3.2.7.4 Customer Info Tab, page D-53

D.3.2.7.1 VC-4 Config Tab

The VC-4 Config tab allows you to view and change the VC-4 settings of the MRC-12 card.

Table D-73 Field Descriptions for the VC-4 Config Tab

Field	Description
VC Number	Displays the VC number.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.
XC Loopback	Indicates cross-connect loopback.

D.3.2.7.2 SDH Path Thresh 15 Min Tab

The SDH Path Thresh 15 Min tab allows you to view and change the 15-minute path thresholds of the MRC-12 card.

Table D-74 Field Descriptions for the SDH Path Thresh 15 Min Tab

Field	Description
Near End	
VC Number	Displays the VC-4 port number.
EB-HP	Errored block–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
BBE-HP	Background block errors–higher-order path.
PPJC-Pdet	Positive pointer justification count, path detected (PPJC-Pdet) is a count of the positive pointer justifications detected on a particular path on an incoming SDH signal.
NPJC-Pdet	Negative pointer justification count, path detected (NPJC-Pdet) is a count of the negative pointer justifications detected on a particular path on an incoming SDH signal.
PPJC-Pgen	Positive pointer justification count, path generated (PPJC-Pgen) is a count of the positive pointer justifications generated for a particular path.
NPJC-Pgen	Negative pointer justification count, path generated (MS-NPJC-Pgen) is a count of the negative pointer justifications generated for a particular path.
PJCS-Pdet	Number of higher-order path pointer justification count seconds detected on a particular path.
PJCS-Pgen	Number of higher-order path pointer justification count seconds generated for a particular path.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
VC Number	Displays the VC-4 port number.
EB-HP	Errored block–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.

Table D-74 Field Descriptions for the SDH Path Thresh 15 Min Tab (continued)

Field	Description
UAS-HP	Unavailable seconds–higher-order path.
BBE-HP	Background block errors–higher-order path.

D.3.2.7.3 SDH Path Thresh 1 Day Tab

The SDH Path Thresh 1 Day tab allows you to view and change the 1-day path thresholds of the MRC-12 card.

Table D-75 Field Descriptions for the SDH Path Thresh 1 Day Tab

Field	Description
Near End	
VC Number	Displays the VC-4 port number.
EB-HP	Errored block–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
BBE-HP	Background block errors–higher-order path.
PPJC-Pdet	Positive pointer justification count, path detected (PPJC-Pdet) is a count of the positive pointer justifications detected on a particular path on an incoming SDH signal.
NPJC-Pdet	Negative pointer justification count, path detected (NPJC-Pdet) is a count of the negative pointer justifications detected on a particular path on an incoming SDH signal.
PPJC-Pgen	Positive pointer justification count, path generated (PPJC-Pgen) is a count of the positive pointer justifications generated for a particular path.
NPJC-Pgen	Negative pointer justification count, path generated (MS-NPJC-Pgen) is a count of the negative pointer justifications generated for a particular path.
PJCS-Pdet	Number of higher-order path pointer justification count seconds detected on a particular path.
PJCS-Pgen	Number of higher-order path pointer justification count seconds generated for a particular path.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
VC Number	Displays the VC-4 port number.
EB-HP	Errored block–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
BBE-HP	Background block errors–higher-order path.

D.3.2.7.4 Customer Info Tab

The Customer Info tab allows you to view the customer information.

Table D-76 Field Descriptions for the Customer Info Tab

Field	Description
VC No.	The VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.3.2.8 Loopback

The Loopback Properties pane allows you to view and update loopback information.

Table D-77 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

D.3.2.9 Protection

The Protection Properties pane allows you to view and update MRC-12 protection group information.

Table D-78 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.3.2.10 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update alarm profile information.

Table D-79 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.3.2.11 Transceiver

The Transceiver Properties pane allows you to view and update MRC-12 transceiver information.

Table D-80 Field Descriptions for the Transceiver Properties Pane

Field	Description
Port No.	PIM number, PPM number, or port number.
Non-normalized LBC (mA)	The actual operating value of laser bias current (in mA) for the specified card port.
Non-normalized OPT (dBm)	The actual operating value of optical power transmitted (in dBm) for the specified card port.
Non-normalized OPR (dBm)	The actual operating value of optical power received (in dBm) for the specified card port.

D.3.2.12 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update MRC-12 ALS parameters.

Table D-81 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the ALS mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shutdown or Not Shutdown.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shutdown.

D.3.2.13 Section Trace

The Section Trace Properties pane allows you to change the section trace settings for the MRC-12 card.

Table D-82 Field Descriptions for the Section Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

D.3.2.14 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update J1 path trace information.

Table D-83 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS | VC-4 Number	Displays the STS or VC-4 number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.

D.3.2.15 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the MRC-12 card.

Table D-84 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.3.3 Slot Properties—MRC25G-4

The slot properties pane displays information about the Cisco ONS 15454 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The MRC-2.5G-4 multirate card provides up to four OC-3/STM-1 ports, four OC-12/STM-4 ports, or one OC-48/STM-16 port using small form factor pluggables (SFPs), in various combinations of line rates. All ports are Telcordia GR-253 compliant. The SFP optics can use SR, IR, LR, coarse wavelength division multiplexing (CWDM), and DWDM SFPs to support unrepeated spans.

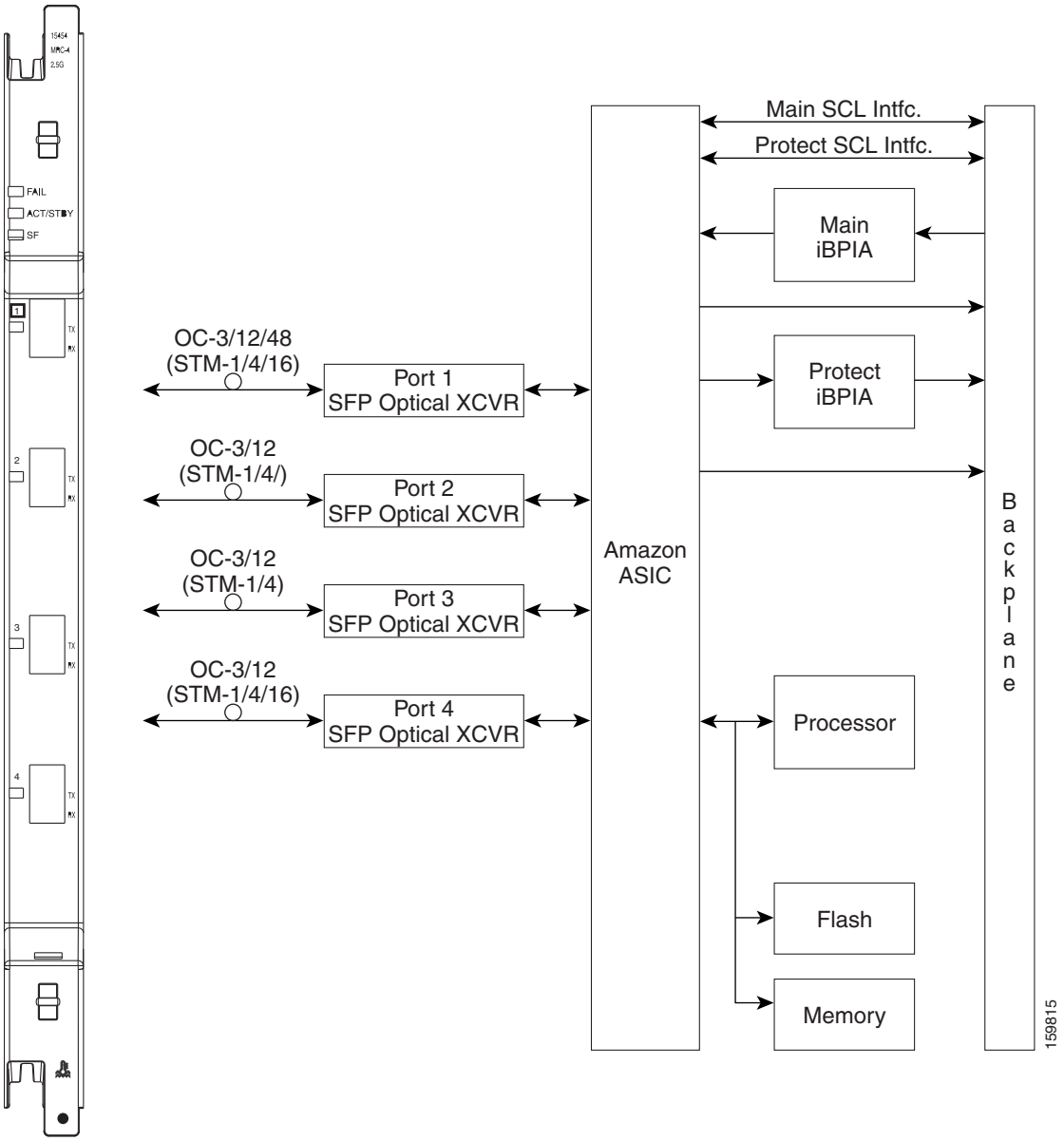
The ports operate at up to 2488.320 Mb/s over a single-mode fiber. The MRC-2.5G-4 card has four physical connector adapters with two fibers per connector adapter (Tx and Rx). The card supports VT payloads, STS-1 payloads, and concatenated payloads at STS-3c, STS-6c, STS-9c, STS-12c, STS-18c, STS-24c, STS-36c, or STS-48c signal levels. It is fully interoperable with the ONS 15454 G-Series Ethernet cards.

The MRC-2.5G-4 port contains a transmit and receive connector (labeled) on the card faceplate. The card supports 1+1 unidirectional and bidirectional facility protection. It also supports 1+1 protection in four-fiber BLSR applications where both span switching and ring switching might occur. You can provision this card as part of an BLSR, UPSR, or 1+1 linear configuration.

Note Longer distances are possible in an amplified system using dispersion compensation.

The following figure shows the MRC-2.5G-4 faceplate and block diagram.

Figure D-1 MRC-2.5G-4 Module



For the MRC25G-4 card, the slot properties pane displays the following tabs: Module View, Identification, Pluggable Provisioning, Line, STS, Loopback, Protection, Alarm Behavior, Transceiver, Auto Laser Shutdown, Section Trace, J1 Path Trace, and Info. The tabs shown depend on the NE configuration.

D.3.3.1 Module View

The Module View Properties pane displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Moving the mouse pointer over the graphic also displays the alarm counts.) Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.3.3.2 Identification

The Identification Properties pane allows you to view and update MRC25G-4 card identification information.

Table D-85 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Admin State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.3.3.3 Pluggable Provisioning

The Pluggable Provisioning Properties pane allows you to view and provision pluggable entities; for example, pluggable port module (PPM) and the ports inside these entities.

Table D-86 Field Descriptions for the Pluggable Provisioning Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual pluggable I/O module that is installed in the pluggable slot.
Equipment State	Displays the equipment state of the card.

Table D-86 Field Descriptions for the Pluggable Provisioning Properties Pane

Field	Description
Admin State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Pluggable Ports	
Pluggable Number	Displays the identifier of the plugin module.
Rate	Displays the rate of the port inside the pluggable entity.

D.3.3.3.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. The Provision Pluggable dialog box allows you to provision pluggable entities—for example, the PPM and PIM—and to create the ports inside these entities. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

D.3.3.3.2 Create Port Dialog Box

Use the Create Port dialog box to configure the port rate for a particular pluggable port module (PPM). In the Port Rate field, use the drop-down list to select the new port rate and click **OK**.

D.3.3.4 Line

The Line Properties pane allows you to view and update optical line performance monitoring information. The Line Properties pane contains the following tabs:

- D.3.3.4.1 Line Config Tab, page D-59
- D.3.3.4.2 Line Thresh 15 Min Tab, page D-61
- D.3.3.4.3 Line Thresh 1 Day Tab, page D-62
- D.3.3.4.4 Physical Thresh 15 Min Tab, page D-63
- D.3.3.4.5 Physical Thresh 1 Day Tab, page D-63
- D.3.3.4.6 Section Thresh 15 Min Tab, page D-64
- D.3.3.4.7 Section Thresh 1 Day Tab, page D-64
- D.3.3.4.8 Alarm Thresholds Tab, page D-65

D.3.3.4.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the MRC25G-4 card.

Table D-87 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Port Rate	Sets the rate of the new port.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Provide Sync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	When checked, enables synchronization status messages, which allow the node to choose the best timing source.
Send Do Not Use	When checked, sends a do not use (DUS) message on the S1 byte.
BLSR Ext. Byte	Select an alternate BLSR byte.
Type	Defines the port.
AINS Soak (H:M)	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down (H:M)	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4
Send <FF> DoNotUse	When checked, sends a special do not use (DUS) (0xff) message on the S1 byte.
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default) - 3 (OC3, per port) • 0 (default) - 12 (OC-12)

Table D-87 Field Descriptions for the Line Config Tab (continued)

Field	Description
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distances options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

D.3.3.4.2 Line Thresh 15 Min Tab

The Line Thresh 15 Min tab allows you to view and change the 15-minute near- and far-end line thresholds of the MRC25G-4 card.

Table D-88 Field Descriptions for the Line Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.

Table D-88 Field Descriptions for the Line Thresh 15 Min Tab (continued)

Field	Description
ES-L	Displays the errored seconds–line.
SES-L	Displays the severely errored seconds–line.
CV-L	Displays the coding violations–line.
UAS-L	Displays the unavailable seconds–line.
FC-L	Displays the failure count–line.
PSC	Protection switching count–line.
PSD	Protection switching duration–line.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
PSC-S	Protection switching count–span.
PSD-S	Protection switching duration–span.
PSC-R	Protection switching count–ring.
PSD-R	Protection switching duration–ring.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds–line.
SES-L	Displays the severely errored seconds–line.
CV-L	Displays the coding violations–line.
UAS-L	Displays the unavailable seconds–line.
FC-L	Displays the failure count–line.

D.3.3.4.3 Line Thresh 1 Day Tab

The Line Thresh 1 Day tab allows you to view and change the 1-day near- and far-end line thresholds of the MRC25G-4 card.

Table D-89 Field Descriptions for the Line Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds–line.
SES-L	Displays the severely errored seconds–line.
CV-L	Displays the coding violations–line.
UAS-L	Displays the unavailable seconds–line.
FC-L	Displays the failure count–line.
PSC	Protection switching count–line.
PSD	Protection switching duration–line.

Table D-89 Field Descriptions for the Line Thresh 1 Day Tab (continued)

Field	Description
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
PSC-S	Protection switching count–span.
PSD-S	Protection switching duration–span.
PSC-R	Protection switching count–ring.
PSD-R	Protection switching duration–ring.
Far End	
Port Number	Displays the optical port number.
ES-L	Displays the errored seconds–line.
SES-L	Displays the severely errored seconds–line.
CV-L	Displays the coding violations–line.
UAS-L	Displays the unavailable seconds–line.
FC-L	Displays the failure count–line.

D.3.3.4.4 Physical Thresh 15 Min Tab

The Physical Thresh 15 Min tab allows you to view and change the 15-minute near-end physical thresholds of the MRC25G-4 card.

Table D-90 Field Descriptions for the Physical Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the optical power received (OPR) establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.3.4.5 Physical Thresh 1 Day Tab

The Physical Thresh 1 Day tab allows you to view and change the 1-day near-end physical thresholds of the MRC25G-4 card.

Table D-91 Field Descriptions for the Physical Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.3.4.6 Section Thresh 15 Min Tab

The Section Thresh 15 Min tab allows you to view and change the 15-minute near-end section thresholds of the MRC25G-4 card.

Table D-92 Field Descriptions for the Section Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations–section.
ES-S	Displays the errored seconds–section.
SES-S	Displays the severely errored seconds–section.
SEFS-S	Displays the severely errored framing seconds–section.

D.3.3.4.7 Section Thresh 1 Day Tab

The Section Thresh 1 Day tab allows you to view and change the 1-day near-end section thresholds of the MRC25G-4 card.

Table D-93 Field Descriptions for the Section Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
CV-S	Displays the coding violations–section.
ES-S	Displays the errored seconds–section.
SES-S	Displays the severely errored seconds–section.
SEFS-S	Displays the severely errored framing seconds–section.

D.3.3.4.8 Alarm Thresholds Tab

The Alarm Thresholds tab allows you to select the thresholds for the alarms.

Table D-94 Field Descriptions for the Alarm Thresholds Tab

Field	Description
Port No.	Port number.
LBC-HIGH	Maximum laser bias current.
LBC-LOW	Minimum laser bias current.
OPT-HIGH	Maximum optical power transmitted.
OPT-LOW	Minimum optical power transmitted.
OPR-HIGH	Maximum optical power received.
OPR-LOW	Minimum optical power received.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.3.5 STS (ONS 15454 SONET)

The STS Properties pane allows you to view and update MRC25G-4 STS information. The STS Properties pane contains the following tabs:

- D.3.3.5.1 STS Config Tab, page D-65
- D.3.3.5.2 Path Thresh 15 Min Tab, page D-65
- D.3.3.5.3 Path Thresh 1 Day Tab, page D-66
- D.3.3.5.4 Customer Info Tab, page D-67

D.3.3.5.1 STS Config Tab

The STS Config tab allows you to view and change the STS settings of the MRC25G-4 card.

Table D-95 Field Descriptions for the STS Config Tab

Field	Description
STS Number	Displays the synchronous transport signal number information.
IPPM Enabled	Check to enable IPPM and uncheck to disable IPPM.
XC Loopback	Displays the cross-connect loopback status.

D.3.3.5.2 Path Thresh 15 Min Tab

The Path Thresh 15 Min tab allows you to view and change the 15-minute path thresholds of the MRC25G-4 card.

Table D-96 Field Descriptions for the Path Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.
PPJC-Pdet	Displays positive pointer justification count, STS path detected.
NPJC-Pdet	Displays negative pointer justification count, STS path detected.
PPJC-Pgen	Displays positive pointer justification count, STS path generated.
NPJC-Pgen	Displays negative pointer justification count, STS path generated.
PJCS-Pdet	Displays positive pointer justification count, STS path detected.
PJCS-Pgen	Displays positive pointer justification count, STS path generated.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS No.	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.

D.3.3.5.3 Path Thresh 1 Day Tab

The Path Thresh 1 Day tab allows you to view and change the 1-day path thresholds of the MRC25G-4 card.

Table D-97 Field Descriptions for the Path Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.

Table D-97 Field Descriptions for the Path Thresh 1 Day Tab (continued)

Field	Description
PPJC-Pdet	Displays positive pointer justification count, STS path detected.
NPJC-Pdet	Displays negative pointer justification count, STS path detected.
PPJC-Pgen	Displays positive pointer justification count, STS path generated.
NPJC-Pgen	Displays negative pointer justification count, STS path generated.
PJCS-Pdet	Displays positive pointer justification count, STS path detected.
PJCS-Pgen	Displays positive pointer justification count, STS path generated.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
STS No.	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.

D.3.3.5.4 Customer Info Tab

The Customer Info tab allows you to view the customer information.

Table D-98 Field Descriptions for the Customer Info Tab

Field	Description
STS No.	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.3.3.6 Loopback

The Loopback Properties pane allows you to view and update loopback information.

Table D-99 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

D.3.3.7 Protection

The Protection Properties pane allows you to view and update MRC25G-4 protection group information.

Table D-100 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.3.3.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update alarm profile information.

Table D-101 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.3.3.9 Transceiver

The Transceiver Properties pane allows you to view and update MRC25G-4 transceiver information.

Table D-102 Field Descriptions for the Transceiver Properties Pane

Field	Description
Port No.	PIM number, PPM number, or port number.
Non-normalized LBC (mA)	The actual operating value of laser bias current (in mA) for the specified card port.
Non-normalized OPT (dBm)	The actual operating value of optical power transmitted (in dBm) for the specified card port.
Non-normalized OPR (dBm)	The actual operating value of optical power received (in dBm) for the specified card port.

D.3.3.10 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update MRC25G-4 ALS parameters.

Table D-103 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the ALS mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shutdown or Not Shutdown.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shutdown.

D.3.3.11 Section Trace

The Section Trace Properties pane allows you to change the section trace settings for the MRC25G-4 card.

Table D-104 Field Descriptions for the Section Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

D.3.3.12 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update J1 path trace information.

Table D-105 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS | VC-4 Number	Displays the STS or VC-4 number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.

D.3.3.13 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the MRC25G-4 card.

Table D-106 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.3.4 Slot Properties—MRC25G-12

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The MRC-2.5G-12 multirate card provides up to 12 OC-3/STM-1 ports, 4 OC-12/STM-4 ports, or 1 OC-48/STM-16 port using small form factor pluggables (SFPs), with total card bandwidth not exceeding OC-48/STM-16. Mixed OC-3 and OC-12 configurations are supported. OC-12/STM-4 SFPs can be installed only in ports 1, 4, 7, and 10, and an OC-48/STM-16 SFP can be installed only in port 1. All ports are Telcordia GR-253 compliant. The SFP optics can use SR, IR, LR, coarse wavelength division multiplexing (CWDM), and DWDM SFPs to support unrepeated spans.

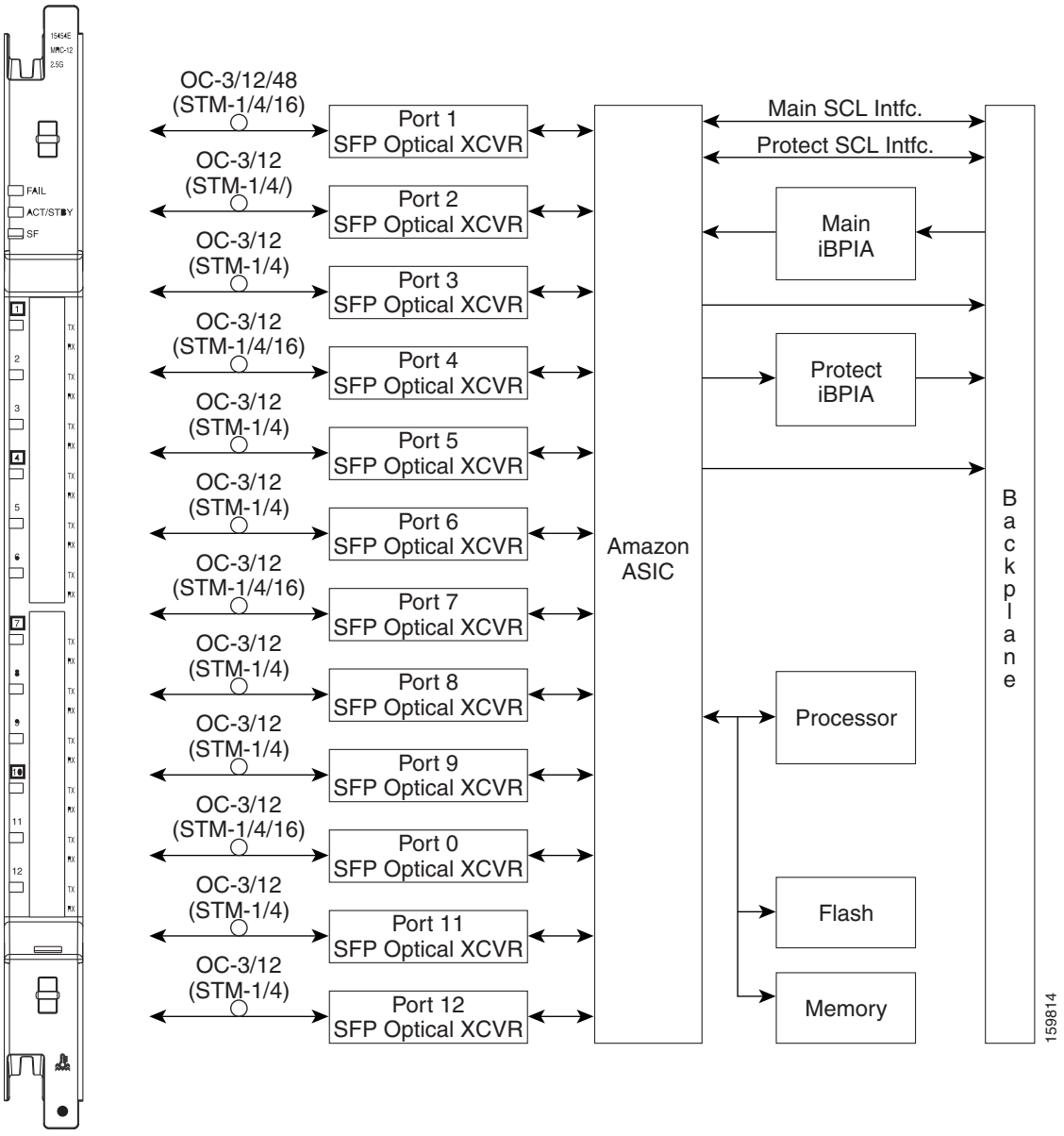
The ports operate at up to 2488.320 Mb/s over a single-mode fiber. The MRC-2.5G-12 card has 12 physical connector adapters with 2 fibers per connector adapter (Tx and Rx). The card supports VT payloads,VC4 payloads, and concatenated payloads at VC4-1c, VC4-2c, VC4-3c, VC4-4c, VC4-8c, VC4-12c, or VC4-16c signal levels. It is fully interoperable with the ONS 15454 SDH G-series Ethernet cards.

Each port contains a transmit and receive connector (labeled) on the card faceplate. The card supports unidirectional and bidirectional facility protection. It also supports both span and ring switching in MS-SPRing protection scheme. You can provision this card as part of an MS-SPRing, SNCP, or linear configuration.

Note Longer distances are possible in an amplified system using dispersion compensation.

The following figure shows the MRC-2.5G-12 faceplate and block diagram.

Figure D-2 MRC-2.5G-12 Module



For the MRC25G-12 card, the slot properties pane displays the following tabs: Module View, Identification, Pluggable Provisioning, Line, VC-4 (available only on the ONS 15454 SDH), Loopback, Protection, Alarm Behavior, Transceiver, Auto Laser Shutdown, Section Trace, J1 Path Trace, and Info. The tabs shown depend on the NE configuration.

D.3.4.1 Module View

The Module View Properties pane displays a graphic of the card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Moving the mouse pointer over the graphic also displays the alarm counts.) Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.3.4.2 Identification

The Identification Properties pane allows you to view and update MRC25G-12 card identification information.

Table D-107 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Admin State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.3.4.3 Pluggable Provisioning

The Pluggable Provisioning Properties pane allows you to view and provision pluggable entities; for example, pluggable port module (PPM) and the ports inside these entities.

Table D-108 Field Descriptions for the Pluggable Provisioning Properties Pane

Field	Description
Pluggable Port Modules	
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual pluggable I/O module that is installed in the pluggable slot.
Equipment State	Displays the equipment state of the card.
Admin State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Pluggable Ports	
Pluggable Number	Displays the identifier of the plugin module.
Rate	Displays the rate of the port inside the pluggable entity.

D.3.4.3.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. The Provision Pluggable dialog box allows you to provision pluggable entities—for example, the PPM and PIM—and to create the ports inside these entities. See C.1.4.5.1 Provision Pluggable Dialog Box, page C-28 for more information.

D.3.4.3.2 Create Port Dialog Box

Use the Create Port dialog box to configure the port rate for a particular pluggable port module (PPM). In the Port Rate field, use the drop-down list to select the new port rate and click **OK**.

D.3.4.4 Line

The Line Properties pane allows you to view and update optical line performance monitoring information. The Line Properties pane contains the following tabs:

- D.3.4.4.1 Line Config Tab, page D-74
- D.3.4.4.2 MS Thresh 15 Min Tab, page D-75
- D.3.4.4.3 MS Thresh 1 Day Tab, page D-76
- D.3.4.4.4 Physical Thresh 15 Min Tab, page D-77
- D.3.4.4.5 Physical Thresh 1 Day Tab, page D-77
- D.3.4.4.6 RS Thresh 15 Min Tab, page D-78

- D.3.4.4.7 RS Thresh 1 Day Tab, page D-78
- D.3.4.4.8 Alarm Thresholds Tab, page D-79

D.3.4.4.1 Line Config Tab

The Line Config tab allows you to view and change the line settings of the MRC25G-12 card.

Table D-109 Field Descriptions for the Line Config Tab

Field	Description
Port Number	Displays the port number.
Port Name	Allows you to add a name for the optical port.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Port Rate	Sets the rate of the new port.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
Provide Sync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	When checked, enables synchronization status messages, which allow the node to choose the best timing source.
Send Do Not Use	When checked, sends a do not use (DUS) message on the S1 byte.
BLSR Ext. Byte	Select an alternate BLSR byte.
Type	Defines the port.
AINS Soak (H:M)	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down (H:M)	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4

Table D-109 Field Descriptions for the Line Config Tab (continued)

Field	Description
Send <FF> DoNotUse	When checked, sends a special do not use (DUS) (0xff) message on the S1 byte.
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default) - 3 (OC3, per port) • 0 (default) - 12 (OC-12)
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distances options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.

D.3.4.4.2 MS Thresh 15 Min Tab

The MS Thresh 15 Min tab allows you to view and change the 15-minute near- and far-end line thresholds of the MRC25G-12 card.

Table D-110 Field Descriptions for the MS Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number.
EB-MS	Displays the errored block–multiplex section.
BBE-MS	Displays the background block errors–multiplex section.
ES-MS	Displays the errored seconds–multiplex section.
SES-MS	Displays the severely errored seconds–multiplex section.
UAS-MS	Displays the unavailable seconds–multiplex section.
PSC	Displays the protection switching count.
PSD	Displays the protection switching duration.
PSC-W	Displays the protection switching count–working.
PSD-W	Displays the protection switching duration–working.
PSC-S	Displays the protection switching count–span.
PSD-S	Displays the protection switching duration–span.
PSC-R	Displays the protection switching count–ring.
PSD-R	Displays the protection switching duration–ring.
Far End	
Port Number	Displays the optical port number.
EB-MS	Displays the errored block–multiplex section.
BBE-MS	Displays the background block errors–multiplex section.
ES-MS	Displays the errored seconds–multiplex section.
SES-MS	Displays the severely errored seconds–multiplex section.
UAS-MS	Displays the unavailable seconds–multiplex section.

D.3.4.4.3 MS Thresh 1 Day Tab

The MS Thresh 1 Day tab allows you to view and change the 1-day near- and far-end line thresholds of the MRC25G-12 card.

Table D-111 Field Descriptions for the MS Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number
EB-MS	Displays the errored block–multiplex section
BBE-MS	Displays the background block errors–multiplex section
ES-MS	Displays the errored seconds–multiplex section
SES-MS	Displays the severely errored seconds–multiplex section
UAS-MS	Displays the unavailable seconds–multiplex section

Table D-111 Field Descriptions for the MS Thresh 1 Day Tab (continued)

Field	Description
PSC	Displays the protection switching count
PSD	Displays the protection switching duration
PSC-W	Displays the protection switching count–working
PSD-W	Displays the protection switching duration–working
PSC-S	Displays the protection switching count–span
PSD-S	Displays the protection switching duration–span
PSC-R	Displays the protection switching count–ring
PSD-R	Displays the protection switching duration–ring
Far End	
Port Number	Displays the optical port number
EB-MS	Displays the errored block–multiplex section
BBE-MS	Displays the background block errors–multiplex section
ES-MS	Displays the errored seconds–multiplex section
SES-MS	Displays the severely errored seconds–multiplex section
UAS-MS	Displays the unavailable seconds–multiplex section

D.3.4.4.4 Physical Thresh 15 Min Tab

The Physical Thresh 15 Min tab allows you to view and change the 15-minute near-end physical thresholds of the MRC25G-12 card.

Table D-112 Field Descriptions for the Physical Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the optical power received (OPR) establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.4.4.5 Physical Thresh 1 Day Tab

The Physical Thresh 1 Day tab allows you to view and change the 1-day near-end physical thresholds of the MRC25G-12 card.

Table D-113 Field Descriptions for the Physical Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.4.4.6 RS Thresh 15 Min Tab

The RS Thresh 15 Min tab allows you to view and change the 15-minute near-end section thresholds of the MRC25G-12 card.

Table D-114 Field Descriptions for the RS Thresh 15 Min Tab

Field	Description
Near End	
Port Number	Displays the optical port number
EB-RS	Displays the errored block–regenerator section
BBE-RS	Displays the background block errors–regenerator section
ES-RS	Displays the errored seconds–regenerator section
SES-RS	Displays the severely errored seconds–regenerator section
UAS-RS	Displays the unavailable seconds–regenerator section
OFS-RS	Displays the out of framing seconds–regenerator section

D.3.4.4.7 RS Thresh 1 Day Tab

The RS Thresh 1 Day tab allows you to view and change the 1-day near-end section thresholds of the MRC25G-12 card.

Table D-115 Field Descriptions for the RS Thresh 1 Day Tab

Field	Description
Near End	
Port Number	Displays the optical port number
EB-RS	Displays the errored block–regenerator section
BBE-RS	Displays the background block errors–regenerator section

Table D-115 Field Descriptions for the RS Thresh 1 Day Tab (continued)

Field	Description
ES-RS	Displays the errored seconds–regenerator section
SES-RS	Displays the severely errored seconds–regenerator section
UAS-RS	Displays the unavailable seconds–regenerator section
OFS-RS	Displays the out of framing seconds–regenerator section

D.3.4.4.8 Alarm Thresholds Tab

The Alarm Thresholds tab allows you to select the thresholds for the alarms.

Table D-116 Field Descriptions for the Alarm Thresholds Tab

Field	Description
Port No.	Port number.
LBC-HIGH	Maximum laser bias current.
LBC-LOW	Minimum laser bias current.
OPT-HIGH	Maximum optical power transmitted.
OPT-LOW	Minimum optical power transmitted.
OPR-HIGH	Maximum optical power received.
OPR-LOW	Minimum optical power received.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.3.4.5 VC-4

The VC-4 Properties pane allows you to view and update MRC25G-12 VC-4 information. The VC-4 Properties pane contains the following tabs:

- D.3.4.5.1 VC-4 Config Tab, page D-79
- D.3.4.5.2 SDH Path Thresh 15 Min Tab, page D-80
- D.3.4.5.3 SDH Path Thresh 1 Day Tab, page D-80
- D.3.4.5.4 Customer Info Tab, page D-81

D.3.4.5.1 VC-4 Config Tab

The VC-4 Config tab allows you to view and change the VC-4 settings of the MRC25G-12 card.

Table D-117 Field Descriptions for the VC-4 Config Tab

Field	Description
VC Number	Displays the VC number.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.
XC Loopback	Indicates cross-connect loopback.

D.3.4.5.2 SDH Path Thresh 15 Min Tab

The SDH Path Thresh 15 Min tab allows you to view and change the 15-minute path thresholds of the MRC25G-12 card.

Table D-118 Field Descriptions for the SDH Path Thresh 15 Min Tab

Field	Description
Near End	
VC Number	Displays the VC-4 port number.
EB-HP	Errored block–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
BBE-HP	Background block errors–higher-order path.
PPJC-Pdet	Positive pointer justification count, path detected (PPJC-Pdet) is a count of the positive pointer justifications detected on a particular path on an incoming SDH signal.
NPJC-Pdet	Negative pointer justification count, path detected (NPJC-Pdet) is a count of the negative pointer justifications detected on a particular path on an incoming SDH signal.
PPJC-Pgen	Positive pointer justification count, path generated (PPJC-Pgen) is a count of the positive pointer justifications generated for a particular path.
NPJC-Pgen	Negative pointer justification count, path generated (MS-NPJC-Pgen) is a count of the negative pointer justifications generated for a particular path.
PJCS-Pdet	Number of higher-order path pointer justification count seconds detected on a particular path.
PJCS-Pgen	Number of higher-order path pointer justification count seconds generated for a particular path.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
VC Number	Displays the VC-4 port number.
EB-HP	Errored block–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
BBE-HP	Background block errors–higher-order path.

D.3.4.5.3 SDH Path Thresh 1 Day Tab

The SDH Path Thresh 1 Day tab allows you to view and change the 1-day path thresholds of the MRC25G-12 card.

Table D-119 Field Descriptions for the SDH Path Thresh 1 Day Tab

Field	Description
Near End	
VC Number	Displays the VC-4 port number.
EB-HP	Errored block–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
BBE-HP	Background block errors–higher-order path.
PPJC-Pdet	Positive pointer justification count, path detected (PPJC-Pdet) is a count of the positive pointer justifications detected on a particular path on an incoming SDH signal.
NPJC-Pdet	Negative pointer justification count, path detected (NPJC-Pdet) is a count of the negative pointer justifications detected on a particular path on an incoming SDH signal.
PPJC-Pgen	Positive pointer justification count, path generated (PPJC-Pgen) is a count of the positive pointer justifications generated for a particular path.
NPJC-Pgen	Negative pointer justification count, path generated (MS-NPJC-Pgen) is a count of the negative pointer justifications generated for a particular path.
PJCS-Pdet	Number of higher-order path pointer justification count seconds detected on a particular path.
PJCS-Pgen	Number of higher-order path pointer justification count seconds generated for a particular path.
PJC-Diff	Displays the sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Far End	
VC Number	Displays the VC-4 port number.
EB-HP	Errored block–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
BBE-HP	Background block errors–higher-order path.

D.3.4.5.4 Customer Info Tab

The Customer Info tab allows you to view the customer information.

Table D-120 Field Descriptions for the Customer Info Tab

Field	Description
VC No.	The VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.3.4.6 Loopback

The Loopback Properties pane allows you to view and update loopback information.

Table D-121 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

D.3.4.7 Protection

The Protection Properties pane allows you to view and update MRC25G-12 protection group information.

Table D-122 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.3.4.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update alarm profile information.

Table D-123 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.

Table D-123 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.3.4.9 Transceiver

The Transceiver Properties pane allows you to view and update MRC25G-12 transceiver information.

Table D-124 Field Descriptions for the Transceiver Properties Pane

Field	Description
Port No.	PIM number, PPM number, or port number.
Non-normalized LBC (mA)	The actual operating value of laser bias current (in mA) for the specified card port.
Non-normalized OPT (dBm)	The actual operating value of optical power transmitted (in dBm) for the specified card port.
Non-normalized OPR (dBm)	The actual operating value of optical power received (in dBm) for the specified card port.

D.3.4.10 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update MRC25G-12 ALS parameters.

Table D-125 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the ALS mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shutdown or Not Shutdown.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shutdown.

D.3.4.11 Section Trace

The Section Trace Properties pane allows you to change the section trace settings for the MRC25G-12 card.

Table D-126 Field Descriptions for the Section Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.

Table D-126 Field Descriptions for the Section Trace Properties Pane

Field	Description
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

D.3.4.12 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update J1 path trace information.

Table D-127 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS	VC-4 Number	Displays the STS or VC-4 number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.

D.3.4.13 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the MRC25G-12 card.

Table D-128 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4 Optical Cards

This section describes the following optical cards supported within Prime Optical:

- D.4.1 Slot Properties—OC12 IR/STM4 SH 1310, page D-85
- D.4.2 Slot Properties—OC12-4 IR/STM4 SH 1310, page D-91

- D.4.3 Slot Properties—OC192 LR/STM64 LH 1550, page D-98
- D.4.4 Slot Properties—OC192/STM64 XFR-Based, page D-105
- D.4.5 Slot Properties—OC3 IR 4 1310, page D-121
- D.4.6 Slot Properties—OC3 IR/STM1 SH 1310-8, page D-127
- D.4.7 Slot Properties—OC48, page D-134
- D.4.8 Slot Properties—OC48 IR 1310, page D-141
- D.4.9 Slot Properties—OC48 LR 1550, page D-148
- D.4.10 Slot Properties—S1.1-2-LC (ONS 15305 CTC), page D-155
- D.4.11 Slot Properties—S1.1-8-LC (ONS 15305 CTC), page D-157
- D.4.12 Slot Properties—S16.1-1-LC (ONS 15305 CTC), page D-159
- D.4.13 Slot Properties—STM-1, page D-161
- D.4.14 Slot Properties—STM-1 S1.1-2-LC/E1-21 (ONS 15305 CTC), page D-166
- D.4.15 Slot Properties—STM-1E-12, page D-168
- D.4.16 Slot Properties—STM-16 (ONS 15454 SDH), page D-174
- D.4.17 Slot Properties—STM-16 (ONS 15600 SDH), page D-179
- D.4.18 Slot Properties—STM-4 IR/STM4 SH 1310, page D-186
- D.4.19 Slot Properties—STM-4 L4.2-2-LC (ONS 15305 CTC), page D-191
- D.4.20 Slot Properties—STM-16 L16.2-1-LC (ONS 15305 CTC), page D-193
- D.4.21 Slot Properties—STM-64 LH 1550 (ONS 15454 SDH), page D-196
- D.4.22 Slot Properties—STM-64 LR/LH 4 (ONS 15600 SDH), page D-201
- D.4.23 Slot Properties—STM-64_4_DWDM (ONS 15600 SDH), page D-208
- D.4.24 Slot Properties—OC192_4_DWDM (ONS 15600 SONET), page D-217

D.4.1 Slot Properties—OC12 IR/STM4 SH 1310

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 Optical Connector (OC12 IR/STM4 SH 1310) card provides one intermediate or short range SONET/SDH OC-12 port compliant with the International Telecommunication Union (ITU) G.707, ITU-T G.957, and Telcordia GR-253-CORE. The port operates at 622.08 Mb/s over a single-mode fiber span. The card supports VT and nonconcatenated or concatenated payloads at STS-1, STS-3c, STS-6c, or STS-12c signal levels.

For the OC12 IR/STM4 SH 1310 module, the slot properties pane displays the following tabs: Module View, Identification, Line, STS, Loopback, Protection, Alarm Behavior, and Info.

D.4.1.1 Module View

The Module View Properties pane displays a graphic of the OC12 IR/STM4 SH 1310 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The

Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.1.2 Identification

The Identification Properties pane allows you to view and update OC12 IR/STM4 SH 1310 identification information.

Table D-129 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.1.3 Line

The Line Properties pane allows you to view and update OC12 IR/STM4 SH 1310 line performance monitoring information.

Table D-130 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.

Table D-130 Field Descriptions for the Line Properties Pane

Field	Description
Port Name	Allows you to enter the name of the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default)–3 (OC-3, per port) • 0 (default)–12 (OC-12) • 0 (default)–48 (OC-48)
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Line Threshold 15 Minutes	
Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count.

Table D-130 Field Descriptions for the Line Properties Pane

Field	Description
PSD	Protection switching duration.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
Far End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Line Threshold 1 Day	
Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count.
PSD	Protection switching duration.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
Far End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Section Threshold 15 Minutes	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.
Section Threshold 1 Day	

Table D-130 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.

D.4.1.4 STS

The STS Properties pane allows you to view and update OC12 IR/STM4 SH 1310 synchronous transport signal (STS) information.

Table D-131 Field Descriptions for the STS Properties Pane

Field	Description
STS Config	
Displays the STS number, the intermediate path protection monitoring (IPPM) status, and XC loopback status.	
Path Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Path Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.

Table D-131 Field Descriptions for the STS Properties Pane

Field	Description
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.1.5 Loopback

The Loopback Properties pane allows you to view and update OC12 IR/STM4 SH 1310 loopback information.

Table D-132 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Admin State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

D.4.1.6 Protection

The Protection Properties pane allows you to view and update OC12 IR/STM4 SH 1310 protection group information.

Table D-133 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.1.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update OC12 IR/STM4 SH 1310 alarm profile information.

Table D-134 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.1.8 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the OC12 IR/STM4 SH 1310 module.

Table D-135 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.2 Slot Properties—OC12-4 IR/STM4 SH 1310

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Optical Connector (OC12-4 IR/STM4 SH 1310) card provides one intermediate or short range SONET/SDH OC-12 port compliant with the International Telecommunication Union's G.707, G.957, and Telcordia's GR-253. The port operates at 622.08 Mb/s over a single-mode fiber span. The card supports VT and nonconcatenated or concatenated payloads at STS-1, STS-3c, STS-6c, or STS-12c signal levels.

For the OC12-4 IR/STM4 SH 1310 module, the slot properties pane displays the following tabs: Module View, Identification, Line, STS, Loopback, Protection, Alarm Behavior, J1 Path Trace, and Info.

D.4.2.1 Module View

The Module View Properties pane displays a graphic of the OC12-4 IR/STM4 SH 1310 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms also display when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.2.2 Identification

The Identification Properties pane is where you view and update OC12-4 IR/STM4 SH 1310 identification information.

Table D-136 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number. This number is printed on the top of the card.
Hardware Revision	Displays the hardware revision number of the card.
Serial Number	Displays the card serial number. This number is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.2.3 Line

The Line Properties pane is where you view and update OC12-4 IR/STM4 SH 1310 optical line performance monitoring information.

Table D-137 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Displays the port name.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default) - 3 (OC3, per port) • 0 (default) - 12 (OC-12) • 0 (default) - 48 (OC-48)
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Admin State	The port administration state. Choosing an administrative state from the drop-down list and clicking Apply changes the port's service state unless network conditions prevent the change. Admin states include: • IS—In Service. The port service state changes to IS_NR. • OOS,DSBLD—Out of Service, Disabled. The port service state changes to OOS_MA, DSBLD. • OOS, MT—Out of Service, Maintenance. The port service state changes to OOS_MA, MT. For loopbacks, the OOS, MT admin state must be initiated. • IS, AINS—Automatic In Service. The port service state changes to OOS_AU, AINS.
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4

Table D-137 Field Descriptions for the Line Properties Pane

Field	Description
Send <<FF> DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Line Threshold 15 Minutes > Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count.
PSD	Protection switching duration.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
PSC-S	Protection switching count–span.
PSD-S	Protection switching duration–span.
Line Threshold 15 Minutes > Far End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Line Threshold 1 Day > Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count.
PSD	Protection switching duration.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
PSC-S	Protection switching count–span.
PSD-S	Protection switching duration–span.
Line Threshold 1 Day > Far End	
Port Number	The optical port number.

Table D-137 Field Descriptions for the Line Properties Pane

Field	Description
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Section Threshold 15 Minutes	
Port Number	Displays the optical port number.
CV-S	Coding violations.
ES-S	Errored seconds.
SES-S	Severely errored seconds.
SEFS-S	Severely errored framing seconds.
Section Threshold 1 Day	
Port Number	Displays the optical port number.
CV-S	Coding violations.
ES-S	Errored seconds.
SES-S	Severely errored seconds.
SEFS-S	Severely errored framing seconds.

D.4.2.4 STS

The STS Properties pane allows you to view and update OC12-4 IR/STM4 SH 1310 STS information.

Table D-138 Field Descriptions for the STS Properties Pane

Field	Description
STS Config	
Displays the STS number, the intermediate path protection monitoring (IPPM) status, and XC loopback status.	
Path Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.

Table D-138 Field Descriptions for the STS Properties Pane

Field	Description
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Path Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.2.5 Loopback

The Loopback Properties pane allows you to view and update OC12-4 IR/STM4 SH 1310 loopback information.

Table D-139 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Admin State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).

Table D-139 Field Descriptions for the Loopback Properties Pane

Field	Description
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

D.4.2.6 Protection

The Protection Properties pane allows you to view and update OC12-4 IR/STM4 SH 1310 protection group information.

Table D-140 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.2.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update OC12-4 IR/STM4 SH 1310 alarm profile information.

Table D-141 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.2.8 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update OC12-4 IR/STM4 SH 1310 J1 Path Trace information.

Note This property is not available on ONS 15327 OC12-4 IR/STM4 SH 1310 cards.

Table D-142 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Member Number	Displays the virtual concatenation (VCAT) member number.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

D.4.2.9 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the OC12-4 IR/STM4 SH 1310 module.

Table D-143 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.3 Slot Properties—OC192 LR/STM64 LH 1550

The slot properties pane displays information about the Cisco ONS 15454 SONET, ONS 15454 SDH, or ONS 15600 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The OC192 LR/STM64 LH 1550 card provides one long-range SONET/SDH OC-192 port compliant with the International Telecommunication Union (ITU-T) G.707, ITU-T G.957, Telcordia GR-1377-CORE, and Telcordia GR-253-CORE. The card port operates at 9.96 Gb/s over unamplified distances up to 80 km when using fiber such as C-SMF or dispersion compensated fiber limited by loss and/or dispersion. The card supports VT and nonconcatenated or concatenated payloads.

For the OC192 LR/STM64 LH 1550 module, the slot properties pane displays the following tabs: Module View, Identification, Line, STS, Loopback, Protection, Alarm Behavior, Auto Laser Shutdown, and J1 Path Trace.

D.4.3.1 Module View

The Module View Properties pane displays a graphic of the OC192 LR/STM64 LH 1550 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.3.2 Identification

The Identification Properties pane allows you to view and update OC192 LR/STM64 LH 1550 identification information.

Table D-144 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
User Code	Allows you to enter an ASCII string to identify the card. The user code is stored in nonvolatile memory so that it is not lost when the unit is moved or stored as a spare.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.3.3 Line

The Line Properties pane allows you to view and update OC192 LR/STM64 LH 1550 optical line performance monitoring information.

Table D-145 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default)–3 (OC-3, per port) • 0 (default)–12 (OC-12) • 0 (default)–48 (OC-48)
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
ALS Mode	Displays the ALS mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Line Threshold 15 Minutes	

Table D-145 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count—Near-end only.
PSD	Protection switching duration—Near-end only.
PSC-W	Protection switching count—working.
PSD-W	Protection switching duration—working.
PSC-S	Protection switching count—span.
PSD-S	Protection switching duration—span.
PSC-R	Protection switching count—ring.
PSD-R	Protection switching duration—ring.
Line Threshold 1 Day	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count—Near-end only.
PSD	Protection switching duration—Near-end only.
PSC-W	Protection switching count—working.
PSD-W	Protection switching duration—working.
PSC-S	Protection switching count—span.
PSD-S	Protection switching duration—span.
PSC-R	Protection switching count—ring.
PSD-R	Protection switching duration—ring.
Section Threshold 15 Minutes	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.
Section Threshold 1 Day	

Table D-145 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.

D.4.3.4 STS

The STS Properties pane allows you to view and update OC192 LR/STM64 LH 1550 STS information.

Table D-146 Field Descriptions for the STS Properties Pane

Field	Description
STS Config	
Displays the STS number, the intermediate path protection monitoring (IPPM) status, and XC loopback status.	
Path Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Path Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.

Table D-146 Field Descriptions for the STS Properties Pane

Field	Description
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.3.5 Loopback

The Loopback Properties pane allows you to view and update OC192 LR/STM64 LH 1550 loopback information.

Table D-147 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

D.4.3.6 Protection

The Protection Properties pane allows you to view and update OC192 LR/STM64 LH 1550 protection group information.

Table D-148 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.3.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update OC192 LR/STM64 LH 1550 alarm profile information.

Table D-149 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.3.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update OC192 LR/STM64 LH 1550 ALS parameters.

Table D-150 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the ALS mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shutdown or Not Shutdown.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shutdown.

D.4.3.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update OC192 LR/STM64 LH 1550 J1 path trace information.

Table D-151 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.

Table D-151 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Member Number	Displays the virtual concatenation (VCAT) member number.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.4 Slot Properties—OC192/STM64 XFR-Based

The slot properties pane displays information about the Cisco ONS 15454 SONET and ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The OC-192/STM64 XFR-based card is an OC-192/STM-64 card based on XFP optics for use in ONS 15454 SONET or ONS 15454 SDH shelves. It is a one-base OC-192/STM-64 board that can be used with SR, IR, or LR XFP optics modules.

For the OC192/STM64 XFR-based module, the slot properties pane displays the following tabs: Module View, Identification, Pluggable Provisioning, Line, VC-4, STS, Loopback, Protection, Alarm Behavior, Transceiver, Auto Laser Shutdown, Section Trace, J1 Path Trace, and Info.

D.4.4.1 Module View

The Module View Properties pane displays a graphic of the OC192/STM64 XFR-based card that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.4.2 Identification

The Identification Properties pane allows you to view and update OC192/STM64 XFR-based card identification information.

Table D-152 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.4.3 Pluggable Provisioning

The Pluggable Provisioning Properties pane allows you to view and provision pluggable entities—for example, the pluggable port module (PPM) and the ports inside these entities.

Table D-153 Field Descriptions for the Pluggable Provisioning Properties Pane

Field	Description
Pluggable Number	Displays the identifier of the plugin module.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Pluggable Number	Displays the identifier of the plugin module and the port number.
Rate	Displays the rate of the port inside the pluggable entity.

D.4.4.3.1 Provision Pluggable Dialog Box

Click the **Create** button to launch the Provision Pluggable dialog box. The Provision Pluggable dialog box allows you to provision pluggable entities—for example, the PPM and PIM—and to create the ports inside these entities.

D.4.4.4 Line (ONS 15454 SONET)

The Line Properties pane allows you to view and update OC192/STM64 XFR-based card optical line performance monitoring information.

Table D-154 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter the name of the optical port.
Admin State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
BLSR Ext. Byte	Select an alternate BLSR byte. Choices are Z2, E2, or F1.
Type	Defines the port as SONET or SDH.
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4
Send <FF> DoNotUse	When checked, sends a special do not use (DUS) (0xff) message on the S1 byte.

Table D-154 Field Descriptions for the Line Properties Pane

Field	Description
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default)–3 (OC3, per port) • 0 (default)–12 (OC-12) • 0 (default)–48 (OC-48)
Reach	Allows you to provision the reach value. You can choose Auto Provision, which allows the system to automatically provision the reach from the PPM reach value on the hardware. Choose one of the following reach distances: **Note** The reach distances options that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.
Line Thresh 15 Minutes	
Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.

Table D-154 Field Descriptions for the Line Properties Pane

Field	Description
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count—Near-end only.
PSD	Protection switching duration—Near-end only.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
PSC-S	Protection switching count–span.
PSD-S	Protection switching duration–span.
PSC-R	Protection switching count–ring.
PSD-R	Protection switching duration–ring.
Far End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Line Thresh 1 Day	
Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count—Near-end only.
PSD	Protection switching duration—Near-end only.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
PSC-S	Protection switching count–span.
PSD-S	Protection switching duration–span.
PSC-R	Protection switching count–ring.
PSD-R	Protection switching duration–ring.
Far End	
Port Number	The optical port number.

Table D-154 Field Descriptions for the Line Properties Pane

Field	Description
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Physical Thresh 15 Minutes	
Port No.	Port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the optical power received (OPR) establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.
Physical Thresh 1 Day	
Port No.	Port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.
Section Thresh 15 Minutes	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.
Section Thresh 1 Day	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.

Table D-154 Field Descriptions for the Line Properties Pane

Field	Description
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.
Alarm Thresholds	
Port No.	Port number.
LBC-HIGH	Maximum laser bias current.
LBC-LOW	Minimum laser bias current.
OPT-HIGH	Maximum optical power transmitted.
OPT-LOW	Minimum optical power transmitted.
OPR-HIGH	Maximum optical power received.
OPR-LOW	Minimum optical power received.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.4.4.5 Line (ONS 15454 SDH)

The Line Properties pane allows you to view and update OC192/STM64 XFR-based card optical line performance monitoring information.

Table D-155 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter the name of the optical port.
Admin State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Port Rate	Sets the rate of the new port.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
SF BER	Sets the signal fail bit error rate.
SD BER	Sets the signal degrade bit error rate.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
MS-SPRing Ext. Byte	Select an alternate MS-SPRing byte.
Type	Defines the port as SONET or SDH.
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.

Table D-155 Field Descriptions for the Line Properties Pane

Field	Description
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4
Send <FF> DoNotUse	When checked, sends a special do not use (DUS) (0xff) message on the S1 byte.
PJ VC-4 Mon#	Sets the VC that will be used for pointer justification. If set to 0, no VC is monitored. Only one VC can be monitored on each STM port.

Table D-155 Field Descriptions for the Line Properties Pane

Field	Description
Reach	Allows you to provision the reach value. You can choose to automatically provision the PPM reach value on the hardware (Auto Provision) or one of the following reach distances: **Note** The reach distances that appear in the drop-down list depend on the card selected. • SR (short reach, up to 2 km distance) • SR 1 (up to 2 km distance) • IR 1 (intermediate reach, up to 15 km distance) • IR 2 (up to 40 km distance) • LR 1 (long reach, up to 40 km distance) • LR 2 (up to 80 km distance) • LR 3 (up to 80 km distance) • I1 • S1 • S2 • L1 • L2 • L3 • SX (up to 550 m or 270 m distance based on 50 um/62.5 um diameter fiber) • LX (up to 10 km or 550 m distance based on 50 um/62.5 um diameter fiber) • CX • T • DX (up to 40 km distance) • HX (up to 40 km distance) • ZX (up to 80 km distance) • VX (up to 100 km distance)
Wavelength	Allows you to provision the wavelength frequency.
MS Thresh 15 Minutes	
Near End	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
BBE-MS	Background block errors–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
PSC	Protection switching counts.
PSD	Protection switching duration.
PSC-W	Protection switching count–working.

Table D-155 Field Descriptions for the Line Properties Pane

Field	Description
PSD-W	Protection switching duration–working.
PSC-S	Protection switching count–span.
PSD-S	Protection switching duration–span.
PSC-R	Protection switching count–ring.
PSD-R	Protection switching duration–ring.
Far End	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
BBE-MS	Background block errors–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
MS Thresh 1 Day	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
BBE-MS	Background block errors–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
PSC	Protection switching counts.
PSD	Protection switching duration.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
PSC-S	Protection switching count–span.
PSD-S	Protection switching duration–span.
PSC-R	Protection switching count–ring.
PSD-R	Protection switching duration–ring.
Far End	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
BBE-MS	Background block errors–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
Physical Thresh 15 Minutes	
Port No.	Port number.

Table D-155 Field Descriptions for the Line Properties Pane

Field	Description
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the optical power received (OPR) establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.
Physical Thresh 1 Day	
Port No.	Port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.
RS Thresh 15 Minutes	
Port Number	The port number.
EB-RS	Errored block–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
UAS-RS	Unavailable seconds–regenerator section.
OFS-RS	Out of framing seconds–regenerator section.
RS Thresh 1 Day	
Port Number	The port number.
EB-RS	Errored block–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
UAS-RS	Unavailable seconds–regenerator section.
OFS-RS	Out of framing seconds–regenerator section.
Alarm Thresholds	

Table D-155 Field Descriptions for the Line Properties Pane

Field	Description
Port No.	Port number.
LBC-HIGH	Maximum laser bias current.
LBC-LOW	Minimum laser bias current.
OPT-HIGH	Maximum optical power transmitted.
OPT-LOW	Minimum optical power transmitted.
OPR-HIGH	Maximum optical power received.
OPR-LOW	Minimum optical power received.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.4.4.6 VC-4 (ONS 15454 SDH)

The VC-4 Properties pane allows you to view and update OC192/STM64 XFR-based card VC-4 information.

Table D-156 Field Descriptions for the VC-4 Properties Pane

Field	Description
VC-4 Config	
Displays the VC-4 number and the intermediate path protection monitoring (IPPM) status.	
Path Thresh 15 Min, Path Thresh 1 Day	
Port Number	The VC-4 port number.
EB-HP	Errored blocks–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-HP	Unavailable seconds–higher-order path.
BBE-HP	Background block errors–higher-order path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Customer Info	
VC Number	The VC number.

Table D-156 Field Descriptions for the VC-4 Properties Pane

Field	Description
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.4.7 STS (ONS 15454 SONET)

The STS Properties pane allows you to view and update OC192/STM64 XFR-based card STS information.

Table D-157 Field Descriptions for the STS Properties Pane

Field	Description
STS Config	
Displays the STS number, the intermediate path protection monitoring (IPPM) status, and XC loopback status.	
Path Thresh 15 Min	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Path Thresh 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.

Table D-157 Field Descriptions for the STS Properties Pane

Field	Description
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.4.8 Loopback

The Loopback Properties pane allows you to view and update OC192/STM64 XFR-based card loopback information.

Table D-158 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Admin State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Send AIS on Facility Loopback	When selected, sends AIS on the facility loopback.
Send AIS on Terminal Loopback	When selected, sends AIS on the terminal loopback.

D.4.4.9 Protection

The Protection Properties pane allows you to view and update OC192/STM64 XFR-based card protection group information.

Table D-159 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.4.10 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update OC192/STM64 XFR-based card alarm profile information.

Table D-160 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.4.11 Transceiver

The Transceiver Properties pane allows you to view and update OC192/STM64 XFR-based card transceiver information.

Table D-161 Field Descriptions for the Transceiver Properties Pane

Field	Description
Port No.	The port number.
Non-normalized LBC (mA)	The actual operating value of laser bias current (in mA) for the specified card port.
Non-normalized OPT (dBm)	The actual operating value of optical power transmitted (in dBm) for the specified card port.
Non-normalized OPR (dBm)	The actual operating value of optical power received (in dBm) for the specified card port.

D.4.4.12 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update OC192/STM64 XFR-based card ALS parameters.

Table D-162 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the ALS mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shutdown or Not Shutdown.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shutdown.

D.4.4.13 Section Trace

The Section Trace Properties pane allows you to change the section trace settings for the OC192/STM64 XFR-based card.

Table D-163 Field Descriptions for the Section Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

D.4.4.14 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update OC192/STM64 XFR-based card J1 path trace information.

Table D-164 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.

Table D-164 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

D.4.4.15 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the OC192/STM64 XFR-based card.

Table D-165 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.5 Slot Properties—OC3 IR 4 1310

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The Optical Connector (OC3 IR 4/STM1 SH 1310) card provides four intermediate or short range SONET/SDH OC-3 ports compliant with the International Telecommunication Union (ITU-T) G.707, ITU-T G.957, and Telcordia GR-253-CORE. Each port operates at 155.52 Mb/s over a single-mode fiber span. The card supports VT and nonconcatenated or concatenated payloads at the STS-1 or STS-3c signal levels.

For the OC3 IR 4/STM1 SH 1310 module, the slot properties pane displays the following tabs: Module View, Identification, Line, STS, Loopback, Protection, Alarm Behavior, J1 Path Trace, and Info.

D.4.5.1 Module View

The Module View Properties pane displays a graphic of the OC3 IR 4/STM1 SH 1310 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.5.2 Identification

The Identification Properties pane allows you to view and update OC3 IR 4/STM1 SH 1310 identification information.

Table D-166 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.5.3 Line

The Line Properties pane allows you to view and update OC3 IR 4/STM1 SH 1310 optical line performance monitoring information.

Table D-167 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter the name of the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.

Table D-167 Field Descriptions for the Line Properties Pane

Field	Description
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default)–3 (OC3, per port) • 0 (default)–12 (OC-12) • 0 (default)–48 (OC-48)
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Admin State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4
Send <FF> DoNotUse	When checked, sends a special do not use (DUS) (0xff) message on the S1 byte.
Line Thresh 15 Minutes	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count—Near-end only.
PSD	Protection switching duration—Near-end only.

Table D-167 Field Descriptions for the Line Properties Pane

Field	Description
Line Thresh 1 Day	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count—Near-end only.
PSD	Protection switching duration—Near-end only.
Section Thresh 15 Minutes	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.
Section Thresh 1 Day	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.

D.4.5.4 STS

The STS Properties pane allows you to view and update OC3 IR 4/STM1 SH 1310 STS information.

Table D-168 Field Descriptions for the STS Properties Pane

Field	Description
STS Config	
Displays the STS number, the intermediate path protection monitoring (IPPM) status, and XC loopback status.	
Path Thresh 15 Min	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.

Table D-168 Field Descriptions for the STS Properties Pane

Field	Description
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Path Thresh 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.5.5 Loopback

The Loopback Properties pane allows you to view and update OC3 IR 4/STM1 SH 1310 loopback information.

Table D-169 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Admin State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

D.4.5.6 Protection

The Protection Properties pane allows you to view and update OC3 IR 4/STM1 SH 1310 protection group information.

Table D-170 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.5.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update OC3 IR 4/STM1 SH 1310 alarm profile information.

Table D-171 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.5.8 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update OC3 IR 4/STM1 SH 1310 J1 path trace information.

Note This property is not available on ONS 15327 OC3 IR 4/STM1 SH 1310 cards.

Table D-172 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Member Number	Displays the virtual concatenation (VCAT) member number.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

D.4.5.9 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the OC3 IR 4/STM1 SH 1310 module.

Table D-173 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.6 Slot Properties—OC3 IR/STM1 SH 1310-8

The slot properties pane displays information about the Cisco ONS 15454 SONET or ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The OC3 IR/STM1 SH 1310-8 card provides eight intermediate or short range SONET/SDH OC-3 ports compliant with ITU-T G.707, ITU-T G.957, and Telcordia GR-253-CORE. Each port operates at 155.52 Mb/s over a single-mode fiber span. The card supports VT and nonconcatenated or concatenated payloads at the STS-1 or STS-3c signal levels.

For the OC3 IR/STM1 SH 1310-8 module, the slot properties pane displays the following tabs: Module View, Identification, Line, STS, Loopback, Protection, Alarm Behavior, Auto Laser Shutdown, J1 Path Trace, and Info.

D.4.6.1 Module View

The Module View Properties pane displays a graphic of the OC3 IR/STM1 SH 1310-8 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.6.2 Identification

The Identification Properties pane allows you to view and update OC3 IR/STM1 SH 1310-8 identification information.

Table D-174 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type that the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.6.3 Line

The Line Properties pane allows you to view and update OC3 IR/STM1 SH 1310-8 optical line performance monitoring information.

Table D-175 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter the name of the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default)–3 (OC3, per port) • 0 (default)–12 (OC-12) • 0 (default)–48 (OC-48)
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Admin State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
ALS Mode	Allows you to select the ALS mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test). ALS is a laser safety feature defined by ITU G.664.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4

Table D-175 Field Descriptions for the Line Properties Pane

Field	Description
Send <FF> DoNotUse	When checked, sends a special do not use (DUS) (0xff) message on the S1 byte.
Line Thresh 15 Minutes	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count—Near-end only.
PSD	Protection switching duration—Near-end only.
Line Thresh 1 Day	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count—Near-end only.
PSD	Protection switching duration—Near-end only.
Section Thresh 15 Minutes	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.
Section Thresh 1 Day	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.

D.4.6.4 STS

The STS Properties pane allows you to view and update OC3 IR/STM1 SH 1310-8 STS information.

Table D-176 Field Descriptions for the STS Properties Pane

Field	Description
STS Config	
Displays the STS number, the intermediate path protection monitoring (IPPM) status, and XC loopback status.	
Path Thresh 15 Min	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Path Thresh 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Customer Info	
STS Number	The STS number.

Table D-176 Field Descriptions for the STS Properties Pane

Field	Description
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.6.5 Loopback

The Loopback Properties pane allows you to view and update OC3 IR/STM1 SH 1310-8 loopback information.

Table D-177 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Admin State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

D.4.6.6 Protection

The Protection Properties pane allows you to view and update OC3 IR/STM1 SH 1310-8 protection group information.

Table D-178 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.6.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update OC3 IR/STM1 SH 1310-8 alarm profile information.

Table D-179 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.

Table D-179 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.6.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update OC3 IR/STM1 SH 1310-8 ALS parameters.

Table D-180 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the ALS mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shutdown or Not Shutdown.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shutdown.

D.4.6.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update OC3 IR/STM1 SH 1310-8 J1 path trace information.

Table D-181 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Member Number	Displays the virtual concatenation (VCAT) member number.

Table D-181 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

D.4.6.10 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the OC3 IR/STM1 SH 1310-8 module.

Table D-182 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.7 Slot Properties—OC48

The slot properties pane displays information about the Cisco ONS 15600 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

For the OC48 module, the slot properties pane displays the following tabs: Module View, Identification, Line, STS, Loopback, Transceiver, Protection, Alarm Behavior, and J1 Path Trace.

D.4.7.1 Module View

The Module View Properties pane displays a graphic of the OC48 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).
Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.7.2 Identification

The Identification Properties pane allows you to view and update OC48 identification information.

Table D-183 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
User Code	Allows you to enter an ASCII string to identify the card. The user code is stored in nonvolatile memory so that it is not lost when the unit is moved or stored as a spare.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.7.3 Line

The Line Properties pane allows you to view and update OC48 optical line performance monitoring information.

Table D-184 Field Descriptions for the Line Properties Pane

Subfield	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter the name of the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.

Table D-184 Field Descriptions for the Line Properties Pane

Subfield	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Synchronization Status Message	Allows you to view the incoming synchronization status message. Values are: • PRS (Primary reference source Stratum 1) • STU (Sync traceability unknown) • ST2 (Stratum 2) • ST3 (Stratum 3) • ST3E (Stratum 3E) • SMC (SONET minimum clock) • ST4 (Stratum 4) • TNC (Transit node clock) • DUS (Do not use for timing synchronization) • RES (Reserved; quality level set by user)
BLSR Ext. Byte	Select an alternate BLSR byte. Choices are Z2, E2, or F1.
Type	Defines the port as SONET or SDH.
Section Thresh 15 Minutes	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.
Section Thresh 1 Day	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.
Line Thresh 15 Minutes	
Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count.

Table D-184 Field Descriptions for the Line Properties Pane

Subfield	Description
PSD	Protection switching duration.
PSC-W	Protection switching count—working.
PSD-W	Protection switching duration—working.
Far End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Line Thresh 1 Day	
Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count.
PSD	Protection switching duration.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
Far End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Physical Thresh 15 Minutes	
Port No.	Port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.

Table D-184 Field Descriptions for the Line Properties Pane

Subfield	Description
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the optical power received (OPR) establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.
Physical Thresh 1 Day	
Port No.	Port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.4.7.4 STS

The STS Properties pane allows you to view and update OC48 STS information.

Table D-185 Field Descriptions for the STS Properties Pane

Field	Description
STS Config	
Displays the STS number, intermediate path protection monitoring (IPPM), and XC loopback status.	
Path Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
Path Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.

Table D-185 Field Descriptions for the STS Properties Pane

Field	Description
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
Customer Info	
VC Number	The VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.7.5 Loopback

The Loopback Properties pane allows you to view and update OC48 loopback information.

Table D-186 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the current state of the port.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).

D.4.7.6 Transceiver

The Transceiver Properties pane allows you to view and update OC48 transceiver information.

Table D-187 Field Descriptions for the Transceiver Properties Pane

Field	Description
Port No.	The port number.
Non-normalized LBC (mA)	The actual operating value of laser bias current (in mA) for the specified card port.
Non-normalized OPT (dBm)	The actual operating value of optical power transmitted (in dBm) for the specified card port.
Non-normalized OPR (dBm)	The actual operating value of optical power received (in dBm) for the specified card port.

D.4.7.7 Protection

The Protection Properties pane allows you to view and update OC48 protection group information.

Table D-188 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.7.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update OC48 alarm profile information.

Table D-189 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Parent Profile	Choose a global alarm profile for the card from the drop-down list.
Port Number	Displays the OC48 port number.
Alarm Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.7.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view the OC48 J1 path trace information.

Table D-190 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
VC Number	Displays the VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.8 Slot Properties—OC48 IR 1310

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The ONS 15454 Optical Connector (OC48 IR 1310) card provides one intermediate-range, Telcordia GR-253-CORE compliant SONET OC-48 port per card. Each port operates at 2.49 Gb/s over a single-mode fiber span. The card supports VT, nonconcatenated, or concatenated payloads at STS-1, STS-3c, STS-6c, STS-12c, or STS-48c signal levels.

For the OC48 IR 1310 module, the slot properties pane displays the following tabs: Module View, Identification, Line, STS, Loopback, Protection, Alarm Behavior, Auto Laser Shutdown, and J1 Path Trace.

Note The OC48 any slot (AS) card supports J1 path trace, but the OC48 card does not.

D.4.8.1 Module View

The Module View Properties pane displays a graphic of the OC48 IR 1310 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.8.2 Identification

The Identification Properties pane allows you to view and update OC48 IR 1310 identification information.

Table D-191 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.

Table D-191 Field Descriptions for the Identification Properties Pane

Field	Description
Administration State	The port administration state. It can be: • IS—In Service. • IS, AINS—Automatic In Service. • OOS, DSBLD—Out of Service, Disabled. • OOS, MT—Out of Service, Maintenance.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.8.3 Line

The Line Properties pane allows you to view and update OC48 IR 1310 optical line performance monitoring information.

Table D-192 Field Descriptions for the Line Properties Pane

Subfield	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter the name of the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default)–3 (OC3, per port) • 0 (default)–12 (OC-12) • 0 (default)–48 (OC-48)
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.

Table D-192 Field Descriptions for the Line Properties Pane

Subfield	Description
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
BLSR Ext. Byte	Select an alternate BLSR byte. Choices are Z2, E2, or F1.
Line Threshold 15 Minutes	
Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count—Near-end only.
PSD	Protection switching duration—Near-end only.
PSC-W	Protection switching count—working.
PSD-W	Protection switching duration—working.
PSC-S	Protection switching count—span.
PSD-S	Protection switching duration—span.
PSC-R	Protection switching count—ring.
PSD-R	Protection switching duration—ring.
Far End	
Port Number	The optical port number.

Table D-192 Field Descriptions for the Line Properties Pane

Subfield	Description
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Line Threshold 1 Day	
Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count—Near-end only.
PSD	Protection switching duration—Near-end only.
PSC-W	Protection switching count—working.
PSD-W	Protection switching duration—working.
PSC-S	Protection switching count—span.
PSD-S	Protection switching duration—span.
PSC-R	Protection switching count—ring.
PSD-R	Protection switching duration—ring.
Far End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Section Threshold 15 Minutes	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.
Section Threshold 1 Day	
Port Number	The optical port number.

Table D-192 Field Descriptions for the Line Properties Pane

Subfield	Description
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.

D.4.8.4 STS

The STS Properties pane allows you to view and update OC48 IR 1310 STS information.

Table D-193 Field Descriptions for the STS Properties Pane

Field	Description
STS Config	
Displays the STS number, the intermediate path protection monitoring (IPPM) status, and XC loopback status.	
Path Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Path Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.

Table D-193 Field Descriptions for the STS Properties Pane

Field	Description
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.8.5 Loopback

The Loopback Properties pane allows you to view and update OC48 IR 1310 loopback information.

Table D-194 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.

D.4.8.6 Protection

The Protection Properties pane allows you to view and update OC48 IR 1310 protection group information.

Table D-195 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.8.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update OC48 IR 1310 alarm profile information.

Table D-196 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.8.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update OC48 IR 1310 ALS parameters.

Table D-197 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the ALS mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shutdown or Not Shutdown.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shutdown.

D.4.8.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and update OC48 IR 1310 J1 path trace information.

Note

- This property is not available on ONS 15327 OC48 IR 1310 cards.
- The OC48_AS card supports J1 path trace, but the OC48 card does not.

Table D-198 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.

Table D-198 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Member Number	Displays the virtual concatenation (VCAT) member number.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.9 Slot Properties—OC48 LR 1550

The slot properties pane displays information about the Cisco ONS 15327 or ONS 15454 slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The OC48 LR 1550 card provides one long-range, SONET OC-48 port per card, compliant with Telcordia GR-253-CORE. Each port operates at 2.49 Gb/s over a single-mode fiber span. The card supports VT, nonconcatenated or concatenated payloads at STS-1, STS-3c, STS-6c, STS-12c, or STS-48c signal levels.

For the OC48 LR 1550 module, the slot properties pane displays the following tabs: Module View, Identification, Line, STS, Loopback, Protection, Alarm Behavior, Auto Laser Shutdown, and Info.

Note The OC48 any slot (AS) card supports J1 path trace, but the OC48 card does not.

D.4.9.1 Module View

The Module View Properties pane displays a graphic of the OC48 LR 1550 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.9.2 Identification

The Identification Properties pane allows you to view and update OC48 LR 1550 identification information.

Table D-199 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format "V99_." The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Admin State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.9.3 Line

The Line Properties pane allows you to view and update OC48 LR 1550 line performance monitoring information.

Table D-200 Field Descriptions for the Line Properties Pane

Subfield	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter the name of the optical port.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port as SONET or SDH.
PJSTSMon#	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port. • 0 (default)–3 (OC3, per port) • 0 (default)–12 (OC-12) • 0 (default)–48 (OC-48)
ProvidesSync	When checked, the card is provisioned as an NE timing reference.

Table D-200 Field Descriptions for the Line Properties Pane

Subfield	Description
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Admin State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
BLSR Ext. Byte	Select an alternate BLSR byte. Choices are Z2, E2, or F1.
ALS Mode	Allows you to select the ALS mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test). ALS is a laser safety feature defined by ITU G.664.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Admin SSM	If the node does not receive an SSM signal, it defaults to STU (synchronization traceability unknown). Admin SSM allows you to override the STU value with one of the following: • PRS—Primary reference source (Stratum 1) • STS2—Stratum 2 • TNC—Transit node clock • STS3E—Stratum 3E • STS3—Stratum 3 • SMC—SONET minimum clock • ST4—Stratum 4
Send <FF> DoNotUse	When checked, sends a special do not use (DUS) (0xff) message on the S1 byte.
Line Threshold 15 Minutes	
Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count—Near-end only.
PSD	Protection switching duration—Near-end only.
PSC-W	Protection switching count—working.
PSD-W	Protection switching duration—working.
PSC-S	Protection switching count—span.
PSD-S	Protection switching duration—span.

Table D-200 Field Descriptions for the Line Properties Pane

Subfield	Description
PSC-R	Protection switching count—ring.
PSD-R	Protection switching duration—ring.
Far End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Line Threshold 1 Day	
Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count–Near-end only.
PSD	Protection switching duration–Near-end only.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
PSC-S	Protection switching count–span.
PSD-S	Protection switching duration–span.
PSC-R	Protection switching count–ring.
PSD-R	Protection switching duration–ring.
Far End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Section Threshold 15 Minutes	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.

Table D-200 Field Descriptions for the Line Properties Pane

Subfield	Description
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.
Section Threshold 1 Day	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.

D.4.9.4 STS

The STS Properties pane allows you to view and update OC48 LR 1550 STS information.

Table D-201 Field Descriptions for the STS Properties Pane

Field	Description
STS Config	
Displays the STS number, the intermediate path protection monitoring (IPPM) status, and XC loopback status.	
Path Threshold 15 Minutes	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Path Threshold 1 Day	
STS Number	The synchronous transport signal number.
CV-P	Coding violations–path.
ES-P	Errored seconds–path.
SES-P	Severely errored seconds–path.

Table D-201 Field Descriptions for the STS Properties Pane

Field	Description
UAS-P	Unavailable seconds–path.
FC-P	Failure count–path.
PPJC-Pdet	Positive pointer justification count, STS path detected.
NPJC-Pdet	Negative pointer justification count, STS path detected.
PPJC-Pgen	Positive pointer justification count, STS path generated.
NPJC-Pgen	Negative pointer justification count, STS path generated.
PJCS-Pdet	Positive pointer justification count, STS path detected.
PJCS-Pgen	Positive pointer justification count, STS path generated.
PJC-Diff	The sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.
Customer Info	
STS Number	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.9.5 Loopback

The Loopback Properties pane allows you to view and update OC48 LR 1550 loopback information.

Table D-202 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Admin State	Displays the status of the line. The line can be In Service (IS), In Service–Auto In Service Soak (IS_AINS), Out of Service (OOS), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (none). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

D.4.9.6 Protection

The Protection Properties pane allows you to view and update OC48 LR 1550 protection group information.

Table D-203 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.9.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update OC48 LR 1550 alarm profile information.

Table D-204 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.9.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update OC48 LR 1550 ALS parameters.

Table D-205 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the ALS mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shutdown or Not Shutdown.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shutdown.

D.4.9.9 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the OC48 LR 1550 module.

Table D-206 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

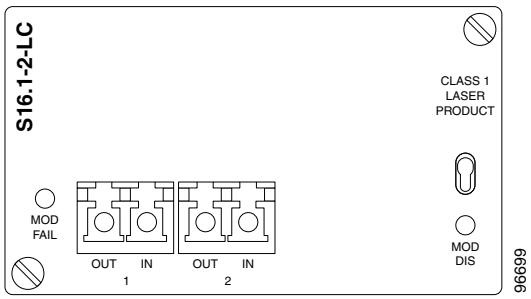
D.4.10 Slot Properties—S1.1-2-LC (ONS 15305 CTC)

The slot properties pane displays information about the Cisco ONS 15305 CTC slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The two optical STM-1 interfaces use a dual-fiber interface, an LC-style connector, one fiber in each direction, 1310 nm wavelength, and single-mode fiber of type 10/125 nm. The optical interfaces are compatible with ITU-T 957 for S-1.1.

The interface is an optical STM-1 short-haul interface, according to clause 5 ITU-T G.957. The definitions of optical parameters and reference points S and R refer to ITU-T G.957. Reference point S is the transmit direction; reference point R is the receive direction of the fiber. The following figure shows the module diagram.

Figure D-3 S1.1-2-LC Module



For the S1.1-2-LC module, the slot properties pane displays the following tabs: Module View, Identification, STM Line, VC-4 Config, and Loopback. The tabs shown depend on the NE configuration.

D.4.10.1 Module View

The Module View Properties pane displays a graphic of the S1.1-2-LC that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.4.10.2 Identification

The Identification Properties pane allows you to view and update S1.1-2-LC identification information.

Table D-207 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Displays the alarm profile for the port.

D.4.10.3 STM Line

The STM Line Properties pane allows you to view and update S1.1-2-LC optical line performance monitoring information.

Table D-208 Field Descriptions for the STM Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Shows the administrative state of the port: In Service (IS), or Out of Service (OOS).

D.4.10.4 VC-4 Config

The VC-4 Config Properties pane allows you to view and update S1.1-2-LC VC-4 information.

Table D-209 Field Descriptions for the VC-4 Config Properties Pane

Field	Description
VC Number	Displays the VC number.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.
XC Loopback	Indicates cross-connect loopback.

D.4.10.5 Loopback

The Loopback Properties pane allows you to view and update STM-1 loopback information.

Table D-210 Field Descriptions for the Loopback Properties Pane

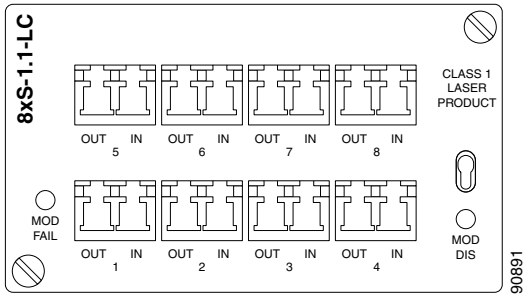
Field	Description
Port Number	Displays the port number.
Admin State	Shows the administrative state of the port: In Service (IS), Out of Service–Disabled (OOS, DSBLD), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.11 Slot Properties—S1.1-8-LC (ONS 15305 CTC)

The module contains eight optical STM-1 interfaces that meets the S-1.1 specification in ITU-T G.957. The physical connector is an LC connector. The module also contains eight mapper circuits and an IP switch, allowing concentration of IP traffic mapped into a VC-12 container. Because the mapper circuits are connected to the matrix, the mapper circuits are global resources and the traffic to be terminated may come from other modules in the system. The following figure shows the module diagram.

Figure D-4 Optical S-1.1 Module, S1.1-8-LC



For the S1.1-8-LC module, the slot properties pane displays the following tabs: Module View, Identification, STM Line, and WAN Line. The tabs shown depend on the NE configuration.

D.4.11.1 Module View

The Module View Properties pane displays a graphic of the S1.1-8-LC that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.4.11.2 Identification

The Identification Properties pane allows you to view and update S1.1-8-LC identification information.

Table D-211 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Card Mode	Select the card mode.
Alarm Profile	Displays the alarm profile for the port.

D.4.11.3 STM Line

The STM Line Properties pane allows you to view and update S1.1-8-LC optical line performance monitoring information.

Table D-212 Field Descriptions for the STM Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Shows the administrative state of the port: In Service (IS), or Out of Service (OOS).

D.4.11.4 WAN Line

The WAN Line Properties pane allows you to view and configure wide-area network (WAN) line information.

Table D-213 Field Descriptions for the WAN Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Link State	Displays the physical port state. Values are Up, Down, or Not Present.

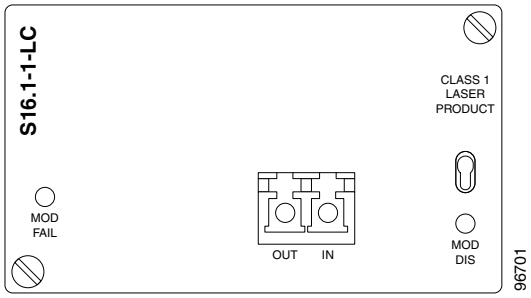
Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.12 Slot Properties—S16.1-1-LC (ONS 15305 CTC)

The S16.1-1-LC module contains one optical STM-16 interfaces that meets the S-16.1 specification in ITU-T G.957. The physical connector is an LC connector. The module only supports TDM traffic.

The slot properties pane displays information about the Cisco ONS 15305 CTC slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties. The following figure shows the module diagram.

Figure D-5 Single Optical S-16.1 Module, S16.1-1-LC



For the S16.1-1-LC module, the slot properties pane displays the following tabs: Module View, Identification, STM Line, VC-4 Config, and Loopback.

D.4.12.1 Module View

The Module View Properties pane displays a graphic of the S16.1-1-LC that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.12.2 Identification

The Identification Properties pane allows you to view and update S16.1-1-LC identification information.

Table D-214 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Displays the alarm profile for the port.

D.4.12.3 STM Line

The STM Line Properties pane allows you to view and update S16.1-1-LC optical line performance monitoring information.

Table D-215 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Shows the administrative state of the port: In Service (IS), or Out of Service (OOS).

D.4.12.4 VC-4 Config

The VC-4 Config Properties pane allows you to view and update S16.1-1-LC information.

Table D-216 Field Descriptions for the VC-4 Config Properties Pane

Field	Description
VC Number	Displays the VC number.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.
XC Loopback	Indicates cross-connect loopback.

D.4.12.5 Loopback

The Loopback Properties pane allows you to view and update S16.1-1-LC loopback information.

Table D-217 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the current loopback state.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.13 Slot Properties—STM-1

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The STM-1 IR 4/STM1 SH 1310 (STM1_4 and STM1_8) card provides four or eight intermediate or short range, ITU-T G.707-, ITU-T G.957-compliant, SDH STM-1 ports. Each port operates at 155.52 Mb/s over a single-mode fiber span. The card supports concatenated or nonconcatenated payloads at the STM-1 signal level on a per-VC-4 basis.

For the STM-1 module, the slot properties pane displays the following tabs: Module View, Identification, Line, VC-4, Loopback, Protection, Alarm Behavior, Auto Laser Shutdown, and J1 Path Trace. The tabs shown depend on the NE configuration.

D.4.13.1 Module View

The Module View Properties pane displays a graphic of the STM-1 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.4.13.2 Identification

The Identification Properties pane allows you to view and update STM-1 identification information.

Table D-218 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.13.3 Line

The Line Properties pane allows you to view and update STM-1 optical line performance monitoring information.

Table D-219 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port.
PJVC-4 Mon#	Sets the VC that will be used for pointer justification. If set to 0, no VC is monitored. Only one VC can be monitored on each STM port.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.

Table D-219 Field Descriptions for the Line Properties Pane

Field	Description
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
MS-SPRing Ext. Byte	Select an alternate MS-SPRing byte.
RS Threshold 15 Minutes	
Port Number	The port number.
EB-RS	Errored block–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
UAS-RS	Unavailable seconds–regenerator section.
OFS-RS	Out of framing seconds–regenerator section.
RS Threshold 1 Day	
Port Number	The port number.
EB-RS	Errored block–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
UAS-RS	Unavailable seconds–regenerator section.
OFS-RS	Out of framing seconds–regenerator section.
MS Threshold 15 Minutes	
Port Number	The port number.
EB-MS	Errored block.
BBE-MS	Background block errors.
ES-MS	Errored seconds.
SES-MS	Severely errored seconds.
UAS-MS	Unavailable seconds.
PPJC-PDET	Positive pointer justification count, path detected.
NPJC-PDET	Negative pointer justification count, path detected.
PPJC-PGEN	Positive pointer justification count, path generated.
NPJC-PGEN	Negative pointer justification count, path generated.
PSC	Protection switching counts.

Table D-219 Field Descriptions for the Line Properties Pane

Field	Description
PSD	Protection switching duration.
MS Threshold 1 Day	
Port Number	The port number.
EB-MS	Errored block.
BBE-MS	Background block errors.
ES-MS	Errored seconds.
SES-MS	Severely errored seconds.
UAS-MS	Unavailable seconds.
PPJC-PDET	Positive pointer justification count, path detected.
NPJC-PDET	Negative pointer justification count, path detected.
PPJC-PGEN	Positive pointer justification count, path generated.
NPJC-PGEN	Negative pointer justification count, path generated.
PSC	Protection switching counts.
PSD	Protection switching duration.

D.4.13.4 VC-4

The VC-4 Properties pane allows you to view and update STM-1 VC-4 information.

Table D-220 Field Descriptions for the VC-4 Properties Pane

Field	Description
VC-4	
Displays the VC-4 number, the intermediate path protection monitoring (IPPM) status, and the XC loopback status. The XC Loopback field only appears on ONS 15454 SDH Release 4.0.	
Threshold 15 Minutes	
VC Number	The VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
Threshold 1 Day	
VC Number	The VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.

Table D-220 Field Descriptions for the VC-4 Properties Pane

Field	Description
UAS-P	Unavailable seconds–higher-order path.
Customer Info	
VC Number	The VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.13.5 Loopback

The Loopback Properties pane allows you to view and update STM-1 loopback information.

Table D-221 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the current loopback state.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).

D.4.13.6 Protection

The Protection Properties pane allows you to view and update STM-1 protection group information.

Table D-222 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.13.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update STM-1 alarm profile information.

Table D-223 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.13.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update ALS parameters.

Table D-224 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shutdown or Not Shutdown.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shutdown.

D.4.13.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve J1 path trace information.

Table D-225 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

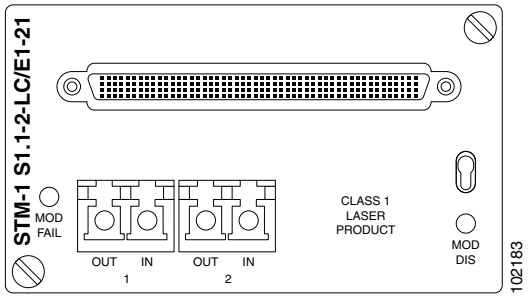
D.4.14 Slot Properties—STM-1 S1.1-2-LC/E1-21 (ONS 15305 CTC)

The slot properties pane displays information about the Cisco ONS 15305 CTC slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The module contains two optical STM-1 short-haul interfaces and 21 E1 interfaces. The main functions of the module are O/E- E/O conversion and SDH multi/demultiplexing with VC-12, VC-3 and VC-4 granularity of the STM-1 traffic and VC-12 mapping/demapping demultiplexing of the E1 traffic. The module supports both transparent E1 data transmission according to ITU-T Rec. G.703 as well as the NT

functionality of ISDN PRA according to ETSI 300 233. One high-density LFH type connector is used to interface the 21 E1s, and a dual-fiber LC connector (one fiber in each direction) is used on the two STM1 interfaces. The following figure shows the module diagram.

Figure D-6 STM-1 S1.1-2-LC/E1-21 Module



For the S1.1-2-LC/E1-21 module, the slot properties pane displays the following tabs: Module View, Identification, STM Line, and E1 Line. The tabs shown depend on the NE configuration.

D.4.14.1 Module View

The Module View Properties pane displays a graphic of the S1.1-2-LC/E1-21 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.4.14.2 Identification

The Identification Properties pane allows you to view and update S1.1-2-LC/E1-21 identification information.

Table D-226 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.

Table D-226 Field Descriptions for the Identification Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile for the port.
Suppress Alarms	When checked, all alarms are suppressed for the port.

D.4.14.3 STM Line

The STM Line Properties pane allows you to view and update S1.1-2-LC/E1-21 optical line performance monitoring information.

Table D-227 Field Descriptions for the STM Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Shows the administrative state of the port: In Service (IS), or Out of Service (OOS).

D.4.14.4 E1 Line

The E1 Line Properties pane allows you to view and update S1.1-2-LC/E1-21 optical line performance monitoring information.

Table D-228 Field Descriptions for the E1 Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
Line Type	Allows you to select the line framing type.
Line Coding	Allows you to define the DS-1 transmission coding type.
Admin State	Shows the administrative state of the port: In Service (IS), Out of Service–Disabled (OOS, DSBLD), or Out of Service–Maintenance (OOS_MT).

D.4.15 Slot Properties—STM-1E-12

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The twelve-port ONS 15454 SDH STM-1E-12 card provides twelve ITU-compliant, G.703 STM-1 ports per card. For release 5.0 NEs and earlier, ports 9 to 12 can be switched to E-4 instead of STM-1. Each interface operates at 155.52 Mb/s for STM-1 or 139.264 Mb/s for E-4 over a 75-ohm coaxial cable (with the FMEC STM1E NP card, the FMEC STM1E 1:1 card, or the FMEC STM1E 1:3 card). In E-4 mode, framed or unframed signal operation is possible. The STM1E-12 card operates as a working or protect card in 1:1 and in 1:3 protection schemes.

Note For release 6.0 NEs, E-4 provisioning is not supported; all ports 1 to 12 are STM-1.

For the STM-1E-12 module, the slot properties pane displays the following tabs: Module View, Identification, Line, VC-4, Loopback, Protection, Alarm Behavior, and J1 Path Trace.

D.4.15.1 Module View

The Module View Properties pane displays a graphic of the STM1E-12 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.15.2 Identification

The Identification Properties pane allows you to view and update STM-1E-12 identification information.

Table D-229 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.15.3 Line

The Line Properties pane allows you to view and update STM-1E-12 line performance monitoring information.

Table D-230 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port.
PJVC-4 Mon#	Sets the VC that will be used for pointer justification. If set to 0, no VC is monitored. Only one VC can be monitored on each STM port.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
MS-SPRing Ext. Byte	Select an alternate MS-SPRing byte.
Port	
Port Number	Displays the port number. **Note** The Port property and fields apply only to release 5.0 and earlier NEs. This functionality does not apply to release 6.0 NEs.
Interface	Displays the SDH interface. **Note** The Port property and fields apply only to release 5.0 and earlier NEs. This functionality does not apply to release 6.0 NEs.
RS Threshold 15 Minutes	
Port Number	The port number.
ES-RS	Errored seconds–regenerator section.
SEFS-RS	Severely errored framing seconds–regenerator section.
EB-RS	Errored blocks–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
BBE-RS (FE)	Background block errors–regenerator section.

Table D-230 Field Descriptions for the Line Properties Pane

Field	Description
UAS-RS	Unavailable seconds–regenerator section.
OFS-RS	Out of framing seconds–regenerator section.
RS Threshold 1 Day	
Port Number	The port number.
ES-RS	Errored seconds–regenerator section.
SEFS-RS	Severely errored framing seconds–regenerator section.
EB-RS	Errored blocks–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
BBE-RS (FE)	Background block errors–regenerator section.
UAS-RS	Unavailable seconds–regenerator section.
OFS-RS	Out of framing seconds–regenerator section.
MS Threshold 15 Minutes	
Port Number	The port number.
EB-MS (FE)	Errored blocks.
BBE-MS	Background block errors.
ES-MS (FE)	Errored seconds.
SES-MS (FE)	Severely errored seconds.
UAS-MS (FE)	Unavailable seconds.
MS Threshold 1 Day	
Port Number	The port number.
EB-MS (FE)	Errored blocks.
BBE-MS	Background block errors.
ES-MS (FE)	Errored seconds.
SES-MS (FE)	Severely errored seconds.
UAS-MS (FE)	Unavailable seconds.

D.4.15.4 VC-4

The VC-4 Properties pane allows you to view and update STM-1E-12 VC-4 information.

Table D-231 Field Descriptions for the VC-4 Properties Pane

Field	Description
VC-4	
Displays the VC-4 number, the intermediate path protection monitoring (IPPM) status, and the XC loopback status.	
Threshold 15 Minutes	
VC Number	The VC number.
EB-HP	Errored block–higher-order path.

Table D-231 Field Descriptions for the VC-4 Properties Pane

Field	Description
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
Threshold 1 Day	
VC Number	The VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
Customer Info	
VC Number	The VC number.
Customer ID	Displays the customer ID.
Service ID	Displays the service ID.
J1 Path Trace Table	
Displays the circuit J1 path trace information. Select a path trace and click **Modify** to open the J1 Path Trace window.	
Port Number	The port number.
STS Number	The STS number.
Expected String	The current expected string.
Received String	The current received string.
Mode	The path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatched	Indicates whether there is a mismatch in the C2 byte received.

D.4.15.5 Loopback

The Loopback Properties pane allows you to view and update STM-1E-12 loopback information.

Table D-232 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the current loopback state.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.

D.4.15.6 Protection

The Protection Properties pane allows you to view and update STM-1E-12 protection group information.

Table D-233 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.15.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update STM-1E-12 alarm profile information.

Table D-234 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.15.8 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve STM-1E-12 J1 path trace information.

Table D-235 Slot Properties for the J1 Path Trace

Field	Description
Port Number	Displays the port number.
VC Number	Displays the VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Mem Num	Displays the virtual concatenation (VCAT) member number.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.16 Slot Properties—STM-16 (ONS 15454 SDH)

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The OC48 IR/STM16 SH AS 1310 card provides one intermediate-range, ITU-T G.707, ITU-T G.957-compliant, SDH STM-16 port per card. The interface operates at 2.488 Gb/s over a single-mode fiber span. The card supports concatenated or nonconcatenated payloads at STM-1, STM-4, or STM-16 signal levels on a per-VC-4 basis.

For the STM-16 module, the slot properties pane displays the following tabs: Module View, Identification, Line, VC-4, Loopback, Protection, Alarm Behavior, Auto Laser Shutdown, and J1 Path Trace.

D.4.16.1 Module View

The Module View Properties pane displays a graphic of the STM-16 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.16.2 Identification

The Identification Properties pane allows you to view and update STM-16 identification information.

Table D-236 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.

Table D-236 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.16.3 Line

The Line Properties pane allows you to view and update STM-16 line performance monitoring information.

Table D-237 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port.
PJVC-4 Mon#	Sets the VC that will be used for pointer justification. If set to 0, no VC is monitored. Only one VC can be monitored on each STM port.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
MS-SPRing Ext. Byte	Select an alternate MS-SPRing byte.
RS Threshold 15 Minutes	
Port Number	The port number.
EB-RS	Errored block–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
UAS-RS	Unavailable seconds–regenerator section.

Table D-237 Field Descriptions for the Line Properties Pane

Field	Description
OFS-RS	Out of framing seconds–regenerator section.
RS Threshold 1 Day	
Port Number	The port number.
EB-RS	Errored block–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
UAS-RS	Unavailable seconds–regenerator section.
OFS-RS	Out of framing seconds–regenerator section.
MS Threshold 15 Minutes	
Port Number	The port number.
EB-MS	Errored block.
BBE-MS	Background block errors.
ES-MS	Errored seconds.
SES-MS	Severely errored seconds.
UAS-MS	Unavailable seconds.
PPJC-PDET	Positive pointer justification count, path detected.
NPJC-PDET	Negative pointer justification count, path detected.
PPJC-PGEN	Positive pointer justification count, path generated.
NPJC-PGEN	Negative pointer justification count, path generated.
PSC	Protection switching counts.
PSD	Protection switching duration.
MS Threshold 1 Day	
Port Number	The port number.
EB-MS	Errored block.
BBE-MS	Background block errors.
ES-MS	Errored seconds.
SES-MS	Severely errored seconds.
UAS-MS	Unavailable seconds.
PPJC-PDET	Positive pointer justification count, path detected.
NPJC-PDET	Negative pointer justification count, path detected.
PPJC-PGEN	Positive pointer justification count, path generated.
NPJC-PGEN	Negative pointer justification count, path generated.
PSC	Protection switching counts.
PSD	Protection switching duration.

D.4.16.4 VC-4

The VC-4 Properties pane allows you to view and update STM-16 VC-4 information.

Table D-238 Field Descriptions for the VC-4 Properties Pane

Field	Description
VC-4	
Displays the VC-4 number, the intermediate path protection monitoring (IPPM) status, and the XC loopback status.	
Threshold 15 Minutes	
VC Number	The VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
Threshold 1 Day	
VC Number	The VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
Customer Info	
VC Number	The VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.16.5 Loopback

The Loopback Properties pane allows you to view and update STM-16 loopback information.

Table D-239 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the current loopback state.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.

D.4.16.6 Protection

The Protection Properties pane allows you to view and update STM-16 protection group information.

Table D-240 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.16.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update STM-16 alarm profile information.

Table D-241 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.16.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update ALS parameters.

Table D-242 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shutdown or Not Shutdown.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shutdown.

D.4.16.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve STM-16 J1 path trace information.

Table D-243 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
VC Number	Displays the VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Mem Num	Displays the virtual concatenation (VCAT) member number.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.17 Slot Properties—STM-16 (ONS 15600 SDH)

The slot properties pane displays information about the Cisco ONS 15600 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The STM-16 card provides 16 long-haul STM-16 ITU-T G.957 L-16.2 compliant signals. The ports operate at the ITU-T G.707 compliant 2488.32 Mb/s rate over a single-mode fiber span. The card has four physical connector adapters with eight fibers per connector adapter. The card VC4 payloads and concatenated payloads at VC4, VC4-4c, VC4-8c, or VC4-16c signal levels.

For the STM-16 module, the slot properties pane displays the following tabs: Module View, Identification, Line, VC4, Loopback, Transceiver, Protection, Alarm Behavior, J1 Path Trace, and Section Trace.

D.4.17.1 Module View

The Module View Properties pane displays a graphic of the STM16 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.17.2 Identification

The Identification Properties pane allows you to view and update STM-16 identification information.

Table D-244 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Hardware Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
User Code	Allows you to enter an ASCII string to identify the card. The user code is stored in nonvolatile memory so that it is not lost when the unit is moved or stored as a spare.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.17.3 Line

The Line Properties pane allows you to view and update STM-16 line performance monitoring information.

Table D-245 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Synchronization Status Message	SDH protocol that communicates information about the quality of the timing source.

Table D-245 Field Descriptions for the Line Properties Pane

Field	Description
MS-SPRing Ext. Byte	Select an alternate MS-SPRing byte.
Type	Defines the port.
MS Thresh 15 Min (Near End)	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
PSC	Protection switching count.
PSD	Protection switching duration.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
MS Thresh 15 Min (Far End)	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
MS Thresh 1 Day (Near End)	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
PSC	Protection switching count.
PSD	Protection switching duration.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
MS Thresh 15 Min (Far End)	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.

Table D-245 Field Descriptions for the Line Properties Pane

Field	Description
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
RS Thresh 15 Min (Near End)	
Port Number	The port number.
EB-RS	Errored block–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
RS Thresh 1 Day (Near End)	
Port Number	The port number.
EB-RS	Errored block–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
Physical Thresh 15 Min	
Port Number	Port number.
LBC-HIGH	High laser bias current threshold.
LBC-LOW	Low laser bias current threshold.
OPT-HIGH	High optical power transmitted threshold.
OPT-LOW	Low optical power transmitted threshold.
OPR-HIGH	High optical power received threshold.
OPR-LOW	Low optical power received threshold.
SET-OPR	Sets the optical power received (OPR).
Physical Thresh 1 Day	
Port Number	Port number.
LBC-HIGH	High laser bias current threshold.
LBC-LOW	Low laser bias current threshold.
OPT-HIGH	High optical power transmitted threshold.
OPT-LOW	Low optical power transmitted threshold.
OPR-HIGH	High optical power received threshold.
OPR-LOW	Low optical power received threshold.
SET-OPR	Sets the OPR.

D.4.17.4 VC4

The VC4 Properties pane allows you to view and update STM-16 VC4 information.

Table D-246 Field Descriptions for the VC4 Properties Pane

Field	Description
VC4 Config	
VC Number	Displays the VC number, the intermediate path protection monitoring (IPPM) status, and the XC loopback status.
IPPM Enabled	Check to enable IPPM and uncheck to disable IPPM.
XC Loopback	Indicates cross-connect loopback.
Path Thresh 15 Min (Near End)	
VC Number	Displays the VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
PPJC-Pdet	Positive pointer justification count-VC4 path detected.
NPJC-Pdet	Negative pointer justification count-VC4 path detected.
PPJC-Pgen	Positive pointer justification count-VC4 path generated.
NPJC-Pgen	Negative pointer justification count-VC4 path generated.
Path Thresh 15 Min (Far End)	
VC Number	Displays the VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
Path Thresh 1 Day (Near End)	
VC Number	Displays the VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
PPJC-Pdet	Positive pointer justification count-VC4 path detected.
NPJC-Pdet	Negative pointer justification count-VC4 path detected.
PPJC-Pgen	Positive pointer justification count-VC4 path generated.
NPJC-Pgen	Negative pointer justification count-VC4 path generated.
Path Thresh 1 Day (Far End)	
VC Number	Displays the VC number.

Table D-246 Field Descriptions for the VC4 Properties Pane

Field	Description
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
Customer Info	
VC Number	Displays the VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.17.5 Loopback

The Loopback Properties pane allows you to view and update STM-16 loopback information.

Table D-247 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Admin State	Shows the administrative state of the port: In Service (IS), Out of Service–Disabled (OOS, DSBLD), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

D.4.17.6 Transceiver

The Transceiver Properties pane allows you to view and update STM-16 transceiver information.

Table D-248 Field Descriptions for the Transceiver Properties Pane

Field	Description
Port No	Port number 1–14.
Non-normalized LBC (mA)	The actual operating value of laser bias current (in mA) for the specified card port.
Non-normalized OPT (dBm)	The actual operating value of optical power transmitted (in dBm) for the specified card port.
Non-normalized OPR (dBm)	The actual operating value of optical power received (in dBm) for the specified card port.

D.4.17.7 Protection

The Protection Properties pane allows you to view and update STM-16 protection group information.

Table D-249 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.17.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update STM-16 alarm profile information.

Table D-250 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.17.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve STM-16 J1 path trace information.

Table D-251 Field Descriptions for the J1 Path Trace Properties Pane

Column	Description
Port Number	Displays the port number.
VC Number	Displays the VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Mem Num	Displays the virtual concatenation (VCAT) member number.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

D.4.17.10 Section Trace

The Section Trace Properties pane allows you to change the section trace settings for the STM-16 card.

Table D-252 Field Descriptions for the Section Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.18 Slot Properties—STM-4 IR/STM4 SH 1310

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The STM-4 IR/STM4 SH 1310 (STM4_1 and STM4_4) card provides one or four intermediate or short range, ITU-T G.707, ITU-T G.957-compliant, SDH STM-4 ports per card. The interface operates at 622.08 Mb/s over a single-mode fiber span. The card supports concatenated or nonconcatenated payloads on a per-VC-4 basis.

For the STM-4 IR/STM4 SH 1310 card, the slot properties pane displays the following tabs: Module View, Identification, Line, VC-4, Loopback, Protection, Alarm Behavior, and J1 Path Trace.

D.4.18.1 Module View

The Module View Properties pane displays a graphic of the STM-4 IR/STM4 SH 1310 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.4.18.2 Identification

The Identification Properties pane allows you to view and update STM-4 IR/STM4 SH 1310 identification information.

Table D-253 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.18.3 Line

The Line Properties pane allows you to view and update STM-4 IR/STM4 SH 1310 line performance monitoring information.

Table D-254 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port.
PJVC-4 Mon#	Sets the VC that will be used for pointer justification. If set to 0, no VC is monitored. Only one VC can be monitored on each STM port.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

Table D-254 Field Descriptions for the Line Properties Pane

Field	Description
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
MS-SPRing Ext. Byte	Select an alternate MS-SPRing byte.
RS Threshold 15 Minutes	
Port Number	The port number.
EB-RS	Errored blocks–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
UAS-RS	Unavailable seconds–regenerator section.
OFS-RS	Out of framing seconds–regenerator section.
RS Threshold 1 Day	
Port Number	The port number.
EB-RS	Errored blocks–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
UAS-RS	Unavailable seconds–regenerator section.
OFS-RS	Out of framing seconds–regenerator section.
MS Threshold 15 Minutes	
Port Number	The port number.
EB-MS	Errored blocks.
BBE-MS	Background block errors.
ES-MS	Errored seconds.
SES-MS	Severely errored seconds.
UAS-MS	Unavailable seconds.
PPJC-PDET	Positive pointer justification count, path detected.
NPJC-PDET	Negative pointer justification count, path detected.
PPJC-PGEN	Positive pointer justification count, path generated.
NPJC-PGEN	Negative pointer justification count, path generated.
PSC	Protection switching counts.
PSD	Protection switching duration.
PSC-W	Protection switching count—working.
PSD-W	Protection switching duration—working.
MS Threshold 1 Day	

Table D-254 Field Descriptions for the Line Properties Pane

Field	Description
Port Number	The port number.
EB-MS	Errored blocks.
BBE-MS	Background block errors.
ES-MS	Errored seconds.
SES-MS	Severely errored seconds.
UAS-MS	Unavailable seconds.
PPJC-PDET	Positive pointer justification count, path detected.
NPJC-PDET	Negative pointer justification count, path detected.
PPJC-PGEN	Positive pointer justification count, path generated.
NPJC-PGEN	Negative pointer justification count, path generated.
PSC	Protection switching counts.
PSD	Protection switching duration.
PSC-W	Protection switching count—working.
PSD-W	Protection switching duration—working.

D.4.18.4 VC-4

The VC-4 Properties pane allows you to view and update STM-4 IR/STM4 SH 1310 VC-4 information.

Table D-255 Field Descriptions for the VC-4 Properties Pane

Field	Description
VC-4	
Displays the VC-4 number, the intermediate path protection monitoring (IPPM) status, and the XC loopback status.	
Threshold 15 Minutes	
VC Number	The VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
Threshold 1 Day	
VC Number	The VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.

Table D-255 Field Descriptions for the VC-4 Properties Pane

Field	Description
Customer Info	
VC Number	The VC number.
Customer ID	Displays the customer ID.
Service ID	Displays the service ID.

D.4.18.5 Loopback

The Loopback Properties pane allows you to view and update STM-4 IR/STM4 SH 1310 loopback information.

Table D-256 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the current loopback state.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).

D.4.18.6 Protection

The Protection Properties pane allows you to view and update STM-4 IR/STM4 SH 1310 protection group information.

Table D-257 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.18.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update STM-4 IR/STM4 SH 1310 alarm profile information.

Table D-258 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Parent Profile	Choose a global alarm profile for the card from the drop-down list.
Port Number	Displays the STM-4 port number.
Alarm Profile	Choose an alarm profile for the slot from the drop-down list.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.18.8 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve STM-4 IR/STM4 SH 1310 J1 path trace information.

Table D-259 Field Descriptions for the J1 Path Trace Properties Pane

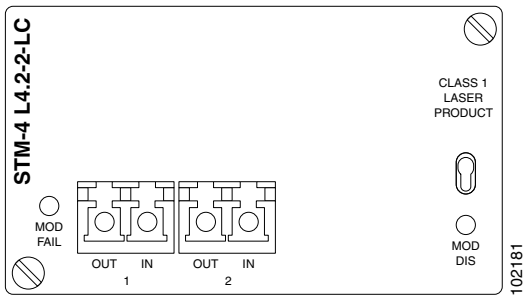
Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.19 Slot Properties—STM-4 L4.2-2-LC (ONS 15305 CTC)

The STM-4 L4.2-2-LC card is a dual-port STM-4 module for long-haul transmission at 1550 nm optical wavelengths. The main functions of the module are O/E-E/O conversion and SDH multi/demultiplexing with VC-12, VC-3, and VC-4 granularity. The following figure shows the module diagram.

Figure D-7 STM-4 L4.2-2-LC Module



For the L4.2-2-LC module, the slot properties pane displays the following tabs: Module View, Identification, STM Line, VC-4 Config, and Loopback. The tabs shown depend on the NE configuration.

D.4.19.1 Module View

The Module View Properties pane displays a graphic of the L4.2-2-LC that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

D.4.19.2 Identification

The Identification Properties pane allows you to view and update L4.2-2-LC identification information.

Table D-260 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Displays the alarm profile for the port.

D.4.19.3 STM Line

The STM Line Properties pane allows you to view and update L4.2-2-LC optical line performance monitoring information.

Table D-261 Field Descriptions for the STM Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.

Table D-261 Field Descriptions for the STM Line Properties Pane

Field	Description
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Shows the administrative state of the port: In Service (IS) or Out of Service (OOS).

D.4.19.4 VC-4 Config

The VC-4 Config Properties pane allows you to view and update L4.2-2-LC VC-4 information.

Table D-262 Field Descriptions for the VC-4 Config Properties Pane

Field	Description
VC Number	Displays the VC number.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.
XC Loopback	Indicates cross-connect loopback.

D.4.19.5 Loopback

The Loopback Properties pane allows you to view and update L4.2-2-LC loopback information.

Table D-263 Field Descriptions for the Loopback Properties Pane

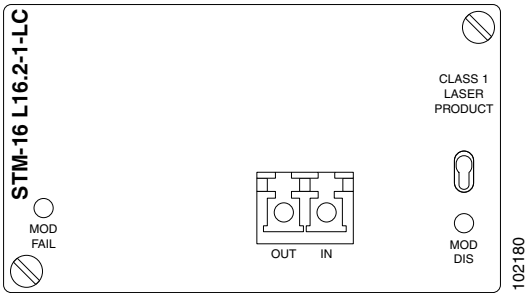
Field	Description
Port Number	Displays the port number.
Admin State	Displays the current loopback state.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.20 Slot Properties—STM-16 L16.2-1-LC (ONS 15305 CTC)

The STM-16 L16.2-1-LC card is an STM-16 long-haul module for transmission at 1550 nm optical wavelengths. The main functions of the module are O/E- E/O conversion and SDH multi/demultiplexing with VC-12, VC-3, and VC-4 granularity. The following figure shows the module diagram.

Figure D-8 STM-16 L16.2-1-LC Module



For the L16.2-1-LC module, the slot properties pane displays the following tabs: Module View, Identification, STM Line, VC-4 Config, and Loopback. The tabs shown depend on the NE configuration.

D.4.20.1 Module View

The Module View Properties pane displays a graphic of the L16.2-1-LC that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to add, delete, change, or reset the module.

D.4.20.2 Identification

The Identification Properties pane allows you to view and update L16.2-1-LC identification information.

Table D-264 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware version number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the hardware revision number of the software used by the ASIC chip installed on the card.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Displays the alarm profile for the port.

D.4.20.3 STM Line

The STM Line Properties pane allows you to view and update L16.2-1-LC optical line performance monitoring information.

Table D-265 Field Descriptions for the STM Line Properties Pane

Field	Description
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Shows the administrative state of the port: In Service (IS) or Out of Service (OOS).

D.4.20.4 VC-4 Config

The VC-4 Config Properties pane allows you to view and update L16.2-1-LC VC-4 configuration information.

Table D-266 Field Descriptions for the VC-4 Config Properties Pane

Field	Description
VC Number	Displays the VC number.
IPPM Enabled	Check to enable intermediate path performance monitoring (IPPM) and uncheck to disable IPPM.
XC Loopback	Indicates cross-connect loopback.

D.4.20.5 Loopback

The Loopback Properties pane allows you to view and update L16.2-1-LC loopback information.

Table D-267 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Admin State	Displays the current loopback state.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.21 Slot Properties—STM-64 LH 1550 (ONS 15454 SDH)

The slot properties pane displays information about the Cisco ONS 15454 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The STM-64 LH 1550 card provides one long-range SONET/SDH STM64 port compliant with the International Telecommunication Union (ITU-T) G.707, ITU-T G.957, Telcordia GR-1377-CORE, and Telcordia GR-253-CORE. The card port operates at 9.96 Gb/s over unamplified distances up to 80 km when using fiber such as C-SMF or dispersion compensated fiber limited by loss and/or dispersion. The card supports VT and nonconcatenated or concatenated payloads.

For the STM-64 LH 1550 module, the slot properties pane displays the following tabs: Module View, Identification, Line, VC-4, Loopback, Protection, Alarm Behavior, Auto Laser Shutdown, and J1 Path Trace.

D.4.21.1 Module View

The Module View Properties pane displays a graphic of the STM-64 LH 1550 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s).

D.4.21.2 Identification

The Identification Properties pane allows you to view and update STM-64 LH 1550 identification information.

Table D-268 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number of the card.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.21.3 Line

The Line Properties pane allows you to view and update STM-64 LH 1550 line performance monitoring information.

Table D-269 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
Type	Defines the port.
PJVC-4 Mon#	Sets the VC that will be used for pointer justification. If set to 0, no VC is monitored. Only one VC can be monitored on each STM port.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
AINS Soak	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
MS-SPRing Ext. Byte	Select an alternate MS-SPRing byte.
RS Threshold 15 Minutes	
Port Number	The port number.
EB-RS	Errored blocks–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
UAS-RS	Unavailable seconds–regenerator section.
OFS-RS	Out of framing seconds–regenerator section.
RS Threshold 1 Day	
Port Number	The port number.
EB-RS	Errored blocks–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.

Table D-269 Field Descriptions for the Line Properties Pane

Field	Description
SES-RS	Severely errored seconds–regenerator section.
UAS-RS	Unavailable seconds–regenerator section.
OFS-RS	Out of framing seconds–regenerator section.
MS Threshold 15 Minutes	
Port Number	The port number.
EB-MS	Errored blocks.
BBE-MS	Background block errors.
ES-MS	Errored seconds.
SES-MS	Severely errored seconds.
UAS-MS	Unavailable seconds.
PPJC-PDET	Positive pointer justification count, path detected.
NPJC-PDET	Negative pointer justification count, path detected.
PPJC-PGEN	Positive pointer justification count, path generated.
NPJC-PGEN	Negative pointer justification count, path generated.
PSC	Protection switching counts.
PSD	Protection switching duration.
MS Threshold 1 Day	
Port Number	The port number.
EB-MS	Errored blocks.
BBE-MS	Background block errors.
ES-MS	Errored seconds.
SES-MS	Severely errored seconds.
UAS-MS	Unavailable seconds.
PPJC-PDET	Positive pointer justification count, path detected.
NPJC-PDET	Negative pointer justification count, path detected.
PPJC-PGEN	Positive pointer justification count, path generated.
NPJC-PGEN	Negative pointer justification count, path generated.
PSC	Protection switching counts.
PSD	Protection switching duration.

D.4.21.4 VC-4

The VC-4 Properties pane allows you to view and update STM-64 LH 1550 VC-4 information.

Table D-270 Field Descriptions for the VC-4 Properties Pane

Field	Description
VC-4	
Displays the VC-4 number, the intermediate path protection monitoring (IPPM) status, and the XC loopback status. The XC Loopback field only appears on the ONS 15454 SDH R4.0.	
Path Threshold 15 Minutes	
VC Number	The VC number.
EB-HP	Errored blocks–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
Path Threshold 1 Day	
VC Number	The VC number.
EB-HP	Errored blocks–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.

D.4.21.5 Loopback

The Loopback Properties pane allows you to view and update STM-64 LH 1550 loopback information.

Table D-271 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
State	Displays the current loopback state.
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or clear the current loopback (none).

D.4.21.6 Protection

The Protection Properties pane allows you to view and update STM-64 LH 1550 protection group information.

Table D-272 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.21.7 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update STM-64 LH 1550 alarm profile information.

Table D-273 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.21.8 Auto Laser Shutdown

The Auto Laser Shutdown Properties pane allows you to view and update STM-64 LH 1550 ALS parameters.

Table D-274 Field Descriptions for the Auto Laser Shutdown Properties Pane

Field	Description
Port No.	Displays the port number.
ALS Mode	Displays the auto laser shutdown mode (Disabled, Auto Restart, Manual Restart, or Manual Restart for Test).
Rec. Pulse Dur. (sec)	Allows you to set the received laser pulse duration, in seconds. The range is from 2.0 to 100.0 seconds.
Rec. Pulse Int. (sec)	Allows you to set the received laser pulse interval, in seconds. The range is from 60 to 300 seconds.
Status	Displays the current laser status. Values are Shutdown or Not Shutdown.
Request Restart	When selected, allows you to request a laser restart. This parameter is configurable only when the ALS mode is set to Manual Restart or Manual Restart for Test and when the laser status is Shutdown.

D.4.21.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve STM-64 LH 1550 J1 path trace information.

Table D-275 Field Descriptions for the J1 Path Trace Properties Pane

Field	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.22 Slot Properties—STM-64 LR/LH 4 (ONS 15600 SDH)

The slot properties pane displays information about the Cisco ONS 15600 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The STM-64 LR/LH 4 port 1550 card provides 4 long-haul STM-64 ITU-T G.9691 L-64.2c compliant signals. The ports operate at the ITU-T G.707 compliant 9953.28 Mb/s rate over a single-mode fiber span. The card has four physical connector adapters with 2 fibers per connector adapter. The card VC4 payloads and concatenated payloads at VC4, VC4-4c, VC4-8c, VC4-16c, or VC-64c signal levels.

For the STM-64 LR/LH 4 module, the slot properties pane displays the following tabs: Module View, Identification, Line, VC4, Loopback, Transceiver, Protection, Alarm Behavior, J1 Path Trace, and Section Trace.

D.4.22.1 Module View

The Module View Properties pane displays a graphic of the STM-64 LR/LH 4 that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.22.2 Identification

The Identification Properties pane allows you to view and update STM-64 LR/LH 4 identification information.

Table D-276 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
User Code	Allows you to enter an ASCII string to identify the card. The user code is stored in nonvolatile memory so that it is not lost when the unit is moved or stored as a spare.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.22.3 Line

The Line Properties pane allows you to view and update STM-64 LR/LH 4 line performance monitoring information.

Table D-277 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.

Table D-277 Field Descriptions for the Line Properties Pane

Field	Description
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Synchronization Status Message	SDH protocol that communicates information about the quality of the timing source.
MS-SPRing Ext. Byte	Select an alternate MS-SPRing byte.
Type	Defines the port.
MS Thresh 15 Min (Near End)	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
PSC	Protection switching count.
PSD	Protection switching duration.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
MS Thresh 15 Min (Far End)	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
MS Thresh 1 Day (Near End)	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
PSC	Protection switching count.
PSD	Protection switching duration.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
MS Thresh 15 Min (Far End)	
Port Number	The port number.

Table D-277 Field Descriptions for the Line Properties Pane

Field	Description
EB-MS	Errored block–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
RS Thresh 15 Min (Near End)	
Port Number	The port number.
EB-RS	Errored block–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
RS Thresh 1 Day (Near End)	
Port Number	The port number.
EB-RS	Errored block–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
Physical Thresh 15 Min	
Port Number	Port number.
LBC-HIGH	High laser bias current threshold.
LBC-LOW	Low laser bias current threshold.
OPT-HIGH	High optical power transmitted threshold.
OPT-LOW	Low optical power transmitted threshold.
OPR-HIGH	High optical power received threshold.
OPR-LOW	Low optical power received threshold.
SET-OPR	Sets the optical power received (OPR).
Physical Thresh 1 Day	
Port Number	Port number.
LBC-HIGH	High laser bias current threshold.
LBC-LOW	Low laser bias current threshold.
OPT-HIGH	High optical power transmitted threshold.
OPT-LOW	Low optical power transmitted threshold.
OPR-HIGH	High optical power received threshold.
OPR-LOW	Low optical power received threshold.
SET-OPR	Sets the OPR.

D.4.22.4 VC4

The VC4 Properties pane allows you to view and update STM-64 LR/LH 4 VC4 information.

Table D-278 Field Descriptions for the VC4 Properties Pane

Field	Description
VC4 Config	
Displays the VC number, the intermediate path protection monitoring (IPPM) status, and the XC loopback status.	
Path Thresh 15 Min (Near End)	
VC Number	Displays the VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
PPJC-Pdet	Positive pointer justification count-VC4 path detected.
NPJC-Pdet	Negative pointer justification count-VC4 path detected.
PPJC-Pgen	Positive pointer justification count-VC4 path generated.
NPJC-Pgen	Negative pointer justification count-VC4 path generated.
Path Thresh 15 Min (Far End)	
VC Number	Displays the VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
Path Thresh 1 Day (Near End)	
VC Number	Displays the VC number.
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
PPJC-Pdet	Positive pointer justification count-VC4 path detected.
NPJC-Pdet	Negative pointer justification count-VC4 path detected.
PPJC-Pgen	Positive pointer justification count-VC4 path generated.
NPJC-Pgen	Negative pointer justification count-VC4 path generated.
Path Thresh 1 Day (Far End)	
VC Number	Displays the VC number.

Table D-278 Field Descriptions for the VC4 Properties Pane

Field	Description
EB-HP	Errored block–higher-order path.
BBE-HP	Background block errors–higher-order path.
ES-HP	Errored seconds–higher-order path.
SES-HP	Severely errored seconds–higher-order path.
UAS-P	Unavailable seconds–higher-order path.
Customer Info	
VC Number	Displays the VC number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.22.5 Loopback

The Loopback Properties pane allows you to view and update STM-64 LR/LH 4 loopback information.

Table D-279 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Admin State	Shows the administrative state of the port: In Service (IS), Out of Service–Disabled (OOS, DSBLD), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Payload, or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

D.4.22.6 Transceiver

The Transceiver Properties pane allows you to view and update STM-64 LR/LH 4 transceiver information.

Table D-280 Field Descriptions for the Transceiver Properties Pane

Field	Description
Port No.	Port No. Port number 1–14.
Non-normalized LBC (mA)	The actual operating value of laser bias current (in mA) for the specified card port.
Non-normalized OPT (dBm)	The actual operating value of optical power transmitted (in dBm) for the specified card port.
Non-normalized OPR (dBm)	The actual operating value of optical power received (in dBm) for the specified card port.

D.4.22.7 Protection

The Protection Properties pane allows you to view and update STM-64 LR/LH 4 protection group information.

Table D-281 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.22.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update STM-64 LR/LH 4 alarm profile information.

Table D-282 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.22.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve STM-64 LR/LH 4 J1 path trace information.

Table D-283 Field Descriptions for the J1 Path Trace Properties Pane

Column	Description
Port Number	Displays the port number.
VC Number	Displays the VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Mem Num	Displays the virtual concatenation (VCAT) member number.

Table D-283 Field Descriptions for the J1 Path Trace Properties Pane

Column	Description
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

D.4.22.10 Section Trace

The Section Trace Properties pane allows you to change the section trace settings for the STM-64 LR/LH 4 card.

Table D-284 Field Descriptions for the Section Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.23 Slot Properties—STM-64_4_DWDM (ONS 15600 SDH)

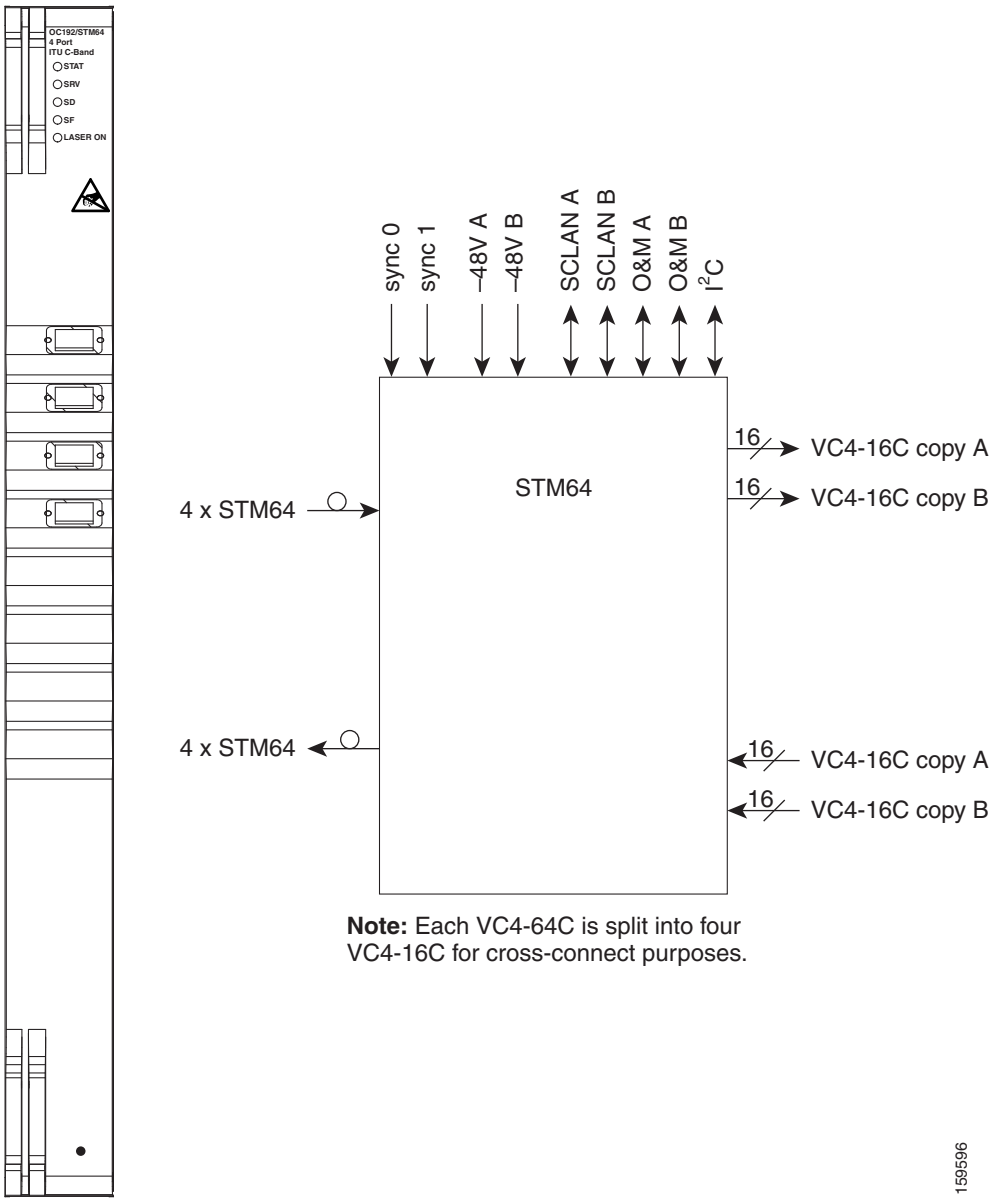
The slot properties pane displays information about the Cisco ONS 15600 SDH slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The OC192/STM64 4 Port ITU C-Band card provides four Telcordia GR-253-CORE compliant, SDH STM-64 ports per card. The ports operate at 9953.28 Mb/s over single-mode fiber. The OC192/STM64 4 Port ITU C-Band card has four physical connector adapters with two fibers per connector adapter. The card supports VC3 payloads and concatenated payloads at VC4, VC4-4c, VC4-8c, VC4-16c, or VC4-64c signal levels.

The OC192/STM64 4 Port ITU C-Band card features a tunable 1550-nm C-band laser on the trunk port. The laser is tunable across 82 wavelengths on the ITU grid with 50-GHz spacing between wavelengths.

The following figure shows the card faceplate and block diagram.

Figure D-9 STM-64_4_DWDM Module



For the STM-64_4_DWDM module, the slot properties pane displays the following tabs: Module View, Identification, Line, STS, Loopback, Transceiver, Protection, Alarm Behavior, J1 Path Trace, Info, and Section Trace.

D.4.23.1 Module View

The Module View Properties pane displays a graphic of the STM-64_4_DWDM that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress

Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.23.2 Identification

The Identification Properties pane allows you to view and update STM-64_4_DWDM identification information.

Table D-285 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
User Code	Allows you to enter an ASCII string to identify the card. The user code is stored in nonvolatile memory so that it is not lost when the unit is moved or stored as a spare.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.23.3 Line

The Line Properties pane allows you to view and update STM-64_4_DWDM line performance monitoring information.

Table D-286 Field Descriptions for the Line Properties Pane

Field	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter an optical port name.
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.

Table D-286 Field Descriptions for the Line Properties Pane

Field	Description
Send DoNotUse	When checked, sends a DNS (do not use) message on the S1 byte.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Synchronization Status Message	SDH protocol that communicates information about the quality of the timing source.
MS-SPRing Ext. Byte	Select an alternate MS-SPRing byte.
Type	Defines the port.
MS Thresh 15 Min (Near End)	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
PSC	Protection switching count.
PSD	Protection switching duration.
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
MS Thresh 15 Min (Far End)	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
MS Thresh 1 Day (Near End)	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
PSC	Protection switching count.
PSD	Protection switching duration.
PSC-W	Protection switching count–working.

Table D-286 Field Descriptions for the Line Properties Pane

Field	Description
PSD-W	Protection switching duration–working.
MS Thresh 15 Min (Far End)	
Port Number	The port number.
EB-MS	Errored block–multiplex section.
ES-MS	Errored seconds–multiplex section.
SES-MS	Severely errored seconds–multiplex section.
BBE-MS	Background block errors–multiplex section.
UAS-MS	Unavailable seconds–multiplex section.
RS Thresh 15 Min (Near End)	
Port Number	The port number.
EB-RS	Errored block–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
RS Thresh 1 Day (Near End)	
Port Number	The port number.
EB-RS	Errored block–regenerator section.
BBE-RS	Background block errors–regenerator section.
ES-RS	Errored seconds–regenerator section.
SES-RS	Severely errored seconds–regenerator section.
Physical Thresh 15 Min	
Port Number	Port number.
LBC-HIGH	High laser bias current threshold.
LBC-LOW	Low laser bias current threshold.
OPT-HIGH	High optical power transmitted threshold.
OPT-LOW	Low optical power transmitted threshold.
OPR-HIGH	High optical power received threshold.
OPR-LOW	Low optical power received threshold.
SET-OPR	Sets the optical power received (OPR).
Physical Thresh 1 Day	
Port Number	Port number.
LBC-HIGH	High laser bias current threshold.
LBC-LOW	Low laser bias current threshold.
OPT-HIGH	High optical power transmitted threshold.
OPT-LOW	Low optical power transmitted threshold.
OPR-HIGH	High optical power received threshold.

Table D-286 Field Descriptions for the Line Properties Pane

Field	Description
OPR-LOW	Low optical power received threshold.
SET-OPR	Sets the OPR.

D.4.23.4 STS

The STS Properties pane allows you to view and update STM-64_4_DWDM STS information. The STS Properties pane contains the following tabs:

- D.4.23.4.1 STS Config Tab, page D-213
- D.4.23.4.2 Path Thresh 15 Min Tab, page D-213
- D.4.23.4.3 Path Thresh 1 Day Tab, page D-214
- D.4.23.4.4 Customer Info Tab, page D-214

D.4.23.4.1 STS Config Tab

The STS Config tab allows you to view and change the STS settings of the STM-64_4_DWDM card.

Table D-287 Field Descriptions for the STS Config Tab

Field	Description
STS Number	Displays the synchronous transport signal number information.
IPPM Enabled	Check to enable IPPM and uncheck to disable IPPM.
XC Loopback	Displays the cross-connect loopback status.

D.4.23.4.2 Path Thresh 15 Min Tab

The Path Thresh 15 Min tab allows you to view and change the 15-minute path thresholds of the STM-64_4_DWDM card.

Table D-288 Field Descriptions for the Path Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.
PPJC-Pdet	Displays positive pointer justification count, STS path detected.
NPJC-Pdet	Displays negative pointer justification count, STS path detected.
PPJC-Pgen	Displays positive pointer justification count, STS path generated.
NPJC-Pgen	Displays negative pointer justification count, STS path generated.

Table D-288 Field Descriptions for the Path Thresh 15 Min Tab (continued)

Field	Description
Far End	
STS No	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
FC-P	Displays failure count–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.

D.4.23.4.3 Path Thresh 1 Day Tab

The Path Thresh 1 Day tab allows you to view and change the 1-day path thresholds of the STM-64_4_DWDM card.

Table D-289 Field Descriptions for the Path Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.
PPJC-Pdet	Displays positive pointer justification count, STS path detected.
NPJC-Pdet	Displays negative pointer justification count, STS path detected.
PPJC-Pgen	Displays positive pointer justification count, STS path generated.
NPJC-Pgen	Displays negative pointer justification count, STS path generated.
Far End	
STS No	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
FC-P	Displays failure count–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.

D.4.23.4.4 Customer Info Tab

The Customer Info tab allows you to view the customer information.

Table D-290 Field Descriptions for the Customer Info Tab

Field	Description
STS No.	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.23.5 Loopback

The Loopback Properties pane allows you to view and update STM-64_4_DWDM loopback information.

Table D-291 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Admin State	Shows the administrative state of the port: In Service (IS), Out of Service–Disabled (OOS, DSBLD), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Payload, or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

D.4.23.6 Transceiver

The Transceiver Properties pane allows you to view and update STM-64_4_DWDM transceiver information.

Table D-292 Field Descriptions for the Transceiver Properties Pane

Field	Description
Port No.	Port No. Port number 1–14.
Non-normalized LBC (mA)	The actual operating value of laser bias current (in mA) for the specified card port.
Non-normalized OPT (dBm)	The actual operating value of optical power transmitted (in dBm) for the specified card port.
Non-normalized OPR (dBm)	The actual operating value of optical power received (in dBm) for the specified card port.

D.4.23.7 Protection

The Protection Properties pane allows you to view and update STM-64_4_DWDM protection group information.

Table D-293 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.23.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update STM-64_4_DWDM alarm profile information.

Table D-294 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.23.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve STM-64_4_DWDM path trace information.

Table D-295 Field Descriptions for the J1 Path Trace Properties Pane

Column	Description
Port Number	Displays the port number.
VC Number	Displays the VC number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Mismatch	Indicates whether there is a mismatch in the C2 byte received.
Vcat Mem Num	Displays the virtual concatenation (VCAT) member number.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

D.4.23.10 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the STM-64_4_DWDM module.

Table D-296 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

D.4.23.11 Section Trace

The Section Trace Properties pane allows you to change the section trace settings for the STM-64_4_DWDM card.

Table D-297 Field Descriptions for the Section Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

D.4.24 Slot Properties—OC192_4_DWDM (ONS 15600 SONET)

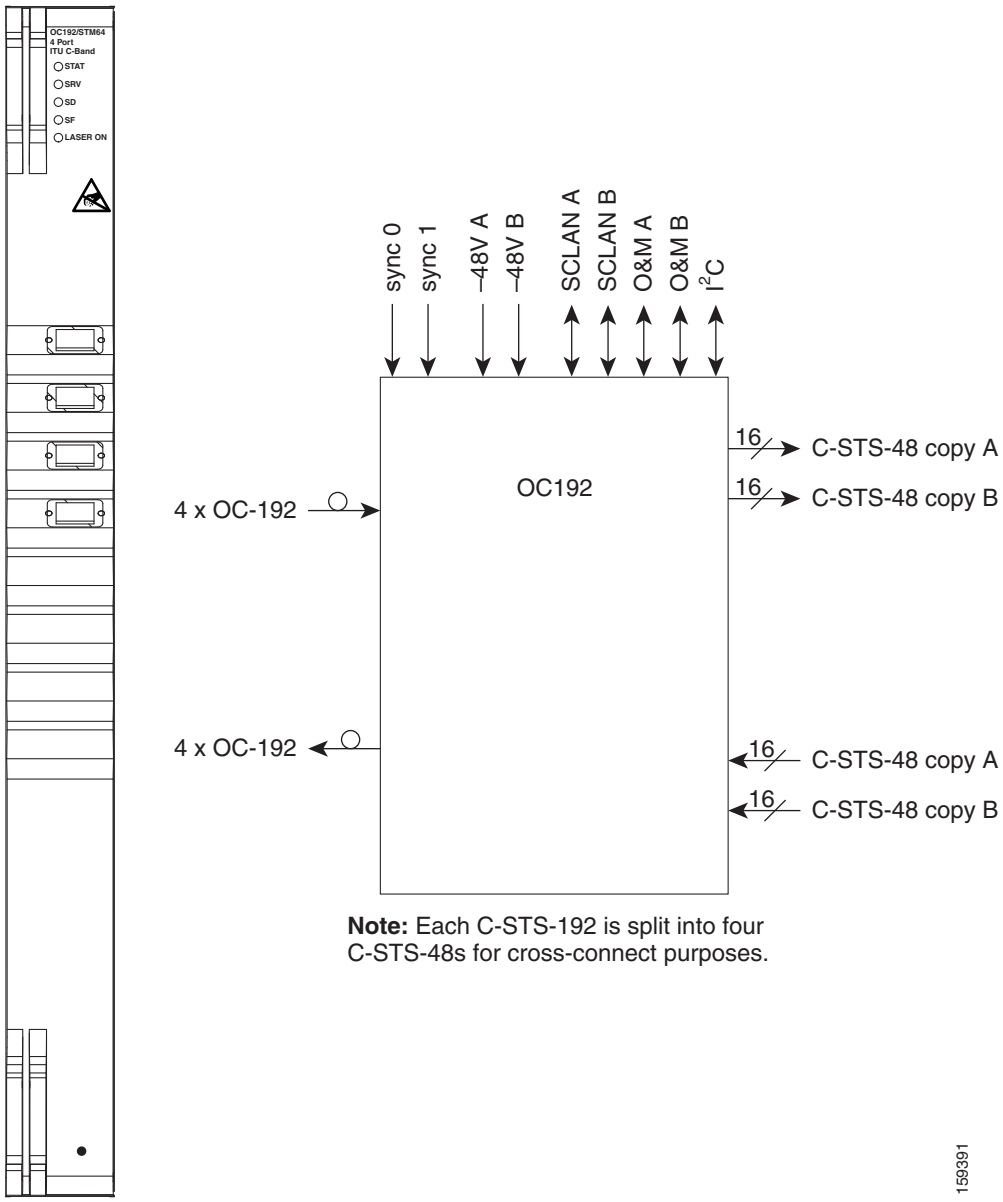
The slot properties pane displays information about the Cisco ONS 15600 SONET slot that is selected in the NE Explorer tree. Use this properties pane to change the card properties.

The OC192/STM64 4 Port ITU C-Band card provides four Telcordia GR-253-CORE compliant, SONET OC-192 ports per card. The ports operate at 9953.28 Mb/s over single-mode fiber. The OC192/STM64 4 Port ITU C-Band card has four physical connector adapters with two fibers per connector adapter. The card supports STS-1 payloads and concatenated payloads at STS-3c, STS-12c, STS-24c, STS-48c, or STS-192c signal levels.

The OC192/STM64 4 Port ITU C-Band card features a tunable 1550-nm C-band laser on the trunk port. The laser is tunable across 82 wavelengths on the ITU grid with 50-GHz spacing between wavelengths.

The following figure shows the card faceplate and block diagram.

Figure D-10 OC192_4_DWDM Module



For the OC192_4_DWDM module, the slot properties pane displays the following tabs: Module View, Identification, Line, STS, Loopback, Transceiver, Protection, Alarm Behavior, J1 Path Trace, Info, and Section Trace.

D.4.24.1 Module View

The Module View Properties pane displays a graphic of the OC192_4_DWDM that is installed in the slot. The number of critical, major, minor, and warning alarms for the module is displayed under Alarm Status. (Alarms are also displayed when you move the mouse pointer over the graphic.) The Suppress

Alarms check box is display-only and indicates whether all alarms are suppressed for the card and its port(s). Right-clicking the graphic opens a shortcut menu that you can use to reset, delete, or change the card.

D.4.24.2 Identification

The Identification Properties pane allows you to view and update OC192_4_DWDM identification information.

Table D-298 Field Descriptions for the Identification Properties Pane

Field	Description
Equipment Type	Displays the equipment type the slot is provisioned for.
Actual Equipment Type	Displays the actual card that is installed in the slot.
HW Part Number	Displays the card part number that is printed on the top of the card.
Hardware Revision	Displays the hardware revision number.
Serial Number	Displays the card serial number that is unique to each card.
CLEI Code	Displays the CLEI code.
Firmware Version	Displays the revision number of the software used by the ASIC chip installed on the card.
User Code	Allows you to enter an ASCII string to identify the card. The user code is stored in nonvolatile memory so that it is not lost when the unit is moved or stored as a spare.
Product ID	Displays a product ID string of 63 characters maximum. If the card does not support the product ID, the field shows N/A.
Version ID	Displays a version ID string in the format “V99_.” The version ID always begins with a V and ends with a space. If the card does not support the version ID, the field shows N/A.
Card State	
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Equipment State	Displays the equipment state of the card.
Alarm Profile	Sets the alarm profile for the card. Check the **Suppress Alarms** check box to suppress all alarms for this card and its port(s).

D.4.24.3 Line

The Line Properties pane allows you to view and update OC192_4_DWDM line performance monitoring information.

Table D-299 Field Descriptions for the Line Properties Pane

Subfield	Description
Line Config	
Port Number	Displays the optical port number.
Port Name	Allows you to enter the name of the optical port.

Table D-299 Field Descriptions for the Line Properties Pane

Subfield	Description
SD BER	Sets the signal degrade bit error rate.
SF BER	Sets the signal fail bit error rate.
ProvidesSync	When checked, the card is provisioned as an NE timing reference.
EnableSyncMsg	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.
Send DoNotUse	When checked, sends a do not use (DUS) message on the S1 byte.
Admin State	Select the designation that determines whether an entity is in service or out of service. The administration state is the driver for the service state.
Synchronization Status Message	Allows you to view the incoming synchronization status message. Values are: • PRS (Primary reference source Stratum 1) • STU (Sync traceability unknown) • ST2 (Stratum 2) • ST3 (Stratum 3) • ST3E (Stratum 3E) • SMC (SONET minimum clock) • ST4 (Stratum 4) • TNC (Transit node clock) • DUS (Do not use for timing synchronization) • RES (Reserved; quality level set by user)
BLSR Ext. Byte	Select an alternate BLSR byte. Choices are Z2, E2, or F1.
AINS Soak (H:M)	Automatic in-service soak. The duration remaining before the traffic/termination transitions to IS state.
AINS Soak Count Down	Automatic in-service soak countdown. Displays the remaining time of valid input signal in *hh:mm* format, after which the card becomes in service (IS) automatically.
Type	Defines the port as SONET or SDH.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.
Wavelength	Allows you to provision the wavelength frequency. The Wavelength column lists the correct wavelengths (82 channels), depending on the type of card, and the band selected. Refer to the *Other Information* field in the Equipment Inventory table (11.3.1 Viewing an Equipment Inventory Table, page 11-11) for details of wavelengths supported.
Band	The Band column reduces the number of selectable wavelengths (82/80 lambdas only). For this single-band card, the band value is fixed to *C*, and this value cannot be altered.
Section Thresh 15 Minutes	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.

Table D-299 Field Descriptions for the Line Properties Pane

Subfield	Description
SEFS-S	Severely errored framing seconds–section.
Section Thresh 1 Day	
Port Number	The optical port number.
CV-S	Coding violations–section.
ES-S	Errored seconds–section.
SES-S	Severely errored seconds–section.
SEFS-S	Severely errored framing seconds–section.
Line Thresh 15 Minutes	
Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count.
PSD	Protection switching duration.
PSC-W	Protection switching count—working.
PSD-W	Protection switching duration—working.
Far End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Line Thresh 1 Day	
Near End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
PSC	Protection switching count.
PSD	Protection switching duration.

Table D-299 Field Descriptions for the Line Properties Pane

Subfield	Description
PSC-W	Protection switching count–working.
PSD-W	Protection switching duration–working.
PSC-S	Protection switching count–span.
PSD-S	Displays the protection switching duration–span.
PSC-R	Protection switching count–ring.
PSD-R	Displays the protection switching duration–ring.
Far End	
Port Number	The optical port number.
ES-L	Errored seconds–line.
SES-L	Severely errored seconds–line.
CV-L	Coding violations–line.
UAS-L	Unavailable seconds–line.
FC-L	Failure count–line.
Physical Thresh 15 Minutes	
Port No.	Port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the optical power received (OPR) establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.
Physical Thresh 1 Day	
Port No.	Port number.
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.
Alarm Threshold	
Port No.	Port number.

Table D-299 Field Descriptions for the Line Properties Pane

Subfield	Description
LBC-HIGH	Maximum laser bias current. The default is (15 min): 150 percent.
LBC-LOW	Minimum laser bias current. The default is (15 min): 50 percent.
OPT-HIGH	Maximum optical power transmitted. The default is (15 min): 120 percent.
OPT-LOW	Minimum optical power transmitted. The default is (15 min): 80 percent.
OPR-HIGH	Maximum optical power received. The default is (15 min): 200 percent.
OPR-LOW	Minimum optical power received. The default is (15 min): 50 percent.
Set OPR	Setting the OPR establishes the received power level as 100 percent. If the receiver power decreases, then the OPR percentage decreases to reflect the loss in receiver power. For example, if the receiver power decreases 3 dBm, the OPR decreases 50 percent.

D.4.24.4 STS

The STS Properties pane allows you to view and update OC192_4_DWDM STS information. The STS Properties pane contains the following tabs:

- D.4.24.4.1 STS Config Tab, page D-223
- D.4.24.4.2 Path Thresh 15 Min Tab, page D-223
- D.4.24.4.3 Path Thresh 1 Day Tab, page D-224
- D.4.24.4.4 Customer Info Tab, page D-225

D.4.24.4.1 STS Config Tab

The STS Config tab allows you to view and change the STS settings of the OC192_4_DWDM card.

Table D-300 Field Descriptions for the STS Config Tab

Field	Description
STS Number	Displays the synchronous transport signal number information.
IPPM Enabled	Check to enable IPPM and uncheck to disable IPPM.
XC Loopback	Displays the cross-connect loopback status.

D.4.24.4.2 Path Thresh 15 Min Tab

The Path Thresh 15 Min tab allows you to view and change the 15-minute path thresholds of the OC192_4_DWDM card.

Table D-301 Field Descriptions for the Path Thresh 15 Min Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.

Table D-301 Field Descriptions for the Path Thresh 15 Min Tab (continued)

Field	Description
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.
PPJC-Pdet	Displays positive pointer justification count, STS path detected.
NPJC-Pdet	Displays negative pointer justification count, STS path detected.
PPJC-Pgen	Displays positive pointer justification count, STS path generated.
NPJC-Pgen	Displays negative pointer justification count, STS path generated.
Far End	
STS No	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
FC-P	Displays failure count–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.

D.4.24.4.3 Path Thresh 1 Day Tab

The Path Thresh 1 Day tab allows you to view and change the 1-day path thresholds of the OC192_4_DWDM card.

Table D-302 Field Descriptions for the Path Thresh 1 Day Tab

Field	Description
Near End	
STS Number	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.
FC-P	Displays failure count–path information.
PPJC-Pdet	Displays positive pointer justification count, STS path detected.
NPJC-Pdet	Displays negative pointer justification count, STS path detected.
PPJC-Pgen	Displays positive pointer justification count, STS path generated.
NPJC-Pgen	Displays negative pointer justification count, STS path generated.
Far End	
STS No	Displays the synchronous transport signal number information.
CV-P	Displays coding violations–path information.
ES-P	Displays errored seconds–path information.
FC-P	Displays failure count–path information.

Table D-302 Field Descriptions for the Path Thresh 1 Day Tab (continued)

Field	Description
SES-P	Displays severely errored seconds–path information.
UAS-P	Displays unavailable seconds–path information.

D.4.24.4.4 Customer Info Tab

The Customer Info tab allows you to view the customer information.

Table D-303 Field Descriptions for the Customer Info Tab

Field	Description
STS No.	The STS number.
Customer ID	The user-defined customer ID number.
Service ID	The user-defined service ID number.

D.4.24.5 Loopback

The Loopback Properties pane allows you to view and update OC192_4_DWDM loopback information.

Table D-304 Field Descriptions for the Loopback Properties Pane

Field	Description
Port Number	Displays the port number.
Admin State	Shows the administrative state of the port: In Service (IS), Out of Service–Disabled (OOS, DSBLD), or Out of Service–Maintenance (OOS_MT).
Loopback Type	Allows you to configure a port to terminal loopback (Inward) or Facility (Line), or clear the current loopback (None). **Note** The line state must be OOS_MT before you can configure the loopback type.
Service State	An autonomously generated state that gives the overall condition of the entity. Service states appear in the format *Administrative_State-Operational_State*, *Status_Attribute*.

D.4.24.6 Transceiver

The Transceiver Properties pane allows you to view and update OC192_4_DWDM transceiver information.

Table D-305 Field Descriptions for the Transceiver Properties Pane

Field	Description
Port No.	Port No. Port number 1–14.
Non-normalized LBC (mA)	The actual operating value of laser bias current (in mA) for the specified card port.
Non-normalized OPT (dBm)	The actual operating value of optical power transmitted (in dBm) for the specified card port.
Non-normalized OPR (dBm)	The actual operating value of optical power received (in dBm) for the specified card port.

D.4.24.7 Protection

The Protection Properties pane allows you to view and update OC192_4_DWDM protection group information.

Table D-306 Field Descriptions for the Protection Properties Pane

Field	Description
Protection Groups	Displays a list of available protection groups.
Protection Group Details	Displays details about the selected protection group.

D.4.24.8 Alarm Behavior

The Alarm Behavior Properties pane allows you to view and update OC192_4_DWDM alarm profile information.

Table D-307 Field Descriptions for the Alarm Behavior Properties Pane

Field	Description
Alarm Profile	Displays the alarm profile that has been configured for the card.
Suppress Alarms	When checked, indicates that all alarms are suppressed for the card.
Port Number	Displays the card port number.
Alarm Profile	Choose an alarm profile for the port from the drop-down list. Values are Default, Inherited, or a customized alarm profile.
Suppress Alarms	When checked, all alarms are suppressed for the port.
Alarm Profile	Choose an alarm profile for all ports.
Force to All Ports	When clicked, forces all the ports to the selected alarm profile.

D.4.24.9 J1 Path Trace

The J1 Path Trace Properties pane allows you to view and retrieve OC192_4_DWDM path trace information.

Table D-308 Field Descriptions for the J1 Path Trace Properties Pane

Column	Description
Port Number	Displays the port number.
STS Number	Displays the STS number.
Expected String	Displays the current expected string.
Received String	Displays the current received string.
Mode	Displays the path trace mode (Off/None, Auto, or Manual).
C2	Represents a machine-generated J1/J2 payload label byte.
Display	Click the **Display** button to view the circuit trace information. See 7.2.20.7 Viewing a J1 Path Trace from the NE Explorer, page 7-173 for more information.
Retrieve	Click the **Retrieve** button to retrieve J1 path trace information.

D.4.24.10 Info

The Info Properties pane allows you to view nominal operating values set during manufacturing for the OC192_4_DWDM card.

Table D-309 Field Descriptions for the Info Properties Pane

Field	Description
Attribute	Displays the nominal card specification.
Value	Displays the value of the attribute.

D.4.24.11 Section Trace

The Section Trace Properties pane allows you to change the section trace settings for the OC192_4_DWDM card.

Table D-310 Field Descriptions for the Section Trace Properties Pane

Field	Description
Port Number	Displays the port number.
Trace Mode	The trace mode (Off/None or Manual).
Disable AIS/RDI on TIM-S	Allows you to disable the Alarm Indication Signal (AIS) and the Remote Defect Indication (RDI) when the path Trace Identifier Mismatch Section (TIM-S) alarm is detected.
Transmit Length	Select a transmit length for the trace.
Current Transmit String	Displays the current transmit string. The trail trace identifier is 64 bytes in length.
Current Expected String	Displays the current expected string; sets a new expected string.
Current Received String	Displays the current received string.

Note See Table 1-22 on page 1-48 for descriptions of actions that you can perform using the buttons at the bottom of the window.

Performance Data

This appendix describes the performance management (PM) tables that are available in Cisco Prime Optical. This appendix includes the following sections:

- E.1 ONS 15305-Specific PM Tables, page E-1
- E.2 PM Tables for CTC-Based NEs, page E-9
- E.3 ONS 15530 and ONS 15540 PM Tables, page E-205

Note PM data collection is not available for the ONS 15216.

E.1 ONS 15305-Specific PM Tables

This section describes the PM tables that are specific to ONS 15305 NEs.

E.1.1 Overview of Supported PM Parameters

ONS 15305 PM parameters are available on any of the following cards:

- S1.1-2-LC
- S1.1-8-LC
- S4.1-2-LC
- S4.1-4-LC
- S16.1-1-LC
- GE-1-LC
- GE-2-LC
- E100-8
- E3T3-6
- E1-8
- E1-21
- E1-63

- L4.2-2-LC
- L16.2-1LC
- S1.1-2-LC/E1-21
- 2xGE+MAP
- 8xFE+MAP

E.1.1.1 Edge SDH

Table E-1 to Table E-7 list all the ONS 15305 Edge SDH PM parameters with the corresponding description and a list of cards supported.

Table E-1 Regenerator Section PM Parameters—Near End

Parameter	Description	ONS 15305 Cards Supported
RS-SES	Regenerator section—severely errored seconds (near end)	S1.1-2-LC, S1.1-8-LC, S4.1-2-LC, S4.1-4-LC, S16.1-1-LC, L4.2-2-LC, L16.2-1LC, S1.1-2-LC/E1-21
RS-BBE	Regenerator section—background block errors (near end)	
RS-ES	Regenerator section—errored seconds (near end)	
RS-UAS	Regenerator section—unavailable seconds (near end)	

Table E-2 Multiplex Section PM Parameters—Near End

Parameter	Description	ONS 15305 Cards Supported
MS-BBE	Multiplex section—background block errors (near end)	S1.1-2-LC, S1.1-8-LC, S4.1-2-LC, S4.1-4-LC, S16.1-1-LC, L4.2-2-LC, L16.2-1LC, S1.1-2-LC/E1-21
MS-ES	Multiplex section—errored seconds (near end)	
MS-SES	Multiplex section—severely errored seconds (near end)	
MS-UAS	Multiplex section—unavailable seconds (near end)	

Table E-3 Multiplex Section PM Parameters—Far End

Parameter	Description	ONS 15305 Cards Supported
MS-BBE	Multiplex section—background block errors (far end)	S1.1-2-LC, S1.1-8-LC, S4.1-2-LC, S4.1-4-LC, S16.1-1-LC, L4.2-2-LC, L16.2-1LC, S1.1-2-LC/E1-21
MS-ES	Multiplex section—errored seconds (far end)	
MS-SES	Multiplex section—severely errored seconds (far end)	
MS-UAS	Multiplex section—unavailable seconds (far end)	

Table E-4 Higher-Order Virtual Container PM Parameters—Near End

Parameter	Description	ONS 15305 Cards Supported
HP-BBE	High-order path—background block errors (near end)	S1.1-2-LC,S1.1-8-LC, S4.1-2-LC, S4.1-4-LC, S16.1-1-LC, L4.2-2-LC, L16.2-1LC, S1.1-2-LC/E1-21
HP-ES	High-order path—errored seconds (near end)	
HP-SES	High-order path—severely errored seconds (near end)	
HP-UAS	High-order path—unavailable seconds (near end)	

Table E-5 Higher-Order Virtual Container PM Parameters—Far End

Parameter	Description	ONS 15305 Cards Supported
HP-BBE	High-order path—background block errors (far end)	S1.1-2-LC,S1.1-8-LC, S4.1-2-LC, S4.1-4-LC, S16.1-1-LC, L4.2-2-LC, L16.2-1LC, S1.1-2-LC/E1-21
HP-ES	High-order path—errored seconds (far end)	
HP-SES	High-order path—severely errored seconds (far end)	
HP-UAS	High-order path—unavailable seconds (far end)	

Table E-6 Lower-Order Virtual Container PM Parameters—Near End

Parameter	Description	ONS 15305 Cards Supported
LP-BBE	Low-order path—background block errors (near end)	S1.1-8-LC, E3T3-6(3), E1-8(1), E1-21(1), E1-63(1), S1.1-2-LC/E1-21(1)
LP-ES	Low-order path—errored seconds (near end)	
LP-SES	Low-order path—severely errored seconds (near end)	
LP-UAS	Low-order path—unavailable seconds (near end)	

Table E-7 Lower-Order Virtual Container PM Parameters—Far End

Parameter	Description	ONS 15305 Cards Supported
LP-BBE	Low-order path—background block errors (far end)	S1.1-8-LC, E3T3-6(3), E1-8(1), E1-21(1), E1-63(1), S1.1-2-LC/E1-21(1)
LP-ES	Low-order path—errored seconds (far end)	
LP-SES	Low-order path—severely errored seconds (far end)	
LP-UAS	Low-order path—unavailable seconds (far end)	

E.1.1.2 Edge Statistics

The following table lists all the ONS 15305 PM parameters with the corresponding description and a list of cards supported.

Table E-8 Statistics PM Parameters—DCC/WAN/LAN

Parameter	Description	ONS 15305 Cards Supported
RxUnicPkt	Number of inbound subnetwork/unicast packets.	S1.1-2-LC, S1.1-8-LC, S4.1-2-LC, S4.1-4-LC, S16.1-1-LC, L4.2-2-LC, L16.2-1LC, S1.1-2-LC/E1-21, GE-1-LC(2), GE-2-LC(2), E100-8(2), 2xGE+MAP(2), 8xFE+MAP(2)
RxDiscards	Number of inbound discarded packets.	
RxErr	Number of erroneous inbound packets.	
RxBytes	Number of received bytes.	
TxBytes	Number of transmitted bytes.	
RxNotUnicPkt	Number of inbound not unicast packets.	
IfInUnknownProtos	Number of discarded packets because of unknown protocol.	
TxUnicPkt	Number of requested subnetwork/unicast packets.	
TxNotUnicPkt	Number of requested not unicast packets.	
TxDiscards	Number of discarded packets—free buffer space.	
TxErr	Number of erroneous outbound packets.	
RxMultPkt	Number of inbound multicast packets.	
RxBroadPkt	Number of inbound broadcast packets.	
TxMultPkt	Number of outbound multicast packets.	
TxBroadPkt	Number of outbound broadcast packets.	

E.1.2 Edge Statistics DCC PM Table

The Edge Statistics DCC PM table shows 15-minute and 1-day data communications channel (DCC) edge statistics performance data for the ONS 15305. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Edge Statistics DCC PM table.

Table E-9 Field Descriptions for the Edge Statistics DCC PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Module Name	Module for which PM data is displayed.
Physical Location	Slot and port number for which PM data is displayed.
Interface	Interface name of the selected NE.

Table E-9 Field Descriptions for the Edge Statistics DCC PM Table (continued)

Field	Description
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.
Rx Unic Pkt	Number of inbound subnetwork/unicast packets.
Rx Discards	Number of inbound discarded packets.
Rx Err	Number of inbound errored packets.
Rx Bytes	Number of received bytes.
Tx Bytes	Number of bytes transmitted since the last counter reset.
Rx Not Unic Pkt	Number of inbound not unicast packets.
Rx Unknown	Number of discarded packets due to unknown protocol.
Tx Unic Pkt	Number of requested subnetwork/unicast packets.
Tx Not Unic Pkt	Number of requested not unicast packets.
Tx Discards	Number of discarded packets with free buffer space.
Tx Err	Number of outbound errored packets.
Rx Mult Pkt	Number of inbound multicast packets.
Rx Broad Pkt	Number of inbound broadcast packets.
Tx Mult Pkt	Number of multicast frames transmitted error free.
Tx Broad Pkt	Total number of packets that higher-level protocols requested be transmitted, and which were addressed to a broadcast address at this sublayer, including those that were discarded or not sent.
NE ID	Name of the selected NE.

E.1.3 Edge Statistics LAN PM Table

The Edge Statistics LAN PM table shows 15-minute and 1-day LAN edge statistics performance data for the ONS 15305. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Edge Statistics LAN PM table.

Table E-10 Field Descriptions for the Edge Statistics LAN PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Module Name	Module for which PM data is displayed.
Physical Location	Slot and port number for which PM data is displayed.
Interface	Interface name of the selected NE.
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.

Table E-10 Field Descriptions for the Edge Statistics LAN PM Table (continued)

Field	Description
Rx Unic Pkt	Number of inbound subnetwork/unicast packets.
Rx Discards	Number of inbound discarded packets.
Rx Err	Number of inbound errored packets.
Rx Bytes	Number of received bytes.
Tx Bytes	Number of bytes transmitted since the last counter reset.
Rx Not Unic Pkt	Number of inbound not unicast packets.
Rx Unknown	Number of discarded packets due to unknown protocol.
Tx Unic Pkt	Number of requested subnetwork/unicast packets.
Tx Not Unic Pkt	Number of requested not unicast packets.
Tx Discards	Number of discarded packets with free buffer space.
Tx Err	Number of outbound errored packets.
Rx Mult Pkt	Number of inbound multicast packets.
Rx Broad Pkt	Number of inbound broadcast packets.
Tx Mult Pkt	Number of multicast frames transmitted error free.
Tx Broad Pkt	Total number of packets that higher-level protocols requested be transmitted, and which were addressed to a broadcast address at this sublayer, including those that were discarded or not sent.
NE ID	Name of the selected NE.

E.1.4 Edge Statistics WAN PM Table

The Edge Statistics WAN PM table shows 15-minute and 1-day WAN edge statistics performance data for the ONS 15305. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Edge Statistics WAN PM table.

Table E-11 Field Descriptions for the Edge Statistics WAN PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Module Name	Module for which PM data is displayed.
Physical Location	Slot and port number for which PM data is displayed.
Interface	Interface name of the selected NE.
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.
Rx Unic Pkt	Number of inbound subnetwork/unicast packets.
Rx Discards	Number of inbound discarded packets.
Rx Err	Number of inbound errored packets.

Table E-11 Field Descriptions for the Edge Statistics WAN PM Table (continued)

Field	Description
Rx Bytes	Number of received bytes.
Tx Bytes	Number of bytes transmitted since the last counter reset.
Rx Not Unic Pkt	Number of inbound not unicast packets.
Rx Unknown	Number of discarded packets due to unknown protocol.
Tx Unic Pkt	Number of requested subnetwork/unicast packets.
Tx Not Unic Pkt	Number of requested not unicast packets.
Tx Discards	Number of discarded packets with free buffer space.
Tx Err	Number of outbound errored packets.
Rx Mult Pkt	Number of inbound multicast packets.
Rx Broad Pkt	Number of inbound broadcast packets.
Tx Mult Pkt	Number of multicast frames transmitted error free.
Tx Broad Pkt	Total number of packets that higher-level protocols requested be transmitted, and which were addressed to a broadcast address at this sublayer, including those that were discarded or not sent.
NE ID	Name of the selected NE.

E.1.5 Edge SDH High Order VC PM Table

The Edge SDH High Order VC PM table shows near- and far-end 15-minute and 1-day SDH high-order Virtual Container (VC) performance data for the ONS 15305. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Edge SDH High Order VC PM table.

Table E-12 Field Descriptions for the Edge SDH High Order VC PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Module Name	Module for which PM data is displayed.
Physical Location	Slot and port number for which PM data is displayed.
Interface	Interface name of the selected NE.
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.
HP BBE	High path section background block errors.
HP ES	High path section errored seconds.
HP SES	High path section severely errored seconds.
HP UAS	High path section unavailable seconds.
NE ID	Name of the selected NE.

E.1.6 Edge SDH Low Order VC PM Table

The Edge SDH Low Order VC PM table shows near- and far-end 15-minute and 1-day SDH low-order VC performance data for the ONS 15305. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Edge SDH Low Order VC PM table.

Table E-13 Field Descriptions for the Edge SDH Low Order VC PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Module Name	Module for which PM data is displayed.
Physical Location	Slot and port number for which PM data is displayed.
Interface	Interface name of the selected NE.
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.
LP BBE	Low path background block errors.
LP ES	Low path errored seconds.
LP SES	Low path severely errored seconds.
LP UAS	Low path unavailable seconds.
NE ID	Name of the selected NE.

E.1.7 Edge SDH Multiplex Section PM Table

The Edge SDH Multiplex Section PM table shows near- and far-end 15-minute and 1-day SDH multiplex section performance data for the ONS 15305. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Edge SDH Multiplex Section PM table.

Table E-14 Field Descriptions for the Edge SDH Multiplex Section PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Module Name	Module for which PM data is displayed.
Physical Location	Slot and port number for which PM data is displayed.
Interface	Interface name of the selected NE.
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.
MS BBE	Multiplex section background block errors.

Table E-14 Field Descriptions for the Edge SDH Multiplex Section PM Table (continued)

Field	Description
MS ES	Multiplex section errored seconds.
MS SES	Multiplex section severely errored seconds.
MS UAS	Multiplex section unavailable seconds.
NE ID	Name of the selected NE.

E.1.8 Edge SDH Regenerator Section PM Table

The Edge SDH Regenerator Section PM table shows 15-minute and 1-day SDH regenerator section performance data for the ONS 15305. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Edge SDH Regenerator Section PM table.

Table E-15 Field Descriptions for the Edge SDH Regenerator Section PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Module Name	Module for which PM data is displayed.
Physical Location	Slot and port number for which PM data is displayed.
Interface	Interface name of the selected NE.
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.
RS BBE	Regenerator section background block errors.
RS ES	Regenerator section errored seconds.
RS SES	Regenerator section severely errored seconds.
RS UAS	Regenerator section unavailable seconds.
NE ID	Name of the selected NE.

E.2 PM Tables for CTC-Based NEs

This section describes the PM tables that are specific to the CTC-based NEs: ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MS SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, and ONS 15600 SDH.

Note Performance management for the CTC-based ONS 15305 R3.0 is similar to the performance management for the non-CTC-based ONS 15305. See E.1 ONS 15305-Specific PM Tables, page E-1.

For CTC-based NEs, each 15-minute or 1-day PM table has a corresponding real-time PM table that allows you to examine the current value of a PM parameter in granularities finer than 15 minutes or 1 day. Not all of the fields in the historical PM tables are shown in the real-time PM tables. The first fields in real-time PM tables are NE ID, Module Name, Physical Location, Interface, Time Stamp, and Validity; the remaining fields are the actual real-time attributes being polled. The Validity column indicates whether the data in the entry is valid: "true" indicates that the entry is valid; "false" indicates that the entry is invalid.

The following conventions apply to PM tables for CTC-based NEs:

- Invalidity in the historical PM table is shown with the corresponding table cell rendered gray and marked with an asterisk (*).

  Note Real-time PM tables do not support invalidity coloring.

- Threshold crossing alerts (TCAs) for a specific statistic in a particular row in the historical PM table are indicated with a purple rendering for the corresponding cell.

  Note Real-time PM tables do not support TCAs.

- Fields that are not applicable for a particular module in a given PM table are indicated by displaying *N/A* (not applicable) in the corresponding table cell.
- 1-day PM data is collected at 00:00 hours Greenwich Mean Time (GMT) (time on the Prime Optical server host).
- For release 4.0 and later NEs, PM data collected for cards that are preprovisioned and not physically present on a slot are indicated by the symbol *ENEQ* displayed for the corresponding table cell.

Note For an RTPM query for remote NEs, select the slot number and port number required for a PM query (do not select slot *All* and port *All*).

Note The PM parameters that Prime Optical supports for CTC-based NEs are also supported by Prime Optical GateWay/CORBA.

E.2.1 8B10B PM Table—ONS 15454 SONET, ONS 15454 SDH

The 8B10B PM table shows performance data for ONS 15454 SONET and ONS 15454 SDH DWDM cards that support Fibre Channel (FC) or Gigabit Ethernet payloads. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.

- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the 8B10B PM table.

Table E-16 Field Descriptions for the 8B10B PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Data Payload	The payload provisioned on the client port of the card.	• ONS 15454 SONET: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME • ONS 15454 SDH: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME
Valid Packets	Number of received packets that contain nonerrored data code groups that have start and end delimiters. This parameter applies to the FC and Gigabit Ethernet payload configured on the TXPP_MR_2.5G and TXP_MR_2.5G cards.	• ONS 15454 SONET: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME • ONS 15454 SDH: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME
Invalid Packets	Number of received packets that contain errored data code groups that have start and end delimiters. This parameter applies to the FC and Gigabit Ethernet payload configured on the TXPP_MR_2.5G and TXP_MR_2.5G cards.	• ONS 15454 SONET: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME • ONS 15454 SDH: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME
Code Group Violations	Number of received code groups that do not contain a start or end delimiter. This parameter applies to the FC and Gigabit Ethernet payload configured on the TXPP_MR_2.5G and TXP_MR_2.5G cards.	• ONS 15454 SONET: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME • ONS 15454 SDH: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME
Idle Ordered Sets	Number of received packets containing idle ordered sets. This parameter applies to the FC and Gigabit Ethernet payload configured on the TXPP_MR_2.5G and TXP_MR_2.5G cards.	• ONS 15454 SONET: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME • ONS 15454 SDH: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME

Table E-16 Field Descriptions for the 8B10B PM Table (continued)

Field	Description	Cards Supported
Non-idle Ordered Sets	Number of received packets containing nonidle ordered sets. This parameter applies to the FC and Gigabit Ethernet payload configured on the TXPP_MR_2.5G and TXP_MR_2.5G cards.	• ONS 15454 SONET: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME • ONS 15454 SDH: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME
Data Code Groups	Number of received data code groups that do not contain ordered sets. This parameter applies to the FC and Gigabit Ethernet payload configured on the TXPP_MR_2.5G and TXP_MR_2.5G cards.	• ONS 15454 SONET: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME • ONS 15454 SDH: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME
Stats Encoding DispErrors	Number of encoding disparity errors received at the port.	• ONS 15454 SONET: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME • ONS 15454 SDH: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME
Data Ordered Sets	Number of received packets containing data ordered sets.	• ONS 15454 SONET: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME • ONS 15454 SDH: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME
rxTotalPackets	Total number of packets received.	• ONS 15454 SONET: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME • ONS 15454 SDH: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME
ifInErrors	Total number of errors received.	• ONS 15454 SONET: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME • ONS 15454 SDH: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME
Invalid Ordered Sets	Number of invalid ordered sets received at this port.	• ONS 15454 SONET: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME • ONS 15454 SDH: TXP_MR_2.5G, TXPP_MR_2.5G, MXP_MR_10DME
Invalid Ordered Sets Disp Errors Sum	Sum of invalid ordered sets of encoding disparity errors received at this port.	• ONS 15454 SONET: MXP_MR_10DME • ONS 15454 SDH: MXP_MR_10DME
rx8b10bWords	Number of code violations/running disparity errors in the 8b/10b encoded characters received.	• ONS 15454 SONET: AR_MXP, AR_XP, AR_XPE • ONS 15454 SDH: AR_MXP, AR_XP, AR_XPE
tx8b10bWords	Number of code violations/running disparity errors in the 8b/10b encoded characters transmitted.	• ONS 15454 SONET: AR_MXP, AR_XP, AR_XPE • ONS 15454 SDH: AR_MXP, AR_XP, AR_XPE
NE ID	Name of the selected NE.	—

E.2.2 ESCON PM Table—ONS 15454 SONET, ONS 15454 SDH

The ESCON PM table shows performance data for ONS 15454 SONET and ONS 15454 SDH DWDM cards that support ESCON payload. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the ESCON PM table.

Table E-17 Field Descriptions for the ESCON PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Stats Last Cleared Time	When the statistics were last reset.	ONS 15454 SONET and ONS 15454 SDH: 2.5G_DM, 2.5G_DMP
ifInOctets	Number of bytes received since the last counter reset.	ONS 15454 SONET and ONS 15454 SDH: 2.5G_DM, 2.5G_DMP
rxTotalPkts	Number of packets received since the last counter reset.	ONS 15454 SONET and ONS 15454 SDH: 2.5G_DM, 2.5G_DMP
ifInDiscards	Number of inbound packets that were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol.	ONS 15454 SONET and ONS 15454 SDH: 2.5G_DM, 2.5G_DMP
ifInErrors	Total number of received errors.	ONS 15454 SONET and ONS 15454 SDH: 2.5G_DM, 2.5G_DMP
ifOutOctets	Number of bytes transmitted since the last counter reset.	ONS 15454 SONET and ONS 15454 SDH: 2.5G_DM, 2.5G_DMP

Table E-17 Field Descriptions for the ESCON PM Table (continued)

Field	Description	Cards Supported
txTotalPkts	Number of packets transmitted since the last counter reset.	ONS 15454 SONET and ONS 15454 SDH: 2.5G_DM, 2.5G_DMP
ifOutDiscards	Number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent their being transmitted.	ONS 15454 SONET and ONS 15454 SDH: 2.5G_DM, 2.5G_DMP
mediaIndStatsRxFrameBadCRC	Number of received data frames with payload CRC errors when HDLC framing is used.	ONS 15454 SONET and ONS 15454 SDH: 2.5G_DM, 2.5G_DMP
mediaIndStatsRxLcvErrors	Number of L1 line code violations received for constant bit rate protocols that equate to invalid 8b10b ordered sets.	• ONS 15454 SONET: AR_MXP, AR_XP • ONS 15454 SDH: AR_MXP, AR_XP
mediaIndStatsTxLcvErrors	Number of L1 line code violations transmitted for constant bit rate protocols that equate to invalid 8b10b ordered sets.	• ONS 15454 SONET: AR_MXP, AR_XP • ONS 15454 SDH: AR_MXP, AR_XP
Rx Utilization (%)	Received utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	ONS 15454 SONET and ONS 15454 SDH: 2.5G_DM, 2.5G_DMP
Tx Utilization (%)	Transmitted utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	ONS 15454 SONET and ONS 15454 SDH: 2.5G_DM, 2.5G_DMP
NE ID	Name of the selected NE.	—

E.2.3 CoS PM Table—ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH

The CoS PM table shows Class of Service (CoS) performance data for the ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH ML-series cards. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the CoS PM table.

Table E-18 Field Descriptions for the CoS PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Interface Name	Name of the interface.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000 • ONS 15454 SDH: ML100T, ML1000
Interface Direction	Input or output direction of the interface.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000 • ONS 15454 SDH: ML100T, ML1000
Class of Service Level	CoS level. The level ranges from 0 to 7.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000 • ONS 15454 SDH: ML100T, ML1000

Table E-18 Field Descriptions for the CoS PM Table (continued)

Field	Description	Cards Supported
Post Policy Packets	Packet count after executing QoS policies.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000 • ONS 15454 SDH: ML100T, ML1000
Post Policy Bytes	Octet count after executing QoS policies.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000 • ONS 15454 SDH: ML100T, ML1000
Drop Packets	Dropped packet count as the result of all QoS features that can produce drops.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000 • ONS 15454 SDH: ML100T, ML1000
Drop Bytes	Dropped octet count as the result of all QoS features that can produce drops.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000 • ONS 15454 SDH: ML100T, ML1000
NE ID	Name of the selected NE.	—

E.2.4 DS1 PM Table (Far End)

The DS1 PM table shows far-end DS-1 performance data. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the DS1 PM table.

Table E-19 Field Descriptions for the DS1 PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
CV-P (Rx)	Coding violations–path.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM_12
ES-P (Rx)	Errored seconds–path.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM_12

Table E-19 Field Descriptions for the DS1 PM Table (Far End) (continued)

Field	Description	Cards Supported
ESA-P (Rx)	Errored seconds type A–path.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM_12
ESB-P (Rx)	Errored seconds type B–path.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM_12
SES-P (Rx)	Severely errored seconds–path.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM_12
SEFS-P (Rx)	Severely errored frame seconds–path.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM_12
CSS-P (Rx)	Controlled slip seconds–path.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM_12

Table E-19 Field Descriptions for the DS1 PM Table (Far End) (continued)

Field	Description	Cards Supported
UAS-P (Rx)	Unavailable seconds–path.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM_12
FC-P (Rx)	Failure count–path.	• ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15454 SONET: DS1_E1_56
ES-L (Rx)	Errored seconds–line.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56
ESR-P	Received path errored seconds ratio is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	—
SESR-P	Received path severely errored seconds ratio is the ratio of SES to total seconds in available time during a fixed measurement interval.	—
ESNE-NP	Network performance errored seconds during a fixed measurement interval for near end.	• ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15454 SONET: DS1_E1_56, DS3XM_12
SESNE-NP	Network performance severely errored seconds during a fixed measurement interval for near end.	• ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15454 SONET: DS1_E1_56, DS3XM_12
UASNE-NP	Network performance unavailable seconds during a fixed measurement interval for near end.	• ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15454 SONET: DS1_E1_56, DS3XM_12

Table E-19 Field Descriptions for the DS1 PM Table (Far End) (continued)

Field	Description	Cards Supported
ESFE-NP	Network performance errored seconds during a fixed measurement interval for far end.	• ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15454 SONET: DS1_E1_56, DS3XM_12
SESFE-NP	Network performance severely errored seconds during a fixed measurement interval for far end.	• ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15454 SONET: DS1_E1_56, DS3XM_12
UASFE-NP	Network performance unavailable seconds during a fixed measurement interval for far end.	• ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15454 SONET: DS1_E1_56, DS3XM_12
NE ID	Name of the selected NE.	—

E.2.5 DS1 PM Table

The DS1 PM table contains PM information at the line layer. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the DS1 PM table.

Table E-20 Field Descriptions for the DS1 PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—

Table E-20 Field Descriptions for the DS1 PM Table (continued)

Field	Description	Cards Supported
Time Stamp	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
CV-L	CV-L indicates the number of coding violations occurring on the line. This parameter is a count of BPVs and EXZs occurring over the accumulation period.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56
ES-L	ES-L is a count of the seconds containing one or more anomalies (BPV + EXZ) and/or defects (loss of signal) on the line.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56
SES-L	SES-L is a count of the seconds containing more than a particular quantity of anomalies (BPV + EXZ > 1544) and/or defects on the line.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56
LOSS-L	LOSS-L is a count of one-second intervals containing one or more LOS defects.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56
CV-P (Rx)	Received path coding violation (Rx CV-P) means that a coding violation occurred on the received end of the path.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56

Table E-20 Field Descriptions for the DS1 PM Table (continued)

Field	Description	Cards Supported
ES-P (Rx)	Received path errored seconds (Rx ES-P) is a count of the seconds containing one or more anomalies and/or defects for paths on the received end of the signal.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM, DS3XM_12
SES-P (Rx)	Received path severely errored seconds (Rx SES-P) is a count of the seconds containing more than a particular quantity of anomalies and/or defects for paths on the received end of the signal.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM, DS3XM_12
SAS-P (Rx)	Received path severely errored seconds frame/alarm indication signal (Rx SAS-P) is a count of one-second intervals containing one or more SEFs or one or more AIS defects on the received end of the signal.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM, DS3XM_12
UAS-P (Rx)	Received path unavailable seconds (Rx UAS-P) is a count of one-second intervals when the DS-1 path is unavailable on the received end of the signal. The DS-1 path is unavailable when ten consecutive SESs occur. The ten SESs are included in unavailable time. Once unavailable, the DS-1 path becomes available when ten consecutive seconds occur with no SESs. The ten seconds with no SESs are excluded from unavailable time.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM, DS3XM_12
AISS-P (Rx)	Received path alarm indication signal seconds (Rx AISS-P) means an alarm indication signal occurred on the received end of the path. This parameter is a count of seconds containing one or more AIS defects.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM, DS3XM_12

Table E-20 Field Descriptions for the DS1 PM Table (continued)

Field	Description	Cards Supported
FC-P (Rx)	Failure count–near-end path.	• ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM_12
CV-P (Tx)	Transmitted path coding violation (Tx CV-P) means that a coding violation occurred on the transmitted end of the path. For DS-1 ESF paths, this parameter is a count of detected CRC-6 errors.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56
ES-P (Tx)	Transmitted path errored seconds (Tx ES-P) is a count of the seconds containing one or more anomalies and/or defects for paths on the transmitted end of the signal.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56
SES-P (Tx)	Transmitted path severely errored seconds (Tx SES-P) is a count of the seconds containing more than a particular quantity of anomalies and/or defects for paths on the transmitted end of the signal.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56
SAS-P (Tx)	Transmitted path severely errored seconds frame/alarm indication signal (Tx SAS-P) is a count of one-second intervals containing one or more severely errored framing seconds (SEFS) or one or more AIS defects on the transmitted end of the signal.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56
UAS-P (Tx)	Transmitted path unavailable seconds (Tx UAS-P) is a count of one-second intervals when the DS-1 path is unavailable on the transmitted end of the signal. The DS-1 path is unavailable when ten consecutive SESs occur. The ten SESs are included in unavailable time. Once unavailable, the DS-1 path becomes available when ten consecutive seconds occur with no SESs. The ten seconds with no SESs are excluded from unavailable time.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56

Table E-20 Field Descriptions for the DS1 PM Table (continued)

Field	Description	Cards Supported
AISS-P (Tx)	Transmitted path alarm indication signal seconds (Tx AISS-P) means that an alarm indication signal occurred on the transmitted end of the path. This parameter is a count of seconds containing one or more AIS defects.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56
FC-P (Tx)	Failure count–near-end path.	• ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM_12
NE ID	Name of the selected NE.	—

E.2.6 DS3 PM Table

The DS3 PM table contains PM information at the DS-3 layer. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the DS3 PM table.

Table E-21 Field Descriptions for the DS3 PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—

Table E-21 Field Descriptions for the DS3 PM Table (continued)

Field	Description	Cards Supported
Time Stamp	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
CV-L	Number of coding violations (CVs) occurring on the line. This parameter is a count of BPVs and EXZs occurring over the accumulation period.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15327: XTC • ONS 15454 SONET: DS-3, DS3E, DS3_EC1_48, DS3I, DS3N, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
ES-L	Number of seconds containing one or more anomalies (BPVs + EXZs) and/or defects (loss of signal [LOS]) on the line.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15327: XTC • ONS 15454 SONET: DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS3N, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
SES-L	Number of seconds containing more than a particular quantity of anomalies (BPV + EXZ > 1544) and/or defects on the line.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15327: XTC • ONS 15454 SONET: DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS3N, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN

Table E-21 Field Descriptions for the DS3 PM Table (continued)

Field	Description	Cards Supported
LOSS-L	Number of one-second intervals containing one or more LOS defects.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15327: XTC • ONS 15454 SONET: DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS3N, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
AISSP-PBIT	Number of alarm indication signal seconds (AISS) encountered by a DS-3 interface in the parity bit (PBIT) of the interface in the interval. The PBIT is the bit position at the beginning of the third and fourth subframes, which contains parity information. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
CVP-PBIT	Number of coding violations encountered by a DS-3 interface in the PBIT of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
ESP-PBIT	Number of errored seconds encountered by a DS-3 interface in the PBIT of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN

Table E-21 Field Descriptions for the DS3 PM Table (continued)

Field	Description	Cards Supported
SESP-PBIT	Number of severely errored seconds (SES) encountered by a DS-3 interface in the PBIT of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
SASP-PBIT	Number of severely alarmed seconds (SAS) encountered by a DS-3 interface in the PBIT of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
UASP-PBIT	Number of unavailable seconds (UAS) encountered by a DS-3 interface in the PBIT of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
CVP (C-bit)	Number of coding violations encountered by a DS-3 interface in the C-bit of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN

Table E-21 Field Descriptions for the DS3 PM Table (continued)

Field	Description	Cards Supported
ESP (C-bit)	Number of errored seconds encountered by a DS-3 interface in the C-bit of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
SESP (C-bit)	Number of SESs encountered by a DS-3 interface in the C-bit of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
SASP (C-bit)	Number of severely alarmed seconds encountered by a DS-3 interface in the C-bit of the interface in the interval. This is a path variable.	• ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3_EC1_48
UASP (C-bit)	Number of unavailable seconds encountered by a DS-3 interface in the C-bit of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
NE ID	Name of the selected NE.	—

E.2.7 DS3 and DS3I PM Table (Far End)—ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH

The DS3 and DS3I PM table shows far-end performance data for the DS-3 and DS3I cards. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the DS3 and DS3I PM table.

Table E-22 Field Descriptions for the DS3 and DS3I PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Coding Violations – Path (C-Bit)	Number of coding violations encountered by a DS-3 interface in the C-bit of the interface in the interval. The C-bit is a bit format used to increase far-end performance monitoring. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN

Table E-22 Field Descriptions for the DS3 and DS3I PM Table (Far End) (continued)

Field	Description	Cards Supported
Errored Seconds – Path (C-Bit)	Number of errored seconds encountered by a DS-3 interface in the C-bit of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
Severely Alarmed Seconds – Path (C-Bit)	Number of severely alarmed seconds encountered by a DS-3 interface in the C-bit of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
Severely Errored Seconds – Path (C-Bit)	Number of severely errored seconds encountered by a DS-3 interface in the C-bit of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
Unavailable Seconds – Path (C-Bit)	Number of unavailable seconds encountered by a DS-3 interface in the C-bit of the interface in the interval. This is a path variable.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS3E, DS3_EC1_48, DS3I, DS3IN, DS3NE, DS3XM, DS3XM_12 • ONS 15454 SDH: DS3I, DS3IN
NE ID	Name of the selected NE.	—

E.2.8 E1 PM Table—ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH

The E1 PM table shows performance data for the following cards:

- ONS 15310 MA SDH: E1_21_E3_DS3_3 and E1_63_E3_DS3_3
- ONS 15454 SONET: DS1_E1_56
- ONS 15454 SDH: E1

You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the E1 PM table.

Table E-23 Field Descriptions for the E1 PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Interface	Interface name of the selected NE.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
CV-L	CV-L indicates the number of coding violations occurring on the line. This parameter is a count of BPVs and EXZs occurring over the accumulation period.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42

Table E-23 Field Descriptions for the E1 PM Table (continued)

Field	Description	Cards Supported
ES-L	ES-L is a count of the seconds containing one or more anomalies (BPV + EXZ) and/or defects (loss of signal) on the line.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
SES-L	SES-L is a count of the seconds containing more than a particular quantity of anomalies (BPV + EXZ > 1544) and/or defects on the line.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
LOSS-L	LOSS-L is a count of one-second intervals containing one or more LOS defects.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
EB-P (Rx)	Received path errored block (EB-P) is a count of the number of bits in error within a block.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
ES-P (Rx)	Received path errored seconds (ES-P) is a count of the seconds containing one or more anomalies and/or defects for paths on the received end of the signal.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
SES-P (Rx)	Received path severely errored seconds (SES-P) is a count of the seconds containing more than a particular quantity of anomalies and/or defects for paths on the received end of the signal.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42

Table E-23 Field Descriptions for the E1 PM Table (continued)

Field	Description	Cards Supported
BBE-P (Rx)	Received path background block errors (BBE-P) is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
UAS-P (Rx)	Received path unavailable seconds (UAS-P) is a count of one-second intervals when the DS-1 path is unavailable on the received end of the signal. The DS-1 path is unavailable when ten consecutive SESs occur. The ten SESs are included in unavailable time. Once unavailable, the DS-1 path becomes available when ten consecutive seconds occur with no SESs. The ten seconds with no SESs are excluded from unavailable time.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
ESR-P (Rx)	Received path errored second ratio (ESR-P) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
SESR-P (Rx)	Received path severely errored seconds ratio (SESR-P) is the ratio of SES to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
BBER-P (Rx)	Received path background block error ratio (BBER-P) is a ratio of BBE to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
AISS-P (Rx)	Received path AISS-P is a count of seconds containing one or more AIS defects.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42

Table E-23 Field Descriptions for the E1 PM Table (continued)

Field	Description	Cards Supported
EB-P (Tx)	Transmitted path errored block (EB-P) indicates that one or more bits are in error within a block.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
ES-P (Tx)	Transmitted path errored seconds (ES-P) is a count of the seconds containing one or more anomalies and/or defects for paths on the transmitted end of the signal.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
SES-P (Tx)	Transmitted path severely errored seconds (SES-P) is a count of the seconds containing more than a particular quantity of anomalies and/or defects for paths on the transmitted end of the signal.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
BBE-P (Tx)	Transmitted path background block error (BBE-P) is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
UAS-P (Tx)	Transmitted path unavailable seconds (UAS-P) is a count of one-second intervals when the DS-1 path is unavailable on the transmitted end of the signal. The DS-1 path is unavailable when ten consecutive SESs occur. The ten SESs are included in unavailable time. Once unavailable, the DS-1 path becomes available when ten consecutive seconds occur with no SESs. The ten seconds with no SESs are excluded from unavailable time.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
ESR-P (Tx)	Transmitted path errored second ratio (ESR-P) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42

Table E-23 Field Descriptions for the E1 PM Table (continued)

Field	Description	Cards Supported
SESR-P (Tx)	Transmitted path severely errored second ratio (SESR-P) is the ratio of SES to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
BBER-P (Tx)	Transmitted path background block error ratio (BBER-P) is a ratio of BBE to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
AISS-P (Tx)	Transmitted path AISS-P is a count of seconds containing one or more AIS defects.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
NE ID	Name of the selected NE.	—

E.2.9 E1 PM Table (Far End)—ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH

The E1 PM table shows far-end performance data for the following cards:

- ONS 15310 MA SDH: E1_21_E3_DS3_3 and E1_63_E3_DS3_3
- ONS 15454 SONET: DS1_E1_56
- ONS 15454 SDH: E1, E1N, and E1_42 cards.

You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the E1 PM table.

Table E-24 Field Descriptions for the E1 PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Interface	Interface name of the selected NE.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
RXP-EB	Received path errored blocks (RXP-EB) indicates that one or more bits are in error within a block.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
RXP-ES	Received path errored seconds (RXP-ES) is a one-second period with one or more errored blocks or at least one defect.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
RXPS-ES	Received path severely errored seconds (RXP-SES) is a one-second period containing 30 percent or more errored blocks or at least one defect; SES is a subset of ES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42

Table E-24 Field Descriptions for the E1 PM Table (Far End) (continued)

Field	Description	Cards Supported
RXP-BBE	Received path background block errors (RXP-BBE) is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
RXP-UAS	Received path unavailable seconds (RXP-UAS) is a count of one-second intervals when the E1 path is unavailable on the signal received end. The E1 path is unavailable when ten consecutive SESs occur. The ten SESs are included in unavailable time. After it has become unavailable, the E1 path becomes available when ten consecutive seconds occur with no SESs. The ten seconds with no SESs are excluded from the unavailable time.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
RXP-ESR	Received path errored second ratio (RXP-ESR) is the ratio of SESs to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
RXP-SESR	Received path severely errored second ratio (RXP-SESR) is the ratio of SESs to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
RXP-BBER	Received path background block error ratio (RXP-BBER) is a ratio of BBEs to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
TXP-EB	Transmitted path errored blocks (TXP-EB) is a count of bits that are in error within a block.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42

Table E-24 Field Descriptions for the E1 PM Table (Far End) (continued)

Field	Description	Cards Supported
TXP-ES	Transmitted path errored seconds (TXP-ES) is a one-second period with one or more errored blocks or at least one defect.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
TXP-SES	Transmitted path severely errored seconds (TXP-SES) is a one-second period containing 30 percent or more errored blocks or at least one defect; SES is a subset of ES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
TXP-BBE	Transmitted path background block errors (TXP-BBE) is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
TXP-UAS	Transmitted path unavailable seconds (TXP-UAS) is a count of one-second intervals when the E1 path is unavailable on the signal transmitted. The E1 path is unavailable when ten consecutive SESs occur. The ten SESs are included in unavailable time. After it has become unavailable, the E1 path becomes available when ten consecutive seconds occur with no SESs. The ten seconds with no SESs are excluded from the unavailable time.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
TXP-ESR	Transmitted path errored second ratio (TXP-ESR) is the ratio of SESs to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
TXP-SESR	Transmitted path severely errored second ratio (TXP-SESR) is the ratio of SESs to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42

Table E-24 Field Descriptions for the E1 PM Table (Far End) (continued)

Field	Description	Cards Supported
TXP-BBER	Transmitted path background block error ratio (TXP-BBER) is a ratio of BBEs to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SONET: DS1_E1_56 • ONS 15454 SDH: E1N, E1, E1_42
NE ID	Name of the selected NE.	—

E.2.10 E3 PM Table—ONS 15310 MA SDH, ONS 15454 SDH

The E3 PM table shows performance data for the ONS 15310 MA SDH E1_21_E3_DS3_3 and E1_63_E3_DS3_3 cards and the ONS 15454 SDH E3 card. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the E3 PM table.

Table E-25 Field Descriptions for the E3 PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Interface	Interface name of the selected NE.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—

Table E-25 Field Descriptions for the E3 PM Table (continued)

Field	Description	Cards Supported
CV-L	CV-L indicates the number of coding violations occurring on the line. This parameter is a count of BPVs and EXZs occurring over the accumulation period.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E3
ES-L	ES-L is a count of the seconds containing one or more anomalies (BPV + EXZ) and/or defects (loss of signal) on the line.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E3
SES-L	SES-L is a count of the seconds containing more than a particular quantity of anomalies (BPV + EXZ > 1544) and/or defects on the line.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E3
LOSS-L	LOSS-L is a count of one-second intervals containing one or more LOS defects.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E3
P-ES	Received path errored seconds (Rx ES-P) is a count of the seconds containing one or more anomalies and/or defects for paths on the received end of the signal.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E3
P-SES	Received path severely errored seconds (Rx SES-P) is a count of the seconds containing more than a particular quantity of anomalies and/or defects for paths on the received end of the signal.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E3
P-UAS	Received path unavailable seconds (Rx UAS-P) is a count of one-second intervals when the DS-1 path is unavailable on the received end of the signal. The DS-1 path is unavailable when ten consecutive SESs occur. The ten SESs are included in unavailable time. Once unavailable, the DS-1 path becomes available when ten consecutive seconds occur with no SESs. The ten seconds with no SESs are excluded from unavailable time.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E3
P-ESR	Received path errored second ratio (RX P-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E3
P-SESR	Received path severely errored second ratio (RX P-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E3
NE ID	Name of the selected NE.	—

E.2.11 CE-Series Ethernet PM Table—ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH

The CE-Series Ethernet PM table shows performance data for the ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH CE-series Ethernet cards. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the CE-Series Ethernet PM table.

Note Real-time PM data is not available for Ethernet cards on NE releases earlier than release 5.0.

Table E-26 Field Descriptions for the CE-Series Ethernet PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Time Last Cleared	When the statistics were last reset.	• ONS 15454 SONET: CE-MR-10 • ONS 15454 SDH: CE-MR-10

Table E-26 Field Descriptions for the CE-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
ifInOctets	Number of bytes received since the last counter reset.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
ifInUCastPkts	Number of unicast packets received.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
ifInMulticastPkts	Number of multicast packets received.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
ifInBroadcastPkts	Number of broadcast packets received.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10

Table E-26 Field Descriptions for the CE-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
ifInDiscards	Number of inbound packets that were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
ifInErrors	Total number of received errors.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
ifOutOctets	Number of bytes transmitted since the last counter reset.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
ifOutUCastPkts	Number of unicast packets transmitted.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10

Table E-26 Field Descriptions for the CE-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
ifOutMulticastPkts	Number of multicast packets transmitted.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
ifOutBroadcastPkts	Number of broadcast packets transmitted.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
dot3StatsAlignmentErrors	Number of received packets with alignment errors (incomplete frames).	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
dot3StatsFCSErrors	Number of packets with an FCS error. FCS errors indicate frame corruption during transmission.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10

Table E-26 Field Descriptions for the CE-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
dot3StatsSingleCollisionFrames	Number of successfully transmitted frames that had exactly one collision.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
dot3StatsFrameTooLong	Number of received frames that were larger than the maximum size permitted.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsUndersizePkts	Number of packets below the minimum packet size received.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsFragments	Total number of frames received that are less than 64 bytes in length and have a CRC error.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10

Table E-26 Field Descriptions for the CE-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsPkts64Octets	Number of packets received with a length less than or equal to 64 octets.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsPkts65to127Octets	Number of packets received with a length from 65 to 127 octets.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsPkts128to255Octets	Number of packets received with a length from 128 to 255 octets.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsPkts256to511Octets	Number of packets received with a length from 256 to 511 octets.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10

Table E-26 Field Descriptions for the CE-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsPkts512to1023Octets	Number of packets received with a length from 512 to 1023 octets.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsPkts1024to1518Octets	Number of packets received with a length from 1024 to 1518 octets.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsBroadcastPkts	Total number of good broadcast packets received.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsMulticastPkts	Total number of good multicast (nonbroadcast) packets received.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10

Table E-26 Field Descriptions for the CE-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsOversizePkts	Total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets) and were otherwise well formed.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsJabbers	Total number of frames received that exceed the maximum 1548 bytes and contain CRC errors.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsOctets	Total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets).	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsCollisions	Best estimate of the total number of collisions on the Ethernet segment.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsCollisionFrames	Best estimate of the total number of collision frames on the Ethernet segment.	• ONS 15454 SONET: CE-MR-10 • ONS 15454 SDH: CE-MR-10

Table E-26 Field Descriptions for the CE-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsCRCAlignErrors	Total number of packets received that had a length (excluding framing bits, but including FCS octets) from 64 to 1518 octets, inclusive, but had either a bad FCS with an integral number of octets (FCS error) or a bad FCS with a nonintegral number of octets (alignment error).	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
etherStatsDropEvents	Total number of events in which packets were dropped by the probe due to lack of resources. The value indicates the number of times this condition has been detected.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10
txTotalPkts	Number of packets transmitted since the last counter reset.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
rxTotalPkts	Number of packets received since the last counter reset.	• ONS 15310 CL: CE-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10
ifOutDiscards	Number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent their being transmitted.	• ONS 15310 CL: CE-100T-8 • ONS 15454 SONET: CE-1000-4, CE-100T-8
ifOutErrors	Total number of transmitted errors.	—
txPauseFrames	Number of transmitted pause frames.	—
rxPauseFrames	Number of received pause frames.	—

Table E-26 Field Descriptions for the CE-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
rxPktsDroppedInternalCongestion	Number of received packets dropped due to overflow in G1000-4 frame buffer.	—
txPktsDroppedInternalCongestion	Number of transmitted queue drops due to drops in the G1000-4 frame buffer.	—
rxControlFrames	Number of MAC control frames passed by the MAC sublayer to the MAC control sublayer.	—
mediaIndStatsRxFramesTruncated	Total number of frames received that are less than 5 bytes. This value is a part of HDLC and GFP port statistics.	—
mediaIndStatsRxFramesTooLong	Number of received frames that exceed the maximum transmission unit (MTU). This value is part of HDLC and generic framing procedure (GFP) port statistics.	—
mediaIndStatsRxFramesBadCRC	Number of received data frames with payload CRC errors when HDLC framing is used.	—
mediaIndStatsTxFramesBadCRC	Number of transmitted data frames with payload CRC errors when HDLC framing is used.	—
mediaIndStatsRxShortPkts	Number of packets below the minimum packet size received.	—
txEtherUtilizationStats (%)	Transmitted utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	—
rxEtherUtilizationStats (%)	Received utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	—
NE ID	Name of the selected NE.	—

E.2.12 E-Series Ethernet PM Table—ONS 15327, ONS 15454 SONET, ONS 15454 SDH

The E-Series Ethernet PM table shows performance data for the ONS 15327, ONS 15454 SONET, and ONS 15454 SDH E-series Ethernet cards. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.

- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the E-Series Ethernet PM table.

Note Real-time PM data is not available for Ethernet cards on NE releases earlier than release 5.0.

Table E-27 Field Descriptions for the E-Series Ethernet PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
ifInOctets	Number of bytes received since the last counter reset.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
ifInUCastPkts	Number of unicast packets received.	• ONS 15327: ETH100 • ONS 15454 SDH: ETH100, ETH1000
ifInErrors	Total number of received errors.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
ifOutOctets	Number of bytes transmitted since the last counter reset.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
ifOutUCastPkts	Number of unicast packets transmitted.	• ONS 15327: ETH100 • ONS 15454 SDH: ETH100, ETH1000
dot3StatsAlignmentErrors	Number of received packets with alignment errors (incomplete frames).	• ONS 15327: ETH100 • ONS 15454 SDH: ETH100, ETH1000

Table E-27 Field Descriptions for the E-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
dot3StatsFCSErrors	Number of packets with an FCS error. FCS errors indicate frame corruption during transmission.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
dot3StatsSingleCollisionFrames	Number of successfully transmitted frames that had exactly one collision.	• ONS 15327: ETH100 • ONS 15454 SDH: ETH100, ETH1000
dot3StatsMultipleCollisionFrames	Number of successfully transmitted frames that had multiple collisions.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100 • ONS 15454 SDH: ETH100
dot3StatsDeferredTransmissions	Number of packets deferred.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100 • ONS 15454 SDH: ETH100
dot3StatsLateCollisions	Number of times that a collision was detected later than 64 octets into the transmission (also added into the collision count).	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100 • ONS 15454 SDH: ETH100
dot3StatsExcessiveCollisions	Number of consecutive collisions.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100 • ONS 15454 SDH: ETH100
dot3StatsFrameTooLong	Number of received frames that were larger than the maximum size permitted.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherStatsUndersizePkts	Number of packets below the minimum packet size received.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherStatsFragments	Total number of frames received that are less than 64 bytes in length and have a CRC error.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherStatsPkts64Octets	Number of packets received with a length less than or equal to 64 octets.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherStatsPkts65to127Octets	Number of packets received with a length from 65 to 127 octets.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherStatsPkts128to255Octets	Number of packets received with a length from 128 to 255 octets.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000

Table E-27 Field Descriptions for the E-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsPkts256to511Octets	Number of packets received with a length from 256 to 511 octets.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherStatsPkts512to1023Octets	Number of packets received with a length from 512 to 1023 octets.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherStatsPkts1024to1518Octets	Number of packets received with a length from 1024 to 1518 octets.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherStatsOversizePkts	Total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets) and were otherwise well formed.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherStatsJabbers	Total number of frames received that exceed the maximum 1548 bytes and contain CRC errors.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherStatsOctets	Total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets).	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherStatsCollisions	Best estimate of the total number of collisions on the Ethernet segment.	• ONS 15327: ETH100 • ONS 15454 SDH: ETH100
etherStatsCollisionFrames	Best estimate of the total number of frame collisions on the segment.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherStatsCRCAlignErrors	Total number of packets received that had a length (excluding framing bits, but including FCS octets) from 64 to 1518 octets, inclusive, but had either a bad FCS with an integral number of octets (FCS error) or a bad FCS with a nonintegral number of octets (alignment error).	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100
rxTotalPkts	Number of packets received since the last counter reset.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
txTotalPkts	Number of packets transmitted since the last counter reset. **Note** This column is no longer supported for R 4.y and later NEs. For those NEs, this column displays *N/A*.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000

Table E-27 Field Descriptions for the E-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
txCollision	Number of transmitted collisions since the last counter reset. **Note** This column is no longer supported for NE R4.7 and later. For NE R4.7 and later this column displays *N/A*.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
rxEtherUtilizationStats (%)	Received utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
txEtherUtilizationStats (%)	Transmitted utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	• ONS 15327: ETH100 • ONS 15454 SONET: ETH100, ETH1000 • ONS 15454 SDH: ETH100, ETH1000
etherUtilizationStats (%)	Average Ethernet utilization statistics (release 3.4 and earlier).	• ONS 15454 SONET R3.3 and R3.4: ETH100, ETH1000
NE ID	Name of the selected NE.	—

E.2.13 G-Series Ethernet PM Table—ONS 15327, ONS 15454 SONET, ONS 15454 SDH

The G-Series Ethernet PM table shows performance data for the ONS 15327, ONS 15454 SONET, and ONS 15454 SDH G-series Ethernet cards. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the G-Series Ethernet PM table.

Note Real-time PM data is not available for Ethernet cards on NE releases earlier than release 5.0.

Table E-28 Field Descriptions for the G-Series Ethernet PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Time Last Cleared	When the statistics were last reset.	—
ifInOctets	Number of bytes received since the last counter reset.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
ifInUcastPkts	Number of unicast packets received.	• ONS 15327: G1000_2 • ONS 15454 SONET: GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
ifInMulticastPkts	Number of multicast packets received.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
ifInBroadcastPkts	Number of broadcast packets received.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
ifInDiscards	Number of inbound packets that were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP

Table E-28 Field Descriptions for the G-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
ifInErrors	Total number of received errors.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4
ifOutOctets	Number of bytes transmitted since the last counter reset.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
ifOutUcastPkts	Number of unicast packets transmitted.	• ONS 15327: G1000_2 • ONS 15454 SONET: GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
ifOutMulticastPkts	Number of multicast packets transmitted.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
ifOutBroadcastPkts	Number of broadcast packets transmitted.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
ifOutDiscards	Number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent their being transmitted.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4 • ONS 15454 SDH: G1000_4
dot3StatsAlignmentErrors	Number of received packets with alignment errors (incomplete frames).	• ONS 15327: G1000_2 • ONS 15454 SONET: GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
dot3StatsFCSErrors	Number of packets with an FCS error. FCS errors indicate frame corruption during transmission.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP

Table E-28 Field Descriptions for the G-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
dot3StatsFrameTooLong	Number of received frames that were larger than the maximum size permitted.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
dot3StatsCarrierSenseErrors	Number of transmission errors on a particular interface that are not otherwise counted.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4 • ONS 15454 SDH: G1000_4
dot3StatsSQETestErrors	Number of times that the SQE test error message is generated by the PLS sublayer for a particular interface.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4 • ONS 15454 SDH: G1000_4
etherStatsUndersizePkts	Number of packets below the minimum packet size received.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, ONS 15454 SDH: GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
etherStatsFragments	Total number of frames received that are less than 64 bytes in length and have a CRC error.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
etherStatsPkts64Octets	Number of packets received with a length less than or equal to 64 octets.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
etherStatsPkts65to127Octets	Number of packets received with a length from 65 to 127 octets.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
etherStatsPkts128to255Octets	Number of packets received with a length from 128 to 255 octets.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP

Table E-28 Field Descriptions for the G-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsPkts256to511Octets	Number of packets received with a length from 256 to 511 octets.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
etherStatsPkts512to1023Octets	Number of packets received with a length from 512 to 1023 octets.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
etherStatsPkts1024to1518Octets	Number of packets received with a length from 1024 to 1518 octets.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
etherStatsOversizePkts	Total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets) and were otherwise well formed.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
etherStatsJabbers	Total number of frames received that exceed the maximum 1548 bytes and contain CRC errors.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
etherStatsOctets	Total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets).	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
etherStatsCRCAlignErrors	Total number of packets received that had a length (excluding framing bits, but including FCS octets) from 64 to 1518 octets, inclusive, but had either a bad FCS with an integral number of octets (FCS error) or a bad FCS with a nonintegral number of octets (alignment error).	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: G1000_4, GE_XP, 10GE_XP
rxPauseFrames	Number of received pause frames.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4 • ONS 15454 SDH: G1000_4

Table E-28 Field Descriptions for the G-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
txPauseFrames	Number of transmitted pause frames.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4 • ONS 15454 SDH: G1000_4
rxPktsDroppedInternalCongestion	Number of received packets dropped due to overflow in G1000-4 frame buffer.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4 • ONS 15454 SDH: G1000_4
txPktsDroppedInternalCongestion	Number of transmitted queue drops due to drops in the G1000-4 frame buffer.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4 • ONS 15454 SDH: G1000_4
rxTotalPkts	Number of packets received since the last counter reset.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: GE_XP, 10GE_XP
txTotalPkts	Number of packets transmitted since the last counter reset.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4, GE_XP, 10GE_XP • ONS 15454 SDH: GE_XP, 10GE_XP
rxGiants	Number of packets received that are greater than 1530 bytes in length.	—
hdlcPktDrops	Total number of packets that are dropped when the card is in HDLC mode and traffic is oversubscribed.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4 • ONS 15454 SDH: G1000_4
etherStatsBroadCastPkts	Total number of good broadcast packets received.	• ONS 15454 SONET: GE_XP, 10GE_XP • ONS 15454 SDH: GE_XP, 10GE_XP
etherStatsMultiCastPkts	Total number of good multicast (nonbroadcast) packets received.	• ONS 15454 SONET: GE_XP, 10GE_XP • ONS 15454 SDH: GE_XP, 10GE_XP
rxEtherUtilizationStats (%)	Received utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4 • ONS 15454 SDH: G1000_4
txEtherUtilizationStats (%)	Transmitted utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	• ONS 15327: G1000_2 • ONS 15454 SONET: G1000_4 • ONS 15454 SDH: G1000_4

Table E-28 Field Descriptions for the G-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherUtilizationStats (%)	Average Ethernet utilization statistics (release 3.4 and earlier).	• ONS 15454 SONET R3.3 and R3.4: G-series cards
NE ID	Name of the selected NE.	—

E.2.14 ML-Series Ethernet PM Table—ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH

The ML-Series Ethernet PM table shows performance data for the ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH ML-series Ethernet cards. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the ML-Series Ethernet PM table.

Note Real-time PM data is not available for Ethernet cards on NE releases earlier than release 5.0.

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
Time Last Cleared	When the statistics were last reset.	• ONS 15454 SONET: ML-MR-10 • ONS 15454 SDH: ML-MR-10
ifInErrors	Total number of received errors.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
ifInOctets	Number of bytes received since the last counter reset.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
ifInUCastPkts	Number of unicast packets received.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
ifInMulticastPkts	Number of multicast packets received.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
ifInBroadcastPkts	Number of broadcast packets received.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
ifInDiscards	Number of inbound packets that were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
Port Drop Counts	Number of received frames dropped at the port level.	• ONS 15310 CL: ML-100T-8 • ONS 15454 SONET: ML1000

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
Rx Runts	Total number of frames received that are less than 64 bytes in length and have a CRC error.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
Rx Giants	Number of packets received that are greater than 1530 bytes in length.	• ONS 15454 SONET: ML1000
Tx Giants	Number of packets transmitted that are greater than 1548 bytes in length.	• ONS 15454 SONET: ML1000
Tx Collisions	Number of collisions transmitted.	• ONS 15454 SONET: ML1000
Rx Total Errors	Total number of received errors.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
RxGMACDropCounts	Number of received frames dropped by MAC module.	• ONS 15454 SONET: ML1000
RxThresholdOversizes	Number of received packets with a length longer than 1518 octets.	• ONS 15454 SONET: ML1000
ifOutOctets	Number of bytes transmitted since the last counter reset.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
ifOutUCastPkts	Number of unicast packets transmitted.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
ifOutMulticastPkts	Number of multicast packets transmitted.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
ifOutBroadcastPkts	Number of broadcast packets transmitted.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
ifOutDiscards	Number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent their being transmitted.	• ONS 15310 CL: ML-100T-8 • ONS 15454 SONET: ML100T, ML1000 • ONS 15454 SDH: ML100T, ML1000

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
dot3StatsAlignmentErrors	Number of received packets with alignment errors (incomplete frames).	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
dot3StatsFCSErrors	Number of packets with an FCS error. FCS errors indicate frame corruption during transmission.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
dot3StatsSingleCollisionFrames	Number of successfully transmitted frames that had exactly one collision.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
dot3StatsFrameTooLong	Number of received frames that were larger than the maximum size permitted.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsUndersizePkts	Number of packets below the minimum packet size received.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
etherStatsPkts64Octets	Number of packets received with a length less than or equal to 64 octets.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
etherStatsPkts65to127Octets	Number of packets received with a length from 65 to 127 octets.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
etherStatsPkts128to255Octets	Number of packets received with a length from 128 to 255 octets.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsPkts256to511Octets	Number of packets received with a length from 256 to 511 octets.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000
etherStatsPkts512to1023Octets	Number of packets received with a length from 512 to 1023 octets.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
etherStatsPkts1024to1518Octets	Number of packets received with a length from 1024 to 1518 octets.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
etherStatsBroadcastPkts	Total number of good broadcast packets received.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsMulticastPkts	Total number of good multicast (nonbroadcast) packets received.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
etherStatsFragments	Total number of frames received that are less than 64 bytes in length and have a CRC error.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
etherStatsOversizePkts	Total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets) and were otherwise well formed.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
etherStatsJabbers	Total number of octets of data (including bad packets) received on the network.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsOctets	Total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets).	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
etherStatsCollisions	Best estimate of the total number of collisions on the Ethernet segment.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
etherStatsCollisionFrames	Best estimate of the total number of frame collisions on the segment.	• ONS 15310 CL: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
etherStatsCRCAlignErrors	Total number of packets received that had a length (excluding framing bits, but including FCS octets) from 64 to 1518 octets, inclusive, but had either a bad FCS with an integral number of octets (FCS error) or a bad FCS with a nonintegral number of octets (alignment error).	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsDropEvents	Total number of events in which packets were dropped by the probe due to lack of resources. The value indicates the number of times this condition has been detected.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML-MR-10 • ONS 15454 SDH: ML-MR-10
txTotalPkts	Number of packets transmitted since the last counter reset.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
rxTotalPkts	Number of packets received since the last counter reset.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH: ML100T, ML1000, ML-MR-10
mediaIndStatsRxFramesBad CRC	Number of received data frames with payload CRC errors when HDLC framing is used.	• ONS 15310 CL: ML-100T-8 • ONS 15454 SONET: ML100T, ML1000 • ONS 15454 SDH: ML100T, ML1000
mediaIndStatsRxFramesToo Long	Number of received frames that exceed the maximum transmission unit (MTU). This value is part of HDLC and generic framing procedure (GFP) port statistics.	• ONS 15454 SONET: ML100T, ML1000 • ONS 15454 SDH: ML100T, ML1000

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
mediaIndStatsOversizeDropped	Number of received packets larger than the ML-series remote monitoring (RMON) threshold.	• ONS 15310 CL: ML-100T-8 • ONS 15454 SONET: ML100T, ML1000 • ONS 15454 SDH: ML100T, ML1000
txPauseFrames	Number of transmitted pause frames.	• ONS 15454 SONET: ML100T, ML1000 • ONS 15454 SDH: ML100T, ML1000
rxPauseFrames	Number of received pause frames.	• ONS 15454 SONET: ML100T, ML1000 • ONS 15454 SDH: ML100T, ML1000
txEtherUtilizationStats (%)	Transmitted utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	• ONS 15454 SONET: ML100T, ML1000 • ONS 15454 SDH: ML100T, ML1000
rxEtherUtilizationStats (%)	Received utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	• ONS 15454 SONET: ML100T, ML1000 • ONS 15454 SDH: ML100T, ML1000
dot3adAggPortStatsLACPDUsRx	Number of valid LAC PDUs received on this aggregation port.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML1000, ML100T, ML100X-8 • ONS 15454 SDH: ML1000, ML100T, ML100X-8
dot3adAggPortStatsMarkerPDUsRx	Number of valid marker PDUs received on this aggregation port.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML1000, ML100T, ML100X-8 • ONS 15454 SDH: ML1000, ML100T, ML100X-8

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
dot3adAggPortStatsMarkerResponsePDUsRx	Number of valid marker response PDUs received on this aggregation port.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML1000, ML100T, ML100X-8 • ONS 15454 SDH: ML1000, ML100T, ML100X-8
dot3adAggPortStatsUnknownRx	Number of frames received that either carry the slow protocols Ethernet type value (43B.4), but contain an unknown PDU, or are addressed to the slow protocols group MAC address (43B.3), but do not carry the slow protocols Ethernet type.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML1000, ML100T, ML100X-8 • ONS 15454 SDH: ML1000, ML100T, ML100X-8
dot3adAggPortStatsIllegalRx	Number of frames received that carry the slow protocols Ethernet type value (43B.4), but contain a badly formed PDU or an illegal value of protocol subtype (43B.4).	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML1000, ML100T, ML100X-8 • ONS 15454 SDH: ML1000, ML100T, ML100X-8
dot3adAggPortStatsLACPDUsTx	Number of LAC PDUs transmitted on this aggregation port.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML1000, ML100T, ML100X-8 • ONS 15454 SDH: ML1000, ML100T, ML100X-8

Table E-29 Field Descriptions for the ML-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
dot3adAggPortStatsMarkerPDUsTx	Number of marker PDUs transmitted on this aggregation port.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML1000, ML100T, ML100X-8 • ONS 15454 SDH: ML1000, ML100T, ML100X-8
dot3adAggPortStatsMarkerResponsePDUsTx	Number of marker response PDUs transmitted on this aggregation port.	• ONS 15310 CL: ML-100T-8 • ONS 15310 MA SONET: ML-100T-8 • ONS 15310 MA SDH: ML-100T-8 • ONS 15454 SONET: ML1000, ML100T, ML100X-8 • ONS 15454 SDH: ML1000, ML100T, ML100X-8
NE ID	Name of the selected NE.	—

E.2.15 ASAP-Series Ethernet PM Table—ONS 15600 SONET, ONS 15600 SDH

The ASAP-Series Ethernet PM table shows performance data for the ONS 15600 SONET and ONS 15600 SDH ASAP-series Ethernet cards. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the ASAP-Series Ethernet PM table.

Note Real-time PM data is not available for Ethernet cards on NE releases earlier than release 5.0.

Table E-30 Field Descriptions for the ASAP-Series Ethernet PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
ifInOctets	Number of bytes received since the last counter reset.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
ifInUcastPkts	Number of unicast packets received.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
ifInMulticastPkts	Number of multicast packets received.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
ifInBroadcastPkts	Number of broadcast packets received.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsOversizePkts	Total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets) and were otherwise well formed.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
dot3StatsFCSErrors	Number of packets with an FCS error. FCS errors indicate frame corruption during transmission.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsUndersizePkts	Number of packets below the minimum packet size received.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4

Table E-30 Field Descriptions for the ASAP-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsJabbers	Total number of octets of data (including bad packets) received on the network.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
dot3StatsAlignmentErrors	Number of received packets with alignment errors (incomplete frames).	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
ifOutOctets	Number of bytes transmitted since the last counter reset.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
ifOutUcastPkts	Number of unicast packets transmitted.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
ifOutMulticastPkts	Number of multicast packets transmitted.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
ifOutBroadcastPkts	Number of broadcast packets transmitted.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsDropEvents	Total number of events in which packets were dropped by the probe due to lack of resources. The value indicates the number of times this condition has been detected.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
ifInDiscards	Number of inbound packets that were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsOctets	Total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets).	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsPkts	Number of packets received with a length from 1024 to 1518 octets.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4

Table E-30 Field Descriptions for the ASAP-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsBroadcastPkts	Total number of good broadcast packets received.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsMulticastPkts	Total number of good multicast (nonbroadcast) packets received.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsFragments	Total number of frames received that are less than 64 bytes in length and have a CRC error.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsPkts64Octets	Number of packets received with a length less than or equal to 64 octets.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsPkts65to127Octets	Number of packets received with a length from 65 to 127 octets.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsPkts128to255Octets	Number of packets received with a length from 128 to 255 octets.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsPkts256to511Octets	Number of packets received with a length from 256 to 511 octets.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsPkts512to1023Octets	Number of packets received with a length from 512 to 1023 octets.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
etherStatsPkts1024to1518Octets	Number of packets received with a length from 1024 to 1518 octets.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
ifOutDiscards	Number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent their being transmitted.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4

Table E-30 Field Descriptions for the ASAP-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
ifInErrors	Total number of received errors.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
ifOutErrors	Total number of transmitted errors.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
dot3StatsInternalMacTxErrors	A count of frames for which transmission on a particular interface fails due to an internal MAC sublayer transmission error.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
dot3StatsFrameTooLong	Number of received frames that were larger than the maximum size permitted.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
dot3StatsInternalMacRxErrors	A count of frames for which reception on a particular interface fails due to an internal MAC sublayer received error.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
dot3StatsSymbolErrors	Number of times there was an invalid data symbol when a valid carrier was present on a particular interface.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
rxPauseFrames	Number of received pause frames.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
txPauseFrames	Number of transmitted pause frames.	ONS 15600 SONET: ASAP_4 ONS 15600 SDH: ASAP_4
Tx Utilization (%)	Transmitted utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	ONS 15600 SONET: ASAP_4
Rx Utilization (%)	Received utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	ONS 15600 SONET: ASAP_4
NE ID	Name of the selected NE.	—

E.2.16 DWDM-Series Ethernet PM Table—ONS 15454 SONET, ONS 15454 SDH

The DWDM-Series Ethernet PM table shows performance data for the ONS 15454 SONET and ONS 15454 SDH DWDM-series Ethernet cards. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the DWDM-Series Ethernet PM table.

Note Real-time PM data is not available for Ethernet cards on NE releases earlier than release 5.0.

Table E-31 Field Descriptions for the DWDM-Series Ethernet PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Time Last Cleared	When the statistics were last reset.	—
ifInOctets	Number of bytes received since the last counter reset.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G

Table E-31 Field Descriptions for the DWDM-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
ifInMulticastPkts	Number of multicast packets received.	• ONS 15454 SONET: 10GE_XP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
ifInBroadcastPkts	Number of broadcast packets received.	• ONS 15454 SONET: 10GE_XP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
ifInDiscards	Number of inbound packets that were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
ifInErrors	Total number of received errors.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
ifOutOctets	Number of bytes transmitted since the last counter reset.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G

Table E-31 Field Descriptions for the DWDM-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
ifOutMulticastPkts	Number of multicast packets transmitted.	• ONS 15454 SONET: 10GE_XP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10G
ifOutBroadcastPkts	Number of broadcast packets transmitted.	• ONS 15454 SONET: 10GE_XP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10G
ifOutDiscards	Number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent their being transmitted.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
dot3StatsFCSErrors	Number of packets with an FCS error. FCS errors indicate frame corruption during transmission.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
dot3StatsFrameTooLong	Number of received frames that were larger than the maximum size permitted.	• ONS 15454 SDH: 10GE_XP, ADM_10G, GE_XP
etherStatsUndersizePkts	Number of packets below the minimum packet size received.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G

Table E-31 Field Descriptions for the DWDM-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsFragments	Total number of frames received that are less than 64 bytes in length and have a CRC error.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
etherStatsPkts64Octets	Number of packets received with a length less than or equal to 64 octets.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
etherStatsPkts65to127Octets	Number of packets received with a length from 65 to 127 octets.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
etherStatsPkts128to255Octets	Number of packets received with a length from 128 to 255 octets.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
etherStatsPkts256to511Octets	Number of packets received with a length from 256 to 511 octets.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G

Table E-31 Field Descriptions for the DWDM-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsPkts512to1023Octets	Number of packets received with a length from 512 to 1023 octets.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
etherStatsPkts1024to1518Octets	Number of packets received with a length from 1024 to 1518 octets.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
etherStatsBroadcastPkts	Total number of good broadcast packets received.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
etherStatsMulticastPkts	Total number of good multicast (nonbroadcast) packets received.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
etherStatsOversizePkts	Total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets) and were otherwise well formed.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G

Table E-31 Field Descriptions for the DWDM-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsJabbers	Total number of frames received that exceed the maximum 1548 bytes and contain CRC errors.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
etherStatsOctets	Total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets).	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
etherStatsCRCAlignErrors	Total number of packets received that had a length (excluding framing bits, but including FCS octets) from 64 to 1518 octets, inclusive, but had either a bad FCS with an integral number of octets (FCS error) or a bad FCS with a nonintegral number of octets (alignment error).	• ONS 15454 SONET: 10GE_XP, ADM_10G, GE_XP • ONS 15454 SDH: 10GE_XP, ADM_10G, GE_XP
etherStatsPkts1519tomaxOctets	Total number of packets (including bad packets) received that were 1591 octets in length (excluding framing bits, but including FCS octets).	• ONS 15454 SONET: AR_MXP, AR_XP • ONS 15454 SDH: AR_MXP, AR_XP
mediaIndStatsTXShortPkts	Number of transmitted frames containing less than the minimum permitted frame size as programmed with the transmit MAC Min Frame Length Configuration Register.	• ONS 15454 SONET: AR_MXP, AR_XP • ONS 15454 SDH: AR_MXP, AR_XP
rxPauseFrames	Number of received pause frames.	• ONS 15454 SONET: MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
rxTotalPkts	Number of packets received since the last counter reset.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G, AR_XP, AR_XPE • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G, AR_XP, AR_XPE

Table E-31 Field Descriptions for the DWDM-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
txTotalPkts	Number of packets transmitted since the last counter reset.	• ONS 15454 SONET: 10GE_XP, 2.5G_DM, 2.5G_DMP, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G, AR_XP, AR_XPE • ONS 15454 SDH: 10GE_XP, 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G, AR_XP, AR_XPE
mediaIndStatsRxFramesTruncated	Total number of frames received that are less than 5 bytes. This value is a part of HDLC and GFP port statistics.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
mediaIndStatsRxFramesTooLong	Number of received frames that exceed the MTU. This value is part of HDLC and GFP port statistics.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G,
mediaIndStatsRxFramesBadCRC	Number of received data frames with payload CRC errors when HDLC framing is used.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G, AR_XP, AR_XPE • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G, AR_XP, AR_XPE
mediaIndStatsTxLcvErrorSG	Number of transmitted line code violations at the PCS layer for GE/FC payload.	• ONS 15454 SONET: AR_XP, AR_XPE • ONS 15454 SDH: AR_XP, AR_XPE
mediaIndStatsLxLcvErrorSG	Number of received line code violations at the PCS layer for GE/FC payload.	• ONS 15454 SONET: AR_XP, AR_XPE • ONS 15454 SDH: AR_XP, AR_XPE
mediaIndStatsTxFramesBadCRC	Number of transmitted data frames with payload CRC errors when HDLC framing is used.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G, AR_XP, AR_XPE • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G, AR_XP, AR_XPE

Table E-31 Field Descriptions for the DWDM-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
rxControlFrames	Number of MAC control frames passed by the MAC sublayer to the MAC control sublayer.	• ONS 15454 SONET: MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
rxUnknownOpcodeFrames	Number of MAC control frames received that contain an opcode that is not supported by the device.	• ONS 15454 SONET: MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
ifInErrorBytePkts	Number of received bytes with errors.	• ONS 15454 SDH: ADM_10G
ifInFramingErrorPkts	Number of received framing error counters.	• ONS 15454 SONET: MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: ADM_10G, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
ifInJunkInterPkts	Number of received interpacket junk counters.	• ONS 15454 SONET: MXP_MR_10DME, TXP_MR_10G • ONS 15454 SDH: ADM_10G, MXP_MR_10DME, TXP_MR_10G
etherStatsPkts	Number of packets received.	• ONS 15454 SONET: 10GE_XP, ADM_10G, GE_XP • ONS 15454 SDH: 10GE_XP, ADM_10G, GE_XP
Dot3StatsControlInUnknown OpCodes	Number of MAC control frames received on the interface that contain an opcode that is not supported by the device.	• ONS 15454 SONET: 10GE_XP, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G • ONS 15454 SDH: 10GE_XP, GE_XP, MXP_MR_10DME, TXP_MR_10E, TXP_MR_10G
ifOutUCastPtks	Number of unicast packets transmitted.	• ONS 15454 SONET: ADM_10G MXP_MR_10DME, TXP_MR_10E • ONS 15454 SDH: ADM_10G, MXP_MR_10DME, TXP_MR_10E
Dot3StatsInPauseFrames	Number of received pause frames.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
Dot3StatsOutPauseFrames	Number of transmitted pause frames.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP

Table E-31 Field Descriptions for the DWDM-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
Dot3StatsLcvErrors	A count of transmitted frames that are an integral number of octets in length and do not pass the FCS check.	• ONS 15454 SONET: AR_MXP, AR_XP • ONS 15454 SDH: AR_MXP, AR_XP
dot3StatsLayer1Errors	Number of Layer 1 errors as defined within the following conditions: • During Packet Reception—Layer 1 errors are counted only one time per packet. The error is indicated as a direct result of a line side protocol violation in which RX_DV is asserted. This is an uncommon event that could the reason why a device loses synchronization. • During Interpacket Reception—The Layer 1 error is indicated as a direct result of a line side protocol violation in which RX_DV is deasserted. This is an uncommon event. The Layer 1 error is also asserted on detection of a False Carrier indication and an errored byte (interpacket) signal encoding. When the error is asserted during interpacket reception, it is statistically asserted only in the vector.	• ONS 15454 SONET: AR_MXP, AR_XP • ONS 15454 SDH: AR_MXP, AR_XP
EtherStatsPkts1519to1522Octets	Number of packets received with a length from 1519 to 1522 octets.	• ONS 15454 SONET: 10GE_XP, ADM_10G, GE_XP
ifInUCastPkts	Number of unicast packets received.	• ONS 15454 SONET: 10GE_XP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E • ONS 15454 SDH: 10GE_XP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E
ifOutErrors	Total number of transmitted errors.	• ONS 15454 SONET: 10GE_XP, ADM_10G, GE_XP • ONS 15454 SDH: 10GE_XP, ADM_10G, GE_XP
dot3StatsAlignmentErrors	Number of received packets with alignment errors (incomplete frames).	• ONS 15454 SONET: 10GE_XP, GE_XP, MXP_MR_10DME, TXP_MR_10E • ONS 15454 SDH: 10GE_XP, ADM_10G, GE_XP, MXP_MR_10DME, TXP_MR_10E
ifHCInOctets	Number of bytes received since the last counter reset—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP

Table E-31 Field Descriptions for the DWDM-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
ifHCInUcastPkts	Number of unicast packets received—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
ifHCInMulticastPkts	Number of multicast packets received—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
ifHCInBroadcastPkts	Number of broadcast packets received—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
ifHCOutOctets	Number of bytes transmitted since the last counter reset—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
ifHCOutMulticastPkts	Number of multicast packets transmitted—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
ifHCOutBroadcastPkts	Number of broadcast packets transmitted—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
etherStatsHighCapacityPkts	Number of packets received—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
etherStatsHighCapacityOctets	Total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets)—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
etherStatsHighCapacityPkts64Octets	Number of packets received with a length less than or equal to 64 octets—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
etherStatsHighCapacityPkts65to127Octets	Number of packets received with a length from 65 to 127 octets—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
etherStatsHighCapacityPkts128to255Octets	Number of packets received with a length from 128 to 255 octets—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
etherStatsHighCapacityPkts256to511Octets	Number of packets received with a length from 256 to 511 octets—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
etherStatsHighCapacityPkts512to1023Octets	Number of packets received with a length from 512 to 1023 octets—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP

Table E-31 Field Descriptions for the DWDM-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
etherStatsHighCapacityPkts1024to1518Octets	Number of packets received with a length from 1024 to 1518 octets—high capacity.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
cisRxReports	Total Internet Group Management Protocol (IGMP) membership reports received at an interface.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
cisRxLeaves	Total IGMP leave messages received at an interface.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
cisTxReports	Total IGMP membership reports transmitted through an interface.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
cisTxLeaves	Total IGMP leave messages transmitted through an interface.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
cisTxGeneralQueries	Total IGMP general queries transmitted through an interface.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
cisTxGroupSpecificQueries	Total IGMP group-specific queries transmitted through an interface.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
cisRxGeneralQueries	Total IGMP general queries received at an interface.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
cisRxGroupSpecificQueries	Total IGMP group-specific queries received at an interface.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
cisRxValidPackets	Total valid IGMP packets received at an interface.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
cisRxInvalidPackets	Total invalid IGMP packets received at an interface.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
crepHflRxPdus	Number of hardware flood layer PDUs received on the port.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
crepHflTxPdus	Number of hardware flood layer PDUs transmitted on the port.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP

Table E-31 Field Descriptions for the DWDM-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
crepLslRxPdus	Number of link status layer PDUs received on the port.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
crepLslTxPdus	Number of link status layer PDUs transmitted on the port.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
dot3adAggPortStatsLACPDUsRx	Number of valid LACPDUs received on this Aggregation Port.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
dot3adAggPortStatsLACPDUsTx	Number of LACPDUs transmitted on this Aggregation Port.	• ONS 15454 SONET: 10GE_XP, GE_XP • ONS 15454 SDH: 10GE_XP, GE_XP
rxEtherUtilizationStats (%)	Received utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME, TXP_MR_10E
txEtherUtilizationStats (%)	Transmitted utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME, TXP_MR_10E
NE ID	Name of the selected NE.	—

E.2.17 CPT-Series Ethernet PM Table—ONS 15454 SONET, ONS 15454 SDH

The CPT-Series Ethernet PM table shows performance data for the ONS 15454 SONET and ONS 15454 SDH CPT-series Ethernet cards. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the CPT-Series Ethernet PM table.

Note Real-time PM data is not available for Ethernet cards on NE releases earlier than release 5.0.

Table E-32 Field Descriptions for the CPT-Series Ethernet PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
ifInOctets	Number of bytes received since the last counter reset.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
rxTotalPackets	Total number of packets received.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
ifInUCastPkts	Number of unicast packets received.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
ifInMulticastPkts	Number of multicast packets received.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
ifInDiscards	Number of inbound packets that were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4

Table E-32 Field Descriptions for the CPT-Series Ethernet PM Table (continued)

Field	Description	Cards Supported
ifInErrors	Total number of received errors.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
ifOutOctets	Number of bytes transmitted since the last counter reset.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
txTotalPkts	Number of packets transmitted since the last counter reset.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
ifOutUCastPkts	Number of unicast packets transmitted.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
ifOutMulticastPkts	Number of multicast packets transmitted.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
ifOutDiscards	Number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent their being transmitted.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
ifOutErrors	Total number of transmitted errors.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
rxEtherUtilizationStats (%)	Received utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
txEtherUtilizationStats (%)	Transmitted utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	• ONS 15454 SONET: PTSA_GE, PTF_10GE_4, PT_10GE_4 • ONS 15454 SDH: PTSA_GE, PTF_10GE_4, PT_10GE_4
NE ID	Name of the selected NE.	—

E.2.18 GFP PM Table—ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, ONS 15454 SDH, and ONS 15600 SDH

The GFP PM table provides monitoring capability to allow operators to identify performance degradation in the generic framing procedure (GFP) multiplexing and framing. GFP describes a framing and encapsulation format for transporting L2/L3 data over SONET, SDH, or OTN transport networks.

You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the GFP PM table.

Table E-33 Field Descriptions for the GFP PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
GfpStatsRxSBitErrors	Number of GFP single-bit errors in the CHEC.	• ONS 15310 MA SONET: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-MR-10, ML100X-8, ML-MR-10, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, ML-MR-10, MXP_MR_10DME • ONS 15600 SDH: ASAP_4

Table E-33 Field Descriptions for the GFP PM Table (continued)

Field	Description	Cards Supported
GfpStatsRxMBitErrors	Number of GFP multibit errors in the CHEC.	• ONS 15310 MA SONET: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-MR-10, ML100X-8, ML-MR-10, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, ML-MR-10, MXP_MR_10DME • ONS 15600 SDH: ASAP_4
GfpStatsRxTypeInvalid	Number of GFP invalid UPI fields in the type field.	• ONS 15310 MA SONET: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-MR-10, ML100X-8, ML-MR-10, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, ML-MR-10, MXP_MR_10DME • ONS 15600 SDH: ASAP_4
GfpStatsRxCRCErrors	Number of superblock CRC errors in the transparent GFP frame.	• ONS 15310 MA SONET: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-MR-10, ML100X-8, ML-MR-10, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, ML-MR-10, MXP_MR_10DME • ONS 15600 SDH: ASAP_4

Table E-33 Field Descriptions for the GFP PM Table (continued)

Field	Description	Cards Supported
GfpStatsRxCIDInvalid	Number of received frames with an invalid channel ID (CID).	• ONS 15310 MA SONET: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-MR-10, ML100X-8, ML-MR-10, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, ML-MR-10, MXP_MR_10DME
GfpStatsCSFRaised	Number of GFP client signal fail frames.	• ONS 15310 MA SONET: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-MR-10, ML100X-8, ML-MR-10, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, ML-MR-10, MXP_MR_10DME
GfpStatsRxFrame	Number of received data frames.	ONS 15600 SDH: ASAP_4
GfpStatsTxFrame	Number of transmitted data frames.	ONS 15600 SDH: ASAP_4
GfpStatsRxOctets	Number of received data octets.	ONS 15600 SDH: ASAP_4
GfpStatsTxOctets	Number of transmitted data octets.	ONS 15600 SDH: ASAP_4
GfpStatsLFDRaised	Number of GFP LFD frames.	—
GfpStatsRoundTripLatency	Round-trip delay (in milliseconds [ms]) for the end-to-end FC transport.	—
GfpStatsRxSBlkCRCErrors	Number of super block CRC errors detected in the received GFP-T frames.	—
GfpStatsRxDistanceExtBuffers	Number of received buffer credits for GFP-T (valid only if distance extension is enabled).	—
GfpStatsTxDistanceExtBuffers	Number of transmitted buffer credits for GFP-T (valid only if distance extension is enabled).	—
gfpStatscHecRxMBitErrors	Number of received GFP frames with single bit errors in the core header (these errors are uncorrectable).	• ONS 15454 SONET: AR_MXP, AR_XP • ONS 15454 SDH: AR_MXP, AR_XP
gfpStatstHecRxMBitErrors	Number of received GFP frames with single bit errors in the tHec (these errors are uncorrectable).	• ONS 15454 SONET: AR_MXP, AR_XP • ONS 15454 SDH: AR_MXP, AR_XP
NE ID	Name of the selected NE.	—

E.2.19 LEX PM Table—ONS 15454 SONET, ONS 15454 SDH

The LEX PM table provides monitoring of performance parameters related to HDLC particular framing (LEX) on optical interfaces. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

Note LEX monitors performance parameters only on ADM-10G cards.

The following table describes the fields in the LEX PM table.

Table E-34 Field Descriptions for the LEX PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Rx Total Packets	Number of bytes received since the last counter reset.	• ONS 15454 SONET: ADM-10G • ONS 15454 SDH: ADM-10G
ifInErrors	Total number of received errors.	• ONS 15454 SONET: ADM-10G • ONS 15454 SDH: ADM-10G
Tx Total Packets	Number of packets transmitted since the last counter reset.	• ONS 15454 SONET: ADM-10G • ONS 15454 SDH: ADM-10G

Table E-34 Field Descriptions for the LEX PM Table

Field	Description	Cards Supported
ifInOctets	Number of bytes received since the last counter reset.	• ONS 15454 SONET: ADM-10G • ONS 15454 SDH: ADM-10G
ifOutOctets	Number of bytes transmitted since the last counter reset.	• ONS 15454 SONET: ADM-10G • ONS 15454 SDH: ADM-10G
mediaIndStatsRxFramesBadCRC	Number of received data frames with payload CRC errors when HDLC framing is used.	• ONS 15454 SONET: ADM-10G • ONS 15454 SDH: ADM-10G
hdlcInOctets	Number of bytes received (from the SONET/SDH path) prior to the bytes undergoing HLDC decapsulation by the policy engine.	• ONS 15454 SONET: ADM-10G • ONS 15454 SDH: ADM-10G
hdlcRxAborts	Number of received packets aborted on input.	• ONS 15454 SONET: ADM-10G • ONS 15454 SDH: ADM-10G
hdlcOutOctets	Number of bytes transmitted (to the SONET/SDH path) after the bytes undergoing HLDC encapsulation by the policy engine.	• ONS 15454 SONET: ADM-10G • ONS 15454 SDH: ADM-10G
IfInPayloadCrcErrors	Number of payload CRC errors received since the last counter reset.	• ONS 15454 SONET: ADM-10G • ONS 15454 SDH: ADM-10G

E.2.20 High Order PM Table (Far End)—ONS 15310 MA SDH, ONS 15454 SDH

The SDH High Order PM table shows far-end performance data for the far-end ONS 15310 MA SDH and ONS 15454 SDH high-order sections. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the High Order PM table.

Table E-35 Field Descriptions for the High Order PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Interface	Interface name of the selected NE.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
HP-EB	High-order path errored block. HP-EB indicates that one or more bits are in error within a block.	• ONS 15310 MA SDH: CTX, E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-BBE	High-order path background block errors. HP-BBE is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: CTX, E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-ES	High-order path errored seconds. HP-ES is a one-second period with one or more errored blocks or at least one defect.	• ONS 15310 MA SDH: CTX, E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E

Table E-35 Field Descriptions for the High Order PM Table (Far End) (continued)

Field	Description	Cards Supported
HP-SES	High-order path severely errored seconds. HP-SES is a one-second period containing 30 percent or more errored blocks or at least one defect. SES is a subset of ES.	• ONS 15310 MA SDH: CTX, E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-UAS	High-order path unavailable seconds. HP-UAS is a count of the seconds when the VC path was unavailable. A high-order path becomes unavailable when ten consecutive seconds occur that qualify as HP-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as HP-SESs.	• ONS 15310 MA SDH: CTX, E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-ESR	High-order path errored seconds ratio. HP-ESR is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: CTX, E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-SESR	High-order path severely errored seconds ratio. HP-SESR is the ratio of SES to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: CTX, E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-BBER	High-order path background block error ratio. HP-BBER is the ratio of BBE to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: CTX, E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E

Table E-35 Field Descriptions for the High Order PM Table (Far End) (continued)

Field	Description	Cards Supported
HP-FC	High-order path failure count. HP-FC is a count of the number of failed events.	• ONS 15310 MA SDH: CTX, E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: MRC_4, MRC_12_2.5G
NE ID	Name of the selected NE.	—

E.2.21 High Order PM Table (Far End)—ONS 15600 SDH

The High Order PM table shows far-end performance data for the ONS 15600 SDH high-order section. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the High Order PM table.

Table E-36 Field Descriptions for the High Order PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Interface	Interface name of the selected NE.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
HP-EB	High-order path errored blocks (HP-EB) indicates that bits are in error within a block.	ASAP_4, STM16_16, STM64_4
HP-ES	High-order path errored seconds (HP-ES) is a one-second period with one or more errored blocks or at least one defect.	ASAP_4, STM16_16, STM64_4

Table E-36 Field Descriptions for the High Order PM Table (Far End) (continued)

Field	Description	Cards Supported
HP-SES	High-order path severely errored seconds (HP-SES) is a one-second period containing more than 30 percent errored blocks or at least one defect. SES is a subset of ES.	ASAP_4, STM16_16, STM64_4
HP-UAS	High-order path unavailable seconds (HP-UAS) is a count of the seconds when the VC path was unavailable. A low-order path becomes unavailable when ten consecutive seconds occur that qualify as HP-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as HP-SESs.	ASAP_4, STM16_16, STM64_4
HP-FC	High-order path failure count (HP-FC) is a count of the number of failed events.	ASAP_4, STM16_16, STM64_4
HP-BBE	High-order path background block errors (HP-BBE) is an errored block not occurring as part of a severely errored second (SES).	ASAP_4, STM16_16, STM64_4
HP-ESR	High-order path errored seconds ratio (HP-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	ASAP_4, STM16_16, STM64_4
HP-SESR	High-order path severely errored seconds ratio (HP-SESR) is the ratio of SESs to total seconds in available time during a fixed measurement interval.	ASAP_4, STM16_16, STM64_4
HP-BBER	High-order path background block error ratio (HP-BBER) is the ratio of background block errors (BBEs) to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	ASAP_4, STM16_16, STM64_4
NE ID	Name of the selected NE.	—

E.2.22 High Order PM Table—ONS 15310 MA SDH, ONS 15454 SDH

The High Order PM table shows performance data for the ONS 15310 MA SDH and ONS 15454 SDH physical sections. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the High Order PM table.

Table E-37 Field Descriptions for the High Order PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
HP-EB	High-order path errored blocks (HP-EB) indicates that one or more bits are in error within a block.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-ES	High-order path errored seconds (HP-ES) is a one-second period with one or more errored blocks or at least one defect.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-SES	High-order path severely errored seconds (HP-SES) is a one-second period containing greater than 30% errored blocks or at least one defect. SES is a subset of ES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E

Table E-37 Field Descriptions for the High Order PM Table (continued)

Field	Description	Cards Supported
HP-UAS	High-order path unavailable seconds (HP-UAS) is a count of the seconds when the VC path was unavailable. A low-order path becomes unavailable when ten consecutive seconds occur that qualify as HP-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as HP-SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-FC	Number of failed events.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: MRC_4, MRC_12_2.5G
HP-BBE	High-order path background block errors (HP-BBE) is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-ESR	High-order path errored seconds ratio (HP-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E

Table E-37 Field Descriptions for the High Order PM Table (continued)

Field	Description	Cards Supported
HP-SESR	High-order path severely errored seconds ratio (HP-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-BBER	High-order path background block error ratio (HP-BBER) is the ratio of background block errors (BBEs) to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, DS3I, DS3IN, E1N, E1, E1_42, E3, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
Positive Pointer Justification Count Path Detected	Positive pointer justification count, path detected is a count of the positive pointer justifications detected on a particular path on an incoming SDH signal.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-NPJC-Pdet	HP-NPJC-Pdet multiplex section, negative pointer justification count, path detected (MS-NPJC-Pdet) is a count of the negative pointer justifications detected on a particular path on an incoming SDH signal.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E

Table E-37 Field Descriptions for the High Order PM Table (continued)

Field	Description	Cards Supported
HP-PPJC-Pgen	HP-PPJC-Pgen multiplex section, positive pointer justification count, path generated (MS-PPJC-Pgen) is a count of the positive pointer justifications generated for a particular path.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-NPJC-Pgen	HP-NPJC-Pgen multiplex section, negative pointer justification count, path generated (MS-NPJC-Pgen) is a count of the negative pointer justifications generated for a particular path.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-PJ-DIFF	Sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
HP-PJCS-Pdet	Number of high-order path pointer justification count seconds detected on a particular path.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E

Table E-37 Field Descriptions for the High Order PM Table (continued)

Field	Description	Cards Supported
HP-PJCS-Pgen	Number of high-order path pointer justification count seconds generated for a particular path.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC192_XFP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E
NE ID	Name of the selected NE.	—

E.2.23 High Order PM Table—ONS 15600 SDH

The High Order PM table shows performance data for the ONS 15600 SDH physical section. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the High Order PM table.

Table E-38 Field Descriptions for the High Order PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp *(time zone)*	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—

Table E-38 Field Descriptions for the High Order PM Table (continued)

Field	Description	Cards Supported
HP-EB	High-order path errored blocks (HP-EB) indicates that one or more bits are in error within a block.	ASAP_4, STM16_16, STM64_4
HP-ES	High-order path errored seconds (HP-ES) is a one-second period with one or more errored blocks or at least one defect.	ASAP_4, STM16_16, STM64_4
HP-SES	High-order path severely errored seconds (HP-SES) is a one-second period containing greater than 30% errored blocks or at least one defect. SES is a subset of ES.	ASAP_4, STM16_16, STM64_4
HP-UAS	High-order path unavailable seconds (HP-UAS) is a count of the seconds when the VC path was unavailable. A low-order path becomes unavailable when ten consecutive seconds occur that qualify as HP-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as HP-SESs.	ASAP_4, STM16_16, STM64_4
HP-FC	High-order path failure count (HP-FC) is a count of the number of failed events.	ASAP_4, STM16_16, STM64_4
HP-BBE	High-order path background block errors (HP-BBE) is an errored block not occurring as part of an SES.	ASAP_4, STM16_16, STM64_4
HP-ESR	High-order path errored seconds ratio (HP-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	ASAP_4, STM16_16, STM64_4
HP-SESR	High-order path severely errored seconds ratio (HP-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	ASAP_4, STM16_16, STM64_4
HP-BBER	High-order path background block error ratio (HP-BBER) is the ratio of BBEs to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	ASAP_4, STM64_4, STM16_16
HP-PPJC-Pdet	HP-PPJC-Pdet multiplex section, positive pointer justification count, path detected (MS-PPJC-Pdet) is a count of the positive pointer justifications detected on a particular path on an incoming SDH signal.	STM64_4, STM16_16
HP-NPJC-Pdet	HP-NPJC-Pdet multiplex section, negative pointer justification count, path detected (MS-NPJC-Pdet) is a count of the negative pointer justifications detected on a particular path on an incoming SDH signal.	STM64_4, STM16_16
HP-PPJC-Pgen	HP-PPJC-Pgen multiplex section, positive pointer justification count, path generated (MS-PPJC-Pgen) is a count of the positive pointer justifications generated for a particular path.	STM64_4, STM16_16
HP-NPJC-Pgen	HP-NPJC-Pgen multiplex section, negative pointer justification count, path generated (MS-NPJC-Pgen) is a count of the negative pointer justifications generated for a particular path.	STM64_4, STM16_16
NE ID	Name of the selected NE.	—

E.2.24 IP SLA PM Table—ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, and ONS 15454 SDH

The IP SLA PM table allows you to monitor service-level agreements (SLAs) for IP networks. Service levels are measured by downtime, bandwidth, latency, jitter, packet loss, and so on. These measurements are controllable and do not depend on network traffic.

You can display IP SLA performance data in real time. When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

Note

- You can launch the IP SLA PM table only from the IP SLA table, not from the Domain Explorer or the NE Explorer.
- Performance monitoring is disabled for the IP SLA echo operation. If you select an echo row in the IP SLA PM table, the Performance menu is disabled.

The following table describes the fields in the IP SLA PM table.

Table E-39 Field Descriptions for the IP SLA PM Table

Field	Description	Cards Supported
Alias NE ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
NE ID	Name of the selected NE.	—
Validity	Whether the data in the entry is valid.	—
rttMonJitterStatsCompletions	Number of jitter operations that have completed successfully.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10

Table E-39 Field Descriptions for the IP SLA PM Table (continued)

Field	Description	Cards Supported
rttMonJitterStatsOverThresholds	Number of jitter operations that violate the threshold.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsNumOfRTT	Number of successful round trips.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsRTTSum	Sum of the round-trip values, in milliseconds (ms).	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsRTTSum2Low	Sum of the squares of the low round-trip values, in ms.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsRTTSum2High	Sum of the squares of the high round-trip values, in ms.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10

Table E-39 Field Descriptions for the IP SLA PM Table (continued)

Field	Description	Cards Supported
rttMonJitterStatsRTTMin	Minimum number of round-trip times (RTTs) that were measured successfully.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsRTTMax	Maximum number of RTTs that were measured successfully.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsMinOfPositivesSD	Minimum positive jitter values from the source to the destination, in ms. Positive jitter values indicate delays in receiving time from one packet to another.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsMaxOfPositivesSD	Maximum positive jitter values from the source to the destination, in ms. Positive jitter values indicate delays in receiving time from one packet to another.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsNumOfPositivesSD	Number of jitter values from the source to the destination that are positive (that is, network latency increases for two consecutive test packets).	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10

Table E-39 Field Descriptions for the IP SLA PM Table (continued)

Field	Description	Cards Supported
rttMonJitterStatsSumOfPositivesSD	Sum of the positive values, in ms.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsSum2PositivesSDLow	Sum of the squares of the low positive values.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsSum2PositivesSDHigh	Sum of the squares of the high positive values.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsMinOfNegativesSD	Minimum negative jitter values from the source to the destination. The absolute value is given.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsMaxOfNegativesSD	Maximum negative jitter values from the source to the destination. The absolute value is given.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10

Table E-39 Field Descriptions for the IP SLA PM Table (continued)

Field	Description	Cards Supported
rttMonJitterStatsNumOfNegativesSD	Number of jitter values from the source to the destination that are negative (that is, network latency decreases for two consecutive test packets).	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsSumOfNegativesSD	Sum of the negative values.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsSum2NegativesSDLow	Sum of the squares of the negative low values.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsSum2NegativesSDHigh	Sum of the squares of the negative high values.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsMinOfPositivesDS	Minimum of all positive jitter values from packets sent from the destination to the source.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10

Table E-39 Field Descriptions for the IP SLA PM Table (continued)

Field	Description	Cards Supported
rttMonJitterStatsMaxOfPositivesDS	Maximum of all positive jitter values from packets sent from the destination to the source.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsNumOfPositivesDS	Sum of numbers of all positive jitter values from packets sent from the destination to the source.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsSumOfPositivesDS	Sum of RTTs of all positive jitter values from packets sent from the destination to the source.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsSum2PositivesDSLow	Sum of squares of RTTs of all positive jitter values from packets sent from the destination to the source (low-order 32 bits).	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsSum2PositivesDSHigh	Sum of the squares of RTTs of all positive jitter values from packets sent from the destination to the source (high-order 32 bits).	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10

Table E-39 Field Descriptions for the IP SLA PM Table (continued)

Field	Description	Cards Supported
rttMonJitterStatsMinOfNegativesDS	Minimum of all negative jitter values from packets sent from the destination to the source.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsMaxOfNegativesDS	Maximum of all negative jitter values from packets sent from the destination to the source.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsNumOfNegativesDS	Sum of numbers of all negative jitter values from packets sent from the destination to the source.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsSumOfNegativesDS	Sum of RTTs of all negative jitter values from packets sent from the destination to the source.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsSum2NegativesDSLow	Sum of the squares of RTTs of all negative jitter values from packets sent from the destination to the source (low-order 32 bits).	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10

Table E-39 Field Descriptions for the IP SLA PM Table (continued)

Field	Description	Cards Supported
rttMonJitterStatsSum2 NegativesDSHigh	Sum of the squares of RTTs of all negative jitter values from packets sent from the destination to the source (high-order 32 bits).	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsPacke tLossSD	Number of packets lost from the source to the destination.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsPacke tLossDS	Number of packets lost from the destination to the source.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsPacke tOutOfSequence	Number of packets that were returned out of order.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsPacke tMIA	Number of packets lost where the direction (source-to-destination or destination-to-source) cannot be determined.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10

Table E-39 Field Descriptions for the IP SLA PM Table (continued)

Field	Description	Cards Supported
rttMonJitterStatsPacketLateArrival	Number of packets that arrived after the timeout.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsError	Number of times an operation could not be started due to other internal failures.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsBusies	Number of times the operation could not be started because the previously scheduled run was not finished.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsOWSumSD	Sum of one-way times from the source to the destination.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsOWSum2SDLow	Sum of the squares of one-way times from the source to the destination (low-order 32 bits).	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10

Table E-39 Field Descriptions for the IP SLA PM Table (continued)

Field	Description	Cards Supported
rttMonJitterStatsOWSum2SDHigh	Sum of the squares of one-way times from the source to the destination (high-order 32 bits).	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsOWMinSD	Minimum of all one-way times from the source to the destination.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsOWMaxSD	Maximum of all one-way times from the source to the destination.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsOWSumDS	Sum of one-way times from the destination to the source.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsOWSum2DSLow	Sum of the squares of one-way times from the destination to the source (low-order 32 bits).	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10

Table E-39 Field Descriptions for the IP SLA PM Table (continued)

Field	Description	Cards Supported
rttMonJitterStatsOWSum2DSHigh	Sum of the squares of one-way times from the destination to the source (high-order 32 bits).	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsOWMinDS	Minimum of all one-way times from the destination to the source.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsOWMaxDS	Maximum of all one-way times from the destination to the source.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsNumOfOW	Number of one-way times that were measured successfully.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10
rttMonJitterStatsOWMinSDNew	Minimum of all one-way times from the source to the destination. Replaces deprecated rttMonJitterStatsOWMinSD.	• ONS 15310 CL—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15310 MA SONET—ML-100T-8 • ONS 15310 MA SDH—ML-100T-8 • ONS 15454 SONET—ML100T, ML100X-8, ML1000, ML-MR-10 • ONS 15454 SDH—ML100T, ML100X-8, ML1000, ML-MR-10

E.2.25 Low Order VC11 PM Table—ONS 15454 SDH

The Low Order VC11 PM table shows performance data for the ONS 15454 SDH low-order VC11. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Low Order VC11 PM table.

Table E-40 Field Descriptions for the Low Order VC11 PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Interface	Interface name of the selected NE.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
VC11-LP-EB	Low-order path errored block (LP-EB) indicates that one or more bits are in error within a block.	—
VC11-LP-BBE	Low-order path background block error (LP-BBE) is an errored block not occurring as part of an SES.	—
VC11-LP-ES	Low-order path errored seconds (LP-ES) is a one-second period with one or more errored blocks or at least one defect.	—
VC11-LP-SES	Low-order path severely errored seconds (LP-SES) is a one-second period containing greater than 30% errored blocks or at least one defect. SES is a subset of ES.	—
VC11-LP-UAS	Low-order path unavailable seconds (LP-UAS) is a count of the seconds when the VC path was unavailable. A low-order path becomes unavailable when ten consecutive seconds occur that qualify as LP-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as LP-SESs.	—

Table E-40 Field Descriptions for the Low Order VC11 PM Table (continued)

Field	Description	Cards Supported
VC11-LP-ESR	Low-order path errored second ratio (LP-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	—
VC11-LP-SESR	Low-order path severely errored second ratio (LP-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	—
VC11-LP-BBER	Low-order path background block error ratio (LP-BBER) is the ratio of BBEs to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	—
NE ID	Name of the selected NE.	—

E.2.26 Low Order VC12 PM Table—ONS 15310 MA SDH, ONS 15454 SDH

The Low Order VC12 PM table shows performance data for the ONS 15310 MA SDH and ONS 15454 SDH low-order VC12. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Low Order VC12 PM table.

Table E-41 Field Descriptions for the Low Order VC12 PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Interface	Interface name of the selected NE.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—

Table E-41 Field Descriptions for the Low Order VC12 PM Table (continued)

Field	Description	Cards Supported
VC12-LP-EB	Low-order path errored block (LP-EB) indicates that one or more bits are in error within a block.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
VC12-LP-BBE	Low-order path background block error (LP-BBE) is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
VC12-LP-ES	Low-order path errored seconds (LP-ES) is a one-second period with one or more errored blocks or at least one defect.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
VC12-LP-SES	Low-order path severely errored seconds (LP-SES) is a one-second period containing greater than 30% errored blocks or at least one defect. SES is a subset of ES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
VC12-LP-UAS	Low-order path unavailable seconds (LP-UAS) is a count of the seconds when the VC path was unavailable. A low-order path becomes unavailable when ten consecutive seconds occur that qualify as LP-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as LP-SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
VC12-LP-ESR	Low-order path errored second ratio (LP-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
VC12-LP-SESR	Low-order path severely errored second ratio (LP-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42

Table E-41 Field Descriptions for the Low Order VC12 PM Table (continued)

Field	Description	Cards Supported
VC12-LP-BBER	Low-order path background block error ratio (LP-BBER) is the ratio of BBEs to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
NE ID	Name of the selected NE.	—

E.2.27 Low Order VC11 Section PM Table (Far End)—ONS 15454 SDH

The Low Order VC11 Section PM table shows far-end performance data for the ONS 15454 SDH low-order VC11 section far end. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Low Order VC11 Section PM table.

Table E-42 Field Descriptions for the Low Order VC11 Section PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Interface	Interface name of the selected NE.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
VC11-LP-EB	Low-order errored block (LP-EB) indicates that one or more one or more bits are in error within a block.	—

Table E-42 Field Descriptions for the Low Order VC11 Section PM Table (Far End) (continued)

Field	Description	Cards Supported
VC11-LP-BBE	Low-order background block errors (LP-BBE) is an errored block not occurring as part of an SES.	—
VC11-LP-ES	Low-order errored seconds (LP-ES) is a one-second period with one or more errored blocks or at least one defect.	—
VC11-LP-SES	Low-order severely errored seconds (LP-SES) is a one-second period containing greater than or equal to 30 percent errored blocks or at least one defect. SES is a subset of ES.	—
VC11-LP-UAS	Low-order unavailable seconds (LP-UAS) is a count of the seconds when the VC path was unavailable. A low-order path becomes unavailable when ten consecutive seconds occur that qualify as LP-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as LP-SESs.	—
VC11-LP-ESR	Low-order errored second ratio (LP-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	—
VC11-LP-SESR	Low-order severely errored second ratio (LP-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	—
VC11-LP-BBER	Low-order background block error ratio (LP-BBER) is the ratio of BBE to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	—
NE ID	Name of the selected NE.	—

E.2.28 Low Order VC12 Section PM Table (Far End)—ONS 15310 MA SDH, ONS 15454 SDH

The Low Order VC12 Section PM table shows far-end performance data for the ONS 15310 MA SDH and ONS 15454 SDH low-order VC12 section far end. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Low Order VC12 Section PM table.

Table E-43 Field Descriptions for the Low Order VC12 Section PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Interface	Interface name of the selected NE.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
VC12-LP-EB	Low-order errored block (LP-EB) indicates that one or more bits are in error within a block.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
VC12-LP-BBE	Low-order background block errors (LP-BBE) is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
VC12-LP-ES	Low-order errored seconds (LP-ES) is a one-second period with one or more errored blocks or at least one defect.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
VC12-LP-SES	Low-order severely errored seconds (LP-SES) is a one-second period containing greater than or equal to 30 percent errored blocks or at least one defect. SES is a subset of ES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
VC12-LP-UAS	Low-order unavailable seconds (LP-UAS) is a count of the seconds when the VC path was unavailable. A low-order path becomes unavailable when ten consecutive seconds occur that qualify as LP-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as LP-SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
VC12-LP-ESR	Low-order errored second ratio (LP-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42

Table E-43 Field Descriptions for the Low Order VC12 Section PM Table (Far End) (continued)

Field	Description	Cards Supported
VC12-LP-SESR	Low-order severely errored second ratio (LP-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
VC12-LP-BBER	Low-order background block error ratio (LP-BBER) is the ratio of BBE to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: E1, E1N, E1_42
NE ID	Name of the selected NE.	—

E.2.29 Low Order VC3 PM Table—ONS 15310 MA SDH, ONS 15454 SDH

The Low Order VC3 PM table shows performance data for the ONS 15310 MA SDH and ONS 15454 SDH low-order VC3. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Low Order VC3 PM table.

Table E-44 Field Descriptions for the Low Order VC3 PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Interface	Interface name of the selected NE.	—

Table E-44 Field Descriptions for the Low Order VC3 PM Table (continued)

Field	Description	Cards Supported
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
VC3-LP-EB	Low-order path errored block (LP-EB) indicates that one or more bits are in error within a block.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-BBE	Low-order path background block error (LP-BBE) is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-ES	Low-order path errored seconds (LP-ES) is a one-second period with one or more errored blocks or at least one defect.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-SES	Low-order path severely errored seconds (LP-SES) is a one-second period containing greater than 30% errored blocks or at least one defect. SES is a subset of ES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-UAS	Low-order path unavailable seconds (LP-UAS) is a count of the seconds when the VC path was unavailable. A low-order path becomes unavailable when ten consecutive seconds occur that qualify as LP-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as LP-SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-ESR	Low-order path errored second ratio (LP-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-SESR	Low-order path severely errored second ratio (LP-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-BBER	Low-order path background block error ratio (LP-BBER) is the ratio of BBEs to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
NE ID	Name of the selected NE.	—

E.2.30 Low Order VC3 Section PM Table (Far End)—ONS 15310 MA SDH and ONS 15454 SDH

The Low Order VC3 Section PM table shows far-end performance data for the far-end ONS 15310 MA SDH and ONS 15454 SDH low-order VC3 sections. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Low Order VC3 Section PM table.

Table E-45 Field Descriptions for the Low Order VC3 Section PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Interface	Interface name of the selected NE.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
VC3-LP-EB	Low-order section errored block (LP-EB) indicates that one or more bits are in error within a block.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-BBE	Low-order section background block errors (LP-BBE) is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3

Table E-45 Field Descriptions for the Low Order VC3 Section PM Table (Far End) (continued)

Field	Description	Cards Supported
VC3-LP-ES	Low-order section errored seconds (LP-ES) is a one-second period with one or more errored blocks or at least one defect.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-SES	Low-order section severely errored seconds (LP-SES) is a one-second period containing greater than or equal to 30 percent errored blocks or at least one defect. SES is a subset of ES.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-UAS	Low-order section unavailable seconds (LP-UAS) is a count of the seconds when the VC path was unavailable. A low-order path becomes unavailable when ten consecutive seconds occur that qualify as LP-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as LP-SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-ESR	Low-order section errored second ratio (LP-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-SESR	Low-order section severely errored seconds ratio (LP-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
VC3-LP-BBER	Low-order section background block error ratio (LP-BBER) is the ratio of BBE to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: E1_21_E3_DS3_3, E1_63_E3_DS3_3 • ONS 15454 SDH: DS3I, DS3IN, E3
NE ID	Name of the selected NE.	—

E.2.31 Multiplex Section PM Table (Far End)—ONS 15310 MA SDH, ONS 15454 SDH

The Multiplex Section PM table shows far-end performance data for the ONS 15310 MA SDH and ONS 15454 SDH multiplex sections (far-end). You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.

- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Multiplex Section PM table.

Table E-46 Field Descriptions for the Multiplex Section PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
MS-EB	Multiplex section errored block (MS-EB) indicates that one or more bits are in error within a block.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
MS-ES	Multiplex section errored seconds (MS-E) is a one-second period with one or more errored blocks or at least one defect.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G

Table E-46 Field Descriptions for the Multiplex Section PM Table (Far End) (continued)

Field	Description	Cards Supported
MS-SES	Multiplex section severely errored seconds (MS-SES) is a one-second period that contains 30 percent or more errored blocks or at least one defect. SES is a subset of ES. For more information, see ITU-T G.829 Section 5.1.3.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
MS-UAS	Multiplex section unavailable seconds (MS-UAS) is a count of the seconds when the section was unavailable. A section becomes unavailable when ten consecutive seconds occur that qualify as MS-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as MS-SESs. When the condition is entered, MS-SESs decrement and then count toward MS-UAS.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, MRC_4, ADM_10G, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
MS-FC	Multiplex section failure count (MS-FC) is a count of the number of failed events.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: ADM_10G
MS-BBE	Multiplex section background block errors (MS-BBE) is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
MS-ESR	Multiplex section errored seconds ratio (MS-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G

Table E-46 Field Descriptions for the Multiplex Section PM Table (Far End) (continued)

Field	Description	Cards Supported
MS-SESR	Multiplex section severely errored seconds ratio (MS-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
MS-BBER	Multiplex section background block errored ratio (MS-BBER) is the ratio of BBE to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
NE ID	Name of the selected NE.	—

E.2.32 Multiplex Section PM Table (Far End)—ONS 15600 SDH

The Multiplex Section PM table shows far-end performance data for the ONS 15600 SDH multiplex section far end. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Multiplex Section PM table.

Table E-47 Field Descriptions for the Multiplex Section PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
MS-EB	Multiplex section errored block (MS-EB) indicates that one or more bits are in error within a block.	ASAP_4, STM16_16, STM64_4
MS-ES	Multiplex section errored seconds (MS-ES) is a one-second period with one or more errored blocks or at least one defect.	ASAP_4, STM16_16, STM64_4
MS-SES	Multiplex section severely errored seconds (MS-SES) is a one-second period that contains 30 percent or more errored blocks or at least one defect. SES is a subset of ES. For more information, see ITU-T G.829 Section 5.1.3.	ASAP_4, STM16_16, STM64_4
MS-UAS	Multiplex section unavailable seconds (MS-UAS) is a count of the seconds when the section was unavailable. A section becomes unavailable when ten consecutive seconds occur that qualify as MS-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as MS-SESs. When the condition is entered, MS-SESs decrement and then count toward MS-UAS.	ASAP_4, STM16_16, STM64_4
MS-FC	Multiplex section failure count (MS-FC) is a count of the number of failed events.	ASAP_4, STM16_16, STM64_4
MS-BBE	Multiplex section background block errors (MS-BBE) is an errored block not occurring as part of an SES.	ASAP_4, STM16_16, STM64_4
MS-ESR	Multiplex section errored seconds ratio (MS-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	—
MS-SESR	Multiplex section severely errored seconds ratio (MS-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	—
MS-BBER	Multiplex section background block errored ratio (MS-BBER) is the ratio of BBE to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	—
NE ID	Name of the selected NE.	—

E.2.33 Multiplex Section PM Table (Near End)—ONS 15310 MA SDH, ONS 15454 SDH

The Multiplex Section PM table shows performance data for the ONS 15310 MA SDH and ONS 15454 SDH multiplex sections. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Multiplex Section PM table.

Table E-48 Field Descriptions for the Multiplex Section PM Table (Near End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
MS-EB	Multiplex section errored blocks (MS-EB) indicates that bits are in error within a block.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC192_XFP, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G

Table E-48 Field Descriptions for the Multiplex Section PM Table (Near End) (continued)

Field	Description	Cards Supported
MS-ES	Multiplex section errored seconds (MS-ES) is a one-second period with one or more errored blocks or at least one defect.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC192_XFP, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
MS-SES	Multiplex section severely errored seconds (MS-SES) is a one-second period that contains 30 percent or more errored blocks or at least one defect. SES is a subset of ES. For more information, see ITU-T G.829 Section 5.1.3.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC192_XFP, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
MS-UAS	Multiplex section unavailable seconds (MS-UAS) is a count of the seconds when the section was unavailable. A section becomes unavailable when ten consecutive seconds occur that qualify as MS-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as MS-SESs. When the condition is entered, MS-SESs decrement and then count toward MS-UAS.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC192_XFP, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
MS-FC	Multiplex section failure count (MS-FC) is a count of the number of failed events.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: ADM_10G, MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP

Table E-48 Field Descriptions for the Multiplex Section PM Table (Near End) (continued)

Field	Description	Cards Supported
MS-BBE	Multiplex section background block errors (MS-BBE) is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC192_XFP, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
MS-PSC	In a 1 + 1 protection scheme for a working card, protection switching count (PSC) is a count of the number of times service switches from a working card to a protection card plus the number of times service switches back to the working card. For a protection card, PSC is a count of the number of times service switches to a working card from a protection card plus the number of times service switches back to the protection card. The PSC PM applies to revertive and nonrevertive, line-level protection switching. **Note** MS-SPRing is not supported on the STM-1 card; therefore, the PSD-W, PSD-S, and PSD-R PMs do not increment. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, STM1, STM1_8, STM4, STM4_4, STM16, STM64
MS-PSD	Protection switching duration (PSD) applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, PSD is a count of the seconds that the line was used to carry service. The PSD PM applies to revertive and nonrevertive, line-level protection switching. **Note** MS-SPRing is not supported on the STM-1 card; therefore, the PSD-W, PSD-S, and PSD-R PMs do not increment. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, STM1, STM1_8, STM4, STM4_4, STM16, STM64
MS-PSC-W	For a working line in a 2-fiber MS-SPRing, protection switching count–working (PSC-W) is a count of the number of times traffic switches away from the working capacity in the failed line and back to the working capacity after the failure is cleared. PSC-W increments on the failed working line and PSC increments on the active protect line. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, STM4, STM4_4, STM16, STM64

Table E-48 Field Descriptions for the Multiplex Section PM Table (Near End) (continued)

Field	Description	Cards Supported
MS-PSD-W	For a working line in a 2-fiber MS-SPRing, protection switching duration–working (PSD-W) is a count of the number of seconds that service was carried on the protection line. PSD-W increments on the failed working line and PSD increments on the active protect line. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, STM4, STM4_4, STM16, STM64
MS-PSC-S	In a 4-fiber MS-SPRing, protection switching count–span (PSC-S) is a count of the number of times service switches from a working line to a protection line plus the number of times it switches back to the working line. A count is only incremented if span switching is used. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, STM4, STM4_4, STM16, STM64
MS-PSD-S	In a 4-fiber MS-SPRing, protection switching duration–span (PSD-S) is a count of the seconds that the protection line was used to carry service. A count is only incremented if span switching is used. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, STM4, STM4_4, STM16, STM64
MS-PSC-R	In a 4-fiber MS-SPRing, protection switching count–ring (PSC-R) is a count of the number of times service switches from a working line to a protection line plus the number of times it switches back to a working line. A count is only incremented if ring switching is used. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, STM4, STM4_4, STM16, STM64
MS-PSD-R	In a 4-fiber MS-SPRing, protection switching duration–ring (PSD-R) is a count of the seconds that the protection line was used to carry service. A count is only incremented if ring switching is used. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, STM4, STM4_4, STM16, STM64
MS-ESR	Multiplex section errored seconds ratio (MS-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, STM1E_12, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G

Table E-48 Field Descriptions for the Multiplex Section PM Table (Near End) (continued)

Field	Description	Cards Supported
MS-SESR	Multiplex section severely errored seconds ratio (MS-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, STM1E_12, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
MS-BBER	Multiplex section background block error ratio (MS-BBER) is the ratio of BBE to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, STM1E_12, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
NE ID	Name of the selected NE.	—

E.2.34 Multiplex Section PM Table—ONS 15600 SDH

The Multiplex Section PM table shows performance data for the ONS 15600 SDH multiplex section. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Multiplex Section PM table.

Table E-49 Field Descriptions for the Multiplex Section PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—

Table E-49 Field Descriptions for the Multiplex Section PM Table (continued)

Field	Description	Cards Supported
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
MS-EB	Multiplex section errored blocks (MS-EB) indicates that one or more bits are in error within a block.	ASAP_4, STM16_16, STM64_4
MS-ES	Multiplex section errored seconds (MS-ES) is a one-second period with one or more errored blocks or at least one defect.	ASAP_4, STM16_16, STM64_4
MS-SES	Multiplex section severely errored seconds (MS-SES) is a one-second period that contains 30 percent or more errored blocks or at least one defect. SES is a subset of ES. For more information, see ITU-T G.829 Section 5.1.3.	ASAP_4, STM16_16, STM64_4
MS-UAS	Multiplex section unavailable seconds (MS-UAS) is a count of the seconds when the section was unavailable. A section becomes unavailable when ten consecutive seconds occur that qualify as MS-SESs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as MS-SESs. When the condition is entered, MS-SESs decrement and then count toward MS-UAS.	ASAP_4, STM16_16, STM64_4
MS-FC	Multiplex section failure count (MS-FC) is a count of the number of failed events.	ASAP_4, STM16_16, STM64_4
MS-BBE	Multiplex section background block errors (MS-BBE) is an errored block not occurring as part of an SES.	ASAP_4, STM16_16, STM64_4
MS-PSC	In a 1 + 1 protection scheme for a working card, PSC is a count of the number of times service switches from a working card to a protection card plus the number of times service switches back to the working card. For a protection card, PSC is a count of the number of times service switches to a working card from a protection card plus the number of times service switches back to the protection card. The PSC PM applies to revertive and nonrevertive, line-level protection switching. **Note** MS-SPRing is not supported on the STM-1 card; therefore, the PSD-W, PSD-S, and PSD-R PMs do not increment.	ASAP_4, STM16_16, STM64_4
MS-PSD	PSD applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, PSD is a count of the seconds that the line was used to carry service. The PSD PM applies to revertive and nonrevertive, line-level protection switching. **Note** MS-SPRing is not supported on the STM-1 card; therefore, the PSD-W, PSD-S, and PSD-R PMs do not increment.	ASAP_4, STM16_16, STM64_4

Table E-49 Field Descriptions for the Multiplex Section PM Table (continued)

Field	Description	Cards Supported
MS-PSC-W	For a working line in a 2-fiber MS-SPRing, protection switching count–working (PSC-W) is a count of the number of times traffic switches away from the working capacity in the failed line and back to the working capacity after the failure is cleared. PSC-W increments on the failed working line and PSC increments on the active protect line.	ASAP_4, STM16_16, STM64_4
MS-PSD-W	For a working line in a 2-fiber MS-SPRing, protection switching duration–working (PSD-W) is a count of the number of seconds that service was carried on the protection line. PSD-W increments on the failed working line and PSD increments on the active protect line.	ASAP_4, STM16_16, STM64_4
MS-PSC-S	In a 4-fiber MS-SPRing, protection switching count–span (PSC-S) is a count of the number of times service switches from a working line to a protection line plus the number of times it switches back to the working line. A count is only incremented if span switching is used.	ASAP_4, STM16_16, STM64_4
MS-PSD-S	In a 4-fiber MS-SPRing, protection switching duration–span (PSD-S) is a count of the seconds that the protection line was used to carry service. A count is only incremented if span switching is used.	ASAP_4, STM16_16, STM64_4
MS-PSC-R	In a 4-fiber MS-SPRing, protection switching count–ring (PSC-R) is a count of the number of times service switches from a working line to a protection line plus the number of times it switches back to a working line. A count is only incremented if ring switching is used.	ASAP_4, STM16_16, STM64_4
MS-PSD-R	In a 4-fiber MS-SPRing, protection switching duration–ring (PSD-R) is a count of the seconds that the protection line was used to carry service. A count is only incremented if ring switching is used.	ASAP_4, STM16_16, STM64_4
MS-ESR	Multiplex section errored seconds ratio (MS-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	—
MS-SESR	Multiplex section severely errored seconds ratio (MS-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	—
MS-BBER	Multiplex section background block error ratio (MS-BBER) is the ratio of BBE to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	—
NE ID	Name of the selected NE.	—

E.2.35 Optical Physical PM Table—ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, and ONS 15600 SDH

The Optical Physical PM table shows physical-layer performance data. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.

- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Optical Service Channel (OSC) power—New optical power parameters are monitored for optical cards. Six new PM parameters are added to all the optical interfaces of all the supported cards for ONS 15454 SONET and ONS 15454 SDH. Using Prime Optical, you can monitor six new parameters for optical power: three each for received and transmitted power.

You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Optical Physical PM table.

Table E-50 Field Descriptions for the Optical Physical PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Card-level interface.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Laser Bias Current	Laser bias current, which is interpreted as a percentage value from 0 to 100. **Note** Laser bias current is not supported (N/A) for the TXP_MR_2.5G and TXPP_MR_2.5G cards.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500 • ONS 15310 MA SDH: CTX_2500 • ONS 15454 SONET: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, OC3_8/STM1_8, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OTU2_XP • ONS 15454 SDH: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, OC3_8/STM1_8, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OTU2_XP • ONS 15600 SONET: ASAP_4, OC48_16, OC192_4 • ONS 15600 SDH: ASAP_4, STM16_16, STM64_4

Table E-50 Field Descriptions for the Optical Physical PM Table (continued)

Field	Description	Cards Supported
Optical Power Transmitted	Optical power transmitted, which is interpreted as a percentage value from 0 to 100. **Note** Optical power transmitted is not supported (N/A) for the TXP_MR_2.5G and TXPP_MR_2.5G cards.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500 • ONS 15310 MA SDH: CTX_2500 • ONS 15454 SONET: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, OC3_8/STM1_8, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OTU2_XP • ONS 15454 SDH: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, OC3_8/STM1_8, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OTU2_XP • ONS 15454 M2/M6: RAMAN_CTP, RAMAN_COP • ONS 15600 SONET: ASAP_4, OC48_16, OC192_4 • ONS 15600 SDH: ASAP_4, STM16_16, STM64_4
Optical Power Received	Optical power received, which is interpreted as a percentage value from 0 to 100. **Note** Optical power received is not supported (N/A) for the TXP_MR_2.5G and TXPP_MR_2.5G cards.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500 • ONS 15310 MA SDH: CTX_2500 • ONS 15454 SONET: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, OC3_8/STM1_8, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OTU2_XP • ONS 15454 SDH: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, OC3_8/STM1_8, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OTU2_XP • ONS 15454 M2/M6: RAMAN_CTP • ONS 15600 SONET: ASAP_4, OC48_16, OC192_4 • ONS 15600 SDH: ASAP_4, STM16_16, STM64_4
Minimum Laser Bias	Minimum laser bias, which is interpreted as a percentage value from 0 to 100.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C

Table E-50 Field Descriptions for the Optical Physical PM Table (continued)

Field	Description	Cards Supported
Average Laser Bias	Average laser bias, which is interpreted as a percentage value from 0 to 100.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C
Maximum Laser Bias	Maximum laser bias, which is interpreted as a percentage value from 0 to 100.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C

Table E-50 Field Descriptions for the Optical Physical PM Table (continued)

Field	Description	Cards Supported
Minimum Transmitted Power	Minimum transmitted power level in increments of one-tenths of decibels referenced to 1 milliwatt (dBm). The range is from –40.0 to 30.0 dBm for the following cards: TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, 2.5G_DM, 2.5G_DMP, MXP_2.5G_10E, and MXP_2.5G_10G. For the other supported DWDM cards, the range is from –50.0 to 30.0 dBm. **Note** Transmitted power is not supported for trunk ports.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, 32DMX, 32DMX_L, 32DMX_O, 32MUX_O, 32WSS, 32WSS_L, 40DMX_C, 40MUX_C, 40WSS_C, 40WXC_C, 80WXC_C, 4MD, AD_1B, AD_1C, AD_2C, AD_4B, AD_4C, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OPT_BST, OPT_BST_E, OPT_BST_L, OPT_PRE, OPT_PRE_L, OSC_CSM, OSCM, OTU2_XP, PSM, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, 32DMX, 32DMX_L, 32DMX_O, 32MUX_O, 32WSS, 32WSS_L, 40DMX_C, 40MUX_C, 40WSS_C, 40WXC_C, 80WXC_C, 4MD, AD_1B, AD_1C, AD_2C, AD_4B, AD_4C, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OPT_BST, OPT_BST_E, OPT_BST_L, OPT_PRE, OPT_PRE_L, OSC_CSM, OSCM, OTU2_XP, PSM, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 M2/M6: RAMAN_CTP, RAMAN_COP

Table E-50 Field Descriptions for the Optical Physical PM Table (continued)

Field	Description	Cards Supported
Average Transmitted Power	Average transmitted power level in increments of one-tenths of dBm. The range is from –40.0 to 30.0 dBm for the following cards: TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, 2.5G_DM, 2.5G_DMP, MXP_2.5G_10E, and MXP_2.5G_10G. For the other supported DWDM cards, the range is from –50.0 to 30.0 dBm. **Note** Transmitted power is not supported for trunk ports.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, 32DMX, 32DMX_L, 32DMX_O, 32MUX_O, 32WSS, 32WSS_L, 40DMX_C, 40MUX_C, 40WSS_C, 40WXC_C, 80WXC_C, 4MD, AD_1B, AD_1C, AD_2C, AD_4B, AD_4C, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OPT_BST, OPT_BST_E, OPT_BST_L, OPT_PRE, OPT_PRE_L, OSC_CSM, OSCM, OTU2_XP, PSM, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, 32MUX_O, 32DMX, 32DMX_L, 32DMX_O, 32WSS, 32WSS_L, 40DMX_C, 40MUX_C, 40WSS_C, 40WXC_C, 80WXC_C, 4MD, AD_1B, AD_1C, AD_2C, AD_4B, AD_4C, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OPT_BST, OPT_BST_E, OPT_BST_L, OPT_PRE, OPT_PRE_L, OSC_CSM, OSCM, OTU2_XP, PSM, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 M2/M6: RAMAN_CTP, RAMAN_COP

Table E-50 Field Descriptions for the Optical Physical PM Table (continued)

Field	Description	Cards Supported
Maximum Transmitted Power	Maximum transmitted power level in increments of one-tenths of dBm. The range is from –40.0 to 30.0 dBm for the following cards: TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, 2.5G_DM, 2.5G_DMP, MXP_2.5G_10E, and MXP_2.5G_10G. For the other supported DWDM cards, the range is from –50.0 to 30.0 dBm. **Note** Transmitted power is not supported for trunk ports.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, 32DMX, 32DMX_L, 32DMX_O, 32MUX_O, 32WSS, 32WSS_L, 40DMX_C, 40MUX_C, 40WSS_C, 40WXC_C, 80WXC_C, 4MD, AD_1B, AD_1C, AD_2C, AD_4B, AD_4C, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OPT_BST, OPT_BST_E, OPT_BST_L, OPT_PRE, OPT_PRE_L, OSC_CSM, OSCM, OTU2_XP, PSM, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, 32DMX, 32DMX_L, 32DMX_O, 32MUX_O, 32WSS, 32WSS_L, 40DMX_C, 40MUX_C, 40WSS_C, 40WXC_C, 80WXC_C, 4MD, AD_1B, AD_1C, AD_2C, AD_4B, AD_4C, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OPT_BST, OPT_BST_E, OPT_BST_L, OPT_PRE, OSC_CSM, OPT_PRE_L, OSCM, OTU2_XP, PSM, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 M2/M6: RAMAN_CTP, RAMAN_COP

Table E-50 Field Descriptions for the Optical Physical PM Table (continued)

Field	Description	Cards Supported
Minimum Received Power	Minimum received power level in increments of one-tenths of dBm. The range is from –40.0 to 30.0 dBm for the following cards: TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, 2.5G_DM, 2.5G_DMP, MXP_2.5G_10E, and MXP_2.5G_10G. For the other supported DWDM cards, the range is from –50.0 to 30.0 dBm.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, 32DMX, 32DMX_L, 32DMX_O, 32MUX_O, 32WSS, 32WSS_L, 40DMX_C, 40MUX_C, 40WSS_C, 40WXC_C, 80WXC_C, 4MD, AD_1B, AD_1C, AD_2C, AD_4B, AD_4C, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OPT_BST, OPT_BST_E, OPT_BST_L, OPT_PRE, OPT_PRE_L, OSC_CSM, OSCM, OTU2_XP, PSM, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, 32DMX, 32DMX_L, 32DMX_O, 32MUX_O, 32WSS, 32WSS_L, 40DMX_C, 40MUX_C, 40WSS_C, 40WXC_C, 80WXC_C, 4MD, AD_1B, AD_1C, AD_2C, AD_4B, AD_4C, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OPT_BST, OPT_BST_E, OPT_BST_L, OPT_PRE, OPT_PRE_L, OSC_CSM, OSCM, OTU2_XP, PSM, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 M2/M6: RAMAN_CTP

Table E-50 Field Descriptions for the Optical Physical PM Table (continued)

Field	Description	Cards Supported
Average Received Power	Average received power level in increments of one-tenths of dBm. The range is from –40.0 to 30.0 dBm for the following cards: TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, 2.5G_DM, 2.5G_DMP, MXP_2.5G_10E, and MXP_2.5G_10G. For the other supported DWDM cards, the range is from –50.0 to 30.0 dBm.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, 32DMX, 32DMX_L, 32DMX_O, 32MUX_O, 32WSS, 32WSS_L, 40DMX_C, 40MUX_C, 40WSS_C, 40WXC_C, 80WXC_C, 4MD, AD_1B, AD_1C, AD_2C, AD_4B, AD_4C, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OPT_BST, OPT_BST_E, OPT_BST_L, OPT_PRE, OPT_PRE_L, OSC_CSM, OSCM, OTU2_XP, PSM, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, 32DMX, 32DMX_L, 32DMX_O, 32MUX_O, 32WSS, 32WSS_L, 40DMX_C, 40MUX_C, 40WSS_C, 40WXC_C, 80WXC_C, 4MD, AD_1B, AD_1C, AD_2C, AD_4B, AD_4C, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OPT_BST, OPT_BST_E, OPT_BST_L, OPT_PRE, OPT_PRE_L, OSC_CSM, OSCM, OTU2_XP, PSM, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 M2/M6: RAMAN_CTP

Table E-50 Field Descriptions for the Optical Physical PM Table (continued)

Field	Description	Cards Supported
Maximum Received Power	Maximum received power level in increments of one-tenths of dBm. The range is from –40.0 to 30.0 dBm for the following cards: TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, 2.5G_DM, 2.5G_DMP, MXP_2.5G_10E, and MXP_2.5G_10G. For the other supported DWDM cards, the range is from –50.0 to 30.0 dBm.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, 32DMX, 32DMX_L, 32DMX_O, 32MUX_O, 32WSS, 32WSS_L, 40DMX_C, 40MUX_C, 40WSS_C, 40WXC_C, 80WXC_C, 4MD, AD_1B, AD_1C, AD_2C, AD_4B, AD_4C, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OPT_BST, OPT_BST_E, OPT_BST_L, OPT_PRE, OPT_PRE_L, OSC_CSM, OSCM, OTU2_XP, PSM, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, 32DMX, 32DMX_L, 32DMX_O, 32MUX_O, 32WSS, 32WSS_L, 40DMX_C, 40MUX_C, 40WSS_C, 40WXC_C, 80WXC_C, 4MD, AD_1B, AD_1C, AD_2C, AD_4B, AD_4C, ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C, OPT_BST, OPT_BST_E, OPT_BST_L, OPT_PRE, OPT_PRE_L, OSC_CSM, OSCM, OTU2_XP, PSM, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4, PT_10GE_4, 40G-MXP-C • ONS 15454 M2/M6: RAMAN_CTP
Minimum Passthrough Power	Displays the minimum passthrough power value.	• ONS 15454 SONET: 32WSS, 32WSS_L, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C • ONS 15454 SDH: 32WSS, 32WSS_L, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C
Average Passthrough Power	Displays the average passthrough power value.	• ONS 15454 SONET: 32WSS, 32WSS_L, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C • ONS 15454 SDH: 32WSS, 32WSS_L, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C
Maximum Passthrough Power	Displays the maximum passthrough power value.	• ONS 15454 SONET: 32WSS, 32WSS_L, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C • ONS 15454 SDH: 32WSS, 32WSS_L, OPT_AMP_17_C, OPT_AMP_C, OPT_RAMP_C

Table E-50 Field Descriptions for the Optical Physical PM Table (continued)

Field	Description	Cards Supported
Minimum Transmitted OSC Power	Minimum transmitted OSC power in increments of one-tenths of dBm. For the other supported DWDM cards, the range is from –50.0 to 30.0 dBm.	• ONS 15454 SONET: OPT_AMP_17_C, OPT_AMP_C, OPT_AMP_L, OPT_BST, OPT_BST_E, OPT_BST_L, OSCM, OSC_CSM, SMR_1, SMR_2 • ONS 15454 SDH: OPT_AMP_17_C, OPT_AMP_C, OPT_AMP_L, OPT_BST, OPT_BST_E, OPT_BST_L, OSCM, OSC_CSM, SMR_1, SMR_2
Average Transmitted OSC Power	Average transmitted OSC power level in increments of one-tenths of dBm. For the other supported DWDM cards, the range is from –50.0 to 30.0 dBm.	• ONS 15454 SONET: OPT_AMP_17_C, OPT_AMP_C, OPT_AMP_L, OPT_BST, OPT_BST_E, OPT_BST_L, OSCM, OSC_CSM, SMR_1, SMR_2 • ONS 15454 SDH: OPT_AMP_17_C, OPT_AMP_C, OPT_AMP_L, OPT_BST, OPT_BST_E, OPT_BST_L, OSCM, OSC_CSM, SMR_1, SMR_2
Maximum Transmitted OSC Power	Maximum transmitted OSC power level in increments of one-tenths of dBm. For the other supported DWDM cards, the range is from –50.0 to 30.0 dBm.	• ONS 15454 SONET: OPT_AMP_17_C, OPT_AMP_C, OPT_AMP_L, OPT_BST, OPT_BST_E, OPT_BST_L, OSCM, OSC_CSM, SMR_1, SMR_2 • ONS 15454 SDH: OPT_AMP_17_C, OPT_AMP_C, OPT_AMP_L, OPT_BST, OPT_BST_E, OPT_BST_L, OSCM, OSC_CSM, SMR_1, SMR_2
Minimum Received OSC Power	Minimum received OSC power level in increments of one-tenths of dBm. For the other supported DWDM cards, the range is from –50.0 to 30.0 dBm.	• ONS 15454 SONET: OPT_AMP_17_C, OPT_AMP_C, OPT_AMP_L, OPT_BST, OPT_BST_E, OPT_BST_L, OSCM, OSC_CSM, SMR_1, SMR_2 • ONS 15454 SDH: OPT_AMP_17_C, OPT_AMP_C, OPT_AMP_L, OPT_BST, OPT_BST_E, OPT_BST_L, OSCM, OSC_CSM, SMR_1, SMR_2
Average Received OSC Power	Average received OSC power level in increments of one-tenths of dBm. For the other supported DWDM cards, the range is from –50.0 to 30.0 dBm.	• ONS 15454 SONET: OPT_AMP_17_C, OPT_AMP_C, OPT_AMP_L, OPT_BST, OPT_BST_E, OPT_BST_L, OSCM, OSC_CSM, SMR_1, SMR_2 • ONS 15454 SDH: OPT_AMP_17_C, OPT_AMP_C, OPT_AMP_L, OPT_BST, OPT_BST_E, OPT_BST_L, OSCM, OSC_CSM, SMR_1, SMR_2
Maximum Received OSC Power	Maximum received OSC power level in increments of one-tenths of dBm. For the other supported DWDM cards, the range is from –50.0 to 30.0 dBm.	• ONS 15454 SONET: OPT_AMP_17_C, OPT_AMP_C, OPT_AMP_L, OPT_BST, OPT_BST_E, OPT_BST_L, OSCM, OSC_CSM, SMR_1, SMR_2 • ONS 15454 SDH: OPT_AMP_17_C, OPT_AMP_C, OPT_AMP_L, OPT_BST, OPT_BST_E, OPT_BST_L, OSCM, OSC_CSM, SMR_1, SMR_2

Table E-50 Field Descriptions for the Optical Physical PM Table (continued)

Field	Description	Cards Supported
Minimum PMD	Minimum polarization-mode dispersion (PMD) value, in picoseconds (ps).	• ONS 15454 SONET: 40E-MXP-C, 40E-TXP-C, 40G-MXP-C • ONS 15454 SDH: 40E-MXP-C, 40E-TXP-C, 40G-MXP-C
Average PMD	Average PMD value, in ps.	• ONS 15454 SONET: 40E-MXP-C, 40E-TXP-C, 40G-MXP-C • ONS 15454 SDH: 40E-MXP-C, 40E-TXP-C, 40G-MXP-C
Maximum PMD	Maximum PMD value, in ps.	• ONS 15454 SONET: 40E-MXP-C, 40E-TXP-C, 40G-MXP-C • ONS 15454 SDH: 40E-MXP-C, 40E-TXP-C, 40G-MXP-C
Minimum OSNR	Minimum optical signal-to-noise ratio (OSNR), in dBm.	• ONS 15454 SONET: 40E-MXP-C, 40E-TXP-C, 40G-MXP-C • ONS 15454 SDH: 40E-MXP-C, 40E-TXP-C, 40G-MXP-C
Average OSNR	Average OSNR, in dBm.	• ONS 15454 SONET: 40E-MXP-C, 40E-TXP-C, 40G-MXP-C • ONS 15454 SDH: 40E-MXP-C, 40E-TXP-C, 40G-MXP-C
Maximum OSNR	Maximum OSNR, in dBm.	• ONS 15454 SONET: 40E-MXP-C, 40E-TXP-C, 40G-MXP-C • ONS 15454 SDH: 40E-MXP-C, 40E-TXP-C, 40G-MXP-C
RX Second Order PMD Estimation (SOPMD)	Second Order PMD, in ps^2.	• ONS 15454 SONET: 100G_LC_C • ONS 15454 SDH:100G_LC_C
Polarization Change Rate Estimation (PCR)	Polarization Change Rate, in 10*rad/s.	• ONS 15454 SONET: 100G_LC_C • ONS 15454 SDH:100G_LC_C
RX Polarization Dependent Loss Estimation (PDL)	Polarization Dependent Loss, in dBm.	• ONS 15454 SONET:100G_LC_C • ONS 15454 SDH:100G_LC_C
NE ID	Name of the selected NE.	—

E.2.36 OTN FEC PM Table—ONS 15454 SONET, ONS 15454 SDH

The OTN FEC PM table shows OTN forward error correction (FEC) performance data for trunk ports on the ONS 15454 SONET and ONS 15454 SDH. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the OTN FEC PM table.

Table E-51 Field Descriptions for the OTN FEC PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Bit Errors Corrected	Number of bit errors corrected.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4

Table E-51 Field Descriptions for the OTN FEC PM Table (continued)

Field	Description	Cards Supported
Uncorrectable Words	Ratio of uncorrected codewords to codewords transmitted. A codeword is a block of *N* symbols that carry *K* information symbols and *R* redundant symbols (N = K+R).	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
NE ID	Name of the selected NE.	—

E.2.37 OTN Path PM Table (Far End)—ONS 15454 SONET, ONS 15454 SDH

The OTN Path PM table shows OTN path performance data for trunk ports on the ONS 15454 SONET and ONS 15454 SDH. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the OTN Path PM table.

Table E-52 Field Descriptions for the OTN Path PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—

Table E-52 Field Descriptions for the OTN Path PM Table (Far End) (continued)

Field	Description	Cards Supported
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
ES-P	Errored seconds–path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
SES-P	Severely errored seconds–path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
UAS-P	Unavailable seconds–path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4

Table E-52 Field Descriptions for the OTN Path PM Table (Far End) (continued)

Field	Description	Cards Supported
BBE-P	Background block errors–path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
FC-P	Failure count–path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
ESR-P	Errored seconds ratio–path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
SESR-P	Severely errored seconds ratio–path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4

Table E-52 Field Descriptions for the OTN Path PM Table (Far End) (continued)

Field	Description	Cards Supported
BBER-P	Background block errors ratio–path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
NE ID	Name of the selected NE.	—

E.2.38 OTN Path PM Table (Near End)—ONS 15454 SONET, ONS 15454 SDH

The OTN Path PM table shows near-end OTN path performance data for trunk ports on the ONS 15454 SONET and ONS 15454 SDH. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the OTN Path PM table.

Table E-53 Field Descriptions for the OTN Path PM Table (Near End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—

Table E-53 Field Descriptions for the OTN Path PM Table (Near End) (continued)

Field	Description	Cards Supported
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
ES-P	Displays the errored seconds-path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
SES-P	Displays the severely errored seconds-path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
UAS-P	Displays the unavailable seconds-path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
BBE-P	Displays the background block errors-path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4

Table E-53 Field Descriptions for the OTN Path PM Table (Near End) (continued)

Field	Description	Cards Supported
FC-P	Displays the failure count-path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
ESR-P	Displays the errored seconds ratio-path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
SESR-P	Displays the severely errored seconds ratio-path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
BBER-P	Displays the background block errors ratio-path.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
NE ID	Name of the selected NE.	—

E.2.39 OTN Section PM Table (Far End)—ONS 15454 SONET, ONS 15454 SDH

The OTN Section PM table shows OTN section performance data for trunk ports on the ONS 15454 SONET and ONS 15454 SDH. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.

- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the OTN Section PM table.

Table E-54 Field Descriptions for the OTN Section PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
ES-S	Errored seconds–section.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
SES-S	Severely errored seconds–section.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4

Table E-54 Field Descriptions for the OTN Section PM Table (Far End) (continued)

Field	Description	Cards Supported
UAS-S	Unavailable seconds–section.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
BBE-S	Background block errors–section.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
FC-S	Failure count–section.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
ESR-S	Errored seconds ratio–section.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4

Table E-54 Field Descriptions for the OTN Section PM Table (Far End) (continued)

Field	Description	Cards Supported
SESR-S	Severely errored seconds ratio–section.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
BBER-S	Background block error ratio–section.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
NE ID	Name of the selected NE.	—

E.2.40 OTN Section PM Table (Near End)—ONS 15454 SONET, ONS 15454 SDH

The OTN Section PM table shows near-end OTN section performance data for trunk ports on the ONS 15454 SONET and ONS 15454 SDH. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the OTN Section PM table.

Table E-55 Field Descriptions for the OTN Section PM Table (Near End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
ES-S	Section Errored Seconds (ES-S) indicates the errored seconds recorded in the OTN section during the PM time interval.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
SES-S	Section Severely Errored Seconds (SES-S) indicates the severely errored seconds recorded in the OTN section during the PM time interval.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
UAS-S	Section unavailable seconds (UAS-S) indicates the unavailable seconds recorded in the OTN section during the PM time interval.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4

Table E-55 Field Descriptions for the OTN Section PM Table (Near End) (continued)

Field	Description	Cards Supported
BBE-S	Section Background Block Errors (BBE-S) indicates the number of background block errors recorded in the OTN section during the PM time interval.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
FC-S	Section Failure Counts (FC-S) indicates the failure counts recorded in the OTN section during the PM time interval.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
ESR-S	Section Errored Seconds Ratio (ESR-S) indicates the errored seconds ratio recorded in the OTN section during the PM time interval.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
SESR-S	Section Severely Errored Seconds Ratio (SESR-S) indicates the severely errored seconds ratio recorded in the OTN section during the PM time interval.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4

Table E-55 Field Descriptions for the OTN Section PM Table (Near End) (continued)

Field	Description	Cards Supported
BBER-S	Section Background Block Errors Ratio (BBER-S) indicates the background block errors ratio recorded in the OTN section during the PM time interval.	• ONS 15454 SONET: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G, PTF_10GE_4 • ONS 15454 SDH: ADM_10G, GE_XP, 10GE_XP, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, PTF_10GE_4
NE ID	Name of the selected NE.	—

E.2.41 POS PM Table—ONS 15310 CL, ONS 15310 MA SONET, ONS 15454 SONET, ONS 15310 MA SDH, ONS 15454 SDH, ONS 15600 SONET, ONS 15600 SDH

The POS PM table shows POS performance data for Ethernet cards. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the POS PM table.

Note Real-time PM data is not available for POS cards on NE releases earlier than release 5.0.

Table E-56 Field Descriptions for the POS PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—

Table E-56 Field Descriptions for the POS PM Table (continued)

Field	Description	Cards Supported
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Time Last Cleared	When the statistics were last reset.	—
Rx Pre HDLC Bytes	Number of bytes received prior to the bytes undergoing HDCL encapsulation by the policy engine.	—
Rx Post HDLC Bytes	Number of bytes received after the bytes undergoing HDLC encapsulation by the policy engine.	—
Rx Total Packets	Number of bytes received since the last counter reset.	• ONS 15310 CL: CE-100T-8, ML-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10, ML100T, ML100X-8, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, ML100T, ML1000, MXP_MR_10DME • ONS 15600 SONET: ASAP_4 • ONS 15600 SDH: ASAP_4
Rx Normal Packets	Number of packets between the minimum and maximum packet size received.	—
Rx Shorts	Number of packets below the minimum packet size received.	—
Rx Runts	Total number of frames received that are less than 64 bytes in length and have a CRC error.	—
Rx Longs	Counter for the number of received frames that exceed the maximum valid packet length of 1518 bytes.	—

Table E-56 Field Descriptions for the POS PM Table (continued)

Field	Description	Cards Supported
ifInErrors	Total number of received errors.	• ONS 15310 MA SONET: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15454 SONET: CE-MR-10 • ONS 15454 SDH: CE-MR-10
ifOutDiscards	Number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent their being transmitted.	• ONS 15454 SONET: CE-MR-10 • ONS 15454 SDH: CE-MR-10
Rx Crc Errors	Number of received CRC errors.	—
Rx Input Drop Packets	Number of received packets dropped on input.	—
Rx Input Abort Packets	Number of received packets aborted on input.	• ONS 15600 SONET: ASAP_4
Tx Pre HDLC Bytes	Number of bytes transmitted prior to the bytes undergoing HDLC encapsulation by the policy engine.	—
Tx Post HDLC Bytes	Number of bytes transmitted after the bytes undergoing HDLC encapsulation by the policy engine.	—
Tx Total Packets	Number of packets transmitted since the last counter reset.	• ONS 15310 CL: CE-100T-8, ML-100T-8 • ONS 15310 MA SONET: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-100T-8, CE-MR-10, ML100T, ML100X-8, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, ML100T, ML1000, MXP_MR_10DME • ONS 15600 SONET: ASAP_4 • ONS 15600 SDH: ASAP_4
Port Drop Counts	Number of received frames dropped at the port level.	—

Table E-56 Field Descriptions for the POS PM Table (continued)

Field	Description	Cards Supported
ifInDiscards	Number of inbound packets that were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol.	• ONS 15310 MA SONET: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-MR-10, ML100X-8, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, MXP_MR_10DME
ifInOctets	Number of bytes received since the last counter reset.	• ONS 15310 MA SONET: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-MR-10, ML100T, ML100X-8, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, ML100T, ML1000, MXP_MR_10DME
ifOutOctets	Number of bytes transmitted since the last counter reset.	• ONS 15310 MA SONET: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15310 MA SDH: CE-100T-8, CE-MR-6, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-MR-10, ML100T, ML100X-8, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-MR-10, ML100T, ML1000, MXP_MR_10DME
etherStatsDropEvents	Total number of events in which packets were dropped by the probe due to lack of resources. The value indicates the number of times this condition has been detected.	• ONS 15310 CL: CE-100T-8, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-100T-8, ML100T, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, ML100T, ML1000, MXP_MR_10DME
rxPktsDroppedInternalCongestion	Number of received packets dropped due to overflow in G1000-4 frame buffer.	• ONS 15310 CL: CE-100T-8, ML-100T-8 • ONS 15454 SONET: CE-1000-4, CE-100T-8, ML100T, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15600 SONET: ASAP_4 • ONS 15600 SDH: ASAP_4

Table E-56 Field Descriptions for the POS PM Table (continued)

Field	Description	Cards Supported
mediaIndStatsRxFramesTruncated	Total number of frames received that are less than 5 bytes. This value is a part of HDLC and GFP port statistics.	• ONS 15454 SONET: CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15600 SONET: ASAP_4 • ONS 15600 SDH: ASAP_4
mediaIndStatsRxFramesTooLong	Number of received frames that exceed the MTU. This value is part of HDLC and GFP port statistics.	• ONS 15454 SONET: CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15600 SONET: ASAP_4 • ONS 15600 SDH: ASAP_4
mediaIndStatsRxFramesBadCRC	Number of received data frames with payload CRC errors when HDLC framing is used.	• ONS 15454 SONET: CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-100T-8, ML100T, ML1000, MXP_MR_10DME • ONS 15600 SONET: ASAP_4 • ONS 15600 SDH: ASAP_4
mediaIndStatsRxShortPkts	Number of packets below the minimum packet size received.	• ONS 15454 SONET:CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15600 SONET: ASAP_4 • ONS 15600 SDH: ASAP_4
hdlcInOctets	Number of bytes received (from the SONET/SDH path) prior to the bytes undergoing HLDC decapsulation by the policy engine.	• ONS 15454 SONET:CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15600 SONET: ASAP_4 • ONS 15600 SDH: ASAP_4
hdlcRxAborts	Number of received packets aborted on input.	• ONS 15454 SONET: CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, CE-100T-8, ML100T, ML1000, MXP_MR_10DME • ONS 15600 SONET: ASAP_4 • ONS 15600 SDH: ASAP_4

Table E-56 Field Descriptions for the POS PM Table (continued)

Field	Description	Cards Supported
hdlcOutOctets	Number of bytes transmitted (to the SONET/SDH path) after the bytes undergoing HLDC encapsulation by the policy engine.	• ONS 15454 SONET: CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, ML100T, ML1000, MXP_MR_10DME • ONS 15600 SONET: ASAP_4 • ONS 15600 SDH: ASAP_4
IfInPayloadCrcErrors	Number of payload CRC errors received since the last counter reset.	• ONS 15454 SONET: CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, MXP_MR_10DME
IfOutPayloadCrcErrors	Number of payload CRC errors transmitted since the last counter reset.	• ONS 15454 SONET: CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, MXP_MR_10DME
IfOutOversizePackets	Number of oversize packets transmitted since the last counted reset.	• ONS 15454 SONET: CE-MR-10 • ONS 15454 SDH: CE-1000-4, CE-100T-8, CE-MR-10, MXP_MR_10DME
hdlcPktDrops	Total number of packets that are dropped when the card is in HDLC mode and traffic is oversubscribed.	• ONS 15454 SONET: CE-1000-4, MXP_MR_10DME • ONS 15454 SDH: CE-1000-4, MXP_MR_10DME
Rx Utilization Stats (%)	Received utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	• ONS 15600 SONET: ASAP_4
Tx Utilization Stats (%)	Transmitted utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	• ONS 15600 SONET: ASAP_4
NE ID	Name of the selected NE.	—

E.2.42 Regenerator Section PM Table—ONS 15310 MA SDH, ONS 15454 SDH

The Regenerator Section PM table shows performance data for the ONS 15310 MA SDH and ONS 15454 SDH regenerator section. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.

- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Regenerator Section PM table.

Table E-57 Field Descriptions for the Regenerator Section PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
RS-EB	Regenerator Section Errored Block (RS-EB) indicates that one or more bits are in error within a block.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC192_XFP, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
RS-ES	Regenerator Section Errored Second (RS-ES) is a one-second period with one or more errored blocks or at least one defect.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC192_XFP, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G

Table E-57 Field Descriptions for the Regenerator Section PM Table (continued)

Field	Description	Cards Supported
RS-SES	Regenerator Section Severely Errored Second (RS-SES) is a one-second period that contains 30 percent or more errored blocks or at least one defect. SES is a subset of ES.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC192_XFP, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
RS-BBE	Regenerator Section Background Block Error (RS-BBE) is an errored block not occurring as part of an SES.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC192_XFP, OSC_CSM, OTU2_XP, STM1, STM1_8, STM1E_12, STM4, STM4_4, STM16, STM64, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
RS-UAS	Regenerator Section Unavailable Second (RS-UAS) is a count of the seconds when the regenerator section was unavailable. A section becomes unavailable when ten consecutive seconds occur that qualify as RS-UASs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as RS-UASs.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MRC_4, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC192_XFP, OSC_CSM, OTU2_XP, STM1E_12, TXP_MR_10G, TXP_MR_10E, TXP_MR_2.5G, TXPP_MR_2.5G
RS-ESR	Regenerator Section Errored Second Ratio (RS-ESR) is the ratio of errored seconds to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, STM1E_12, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G

Table E-57 Field Descriptions for the Regenerator Section PM Table (continued)

Field	Description	Cards Supported
RS-SESR	Regenerator Section Severely Errored Second Ratio (RS-SESR) is the ratio of SES to total seconds in available time during a fixed measurement interval.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, STM1E_12, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
RS-BBER	Regenerator Section Background Block Error Ratio (RS-BBER) is the ratio of BBE to total blocks in available time during a fixed measurement interval. The count of total blocks excludes all blocks during SESs.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, ADM_10G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OTU2_XP, STM1E_12, TXP_MR_10E, TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G
RS-OFS	Regenerator Section Out of Frame Seconds (RS-OSF) is the count of seconds when the Regenerator Section was out of frame.	• ONS 15310 MA SDH: CTX-2500 • ONS 15454 SDH: MRC_4, MRC_12_2.5G, MXP_MR_10DME, OC192_XFP, OTU2_XP
NE ID	Name of the selected NE.	—

E.2.43 Regenerator Section PM Table—ONS 15600 SDH

The Regenerator Section PM table shows performance data for the ONS 15600 SDH regenerator section. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the Regenerator Section PM table.

Table E-58 Field Descriptions for the Regenerator Section PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
RS-EB	Regenerator Section Errored Block (RS-EB) indicates that one or more bits are in error within a block.	ASAP_4, STM16_16, STM64_4
RS-ES	Regenerator Section Errored Second (RS-ES) is a one-second period with one or more errored blocks or at least one defect.	ASAP_4, STM16_16, STM64_4
RS-SES	Regenerator Section Severely Errored Second (RS-SES) is a one-second period that contains 30 percent or more errored blocks or at least one defect. SES is a subset of ES.	ASAP_4, STM16_16, STM64_4
RS-BBE	Regenerator Section Background Block Error (RS-BBE) is an errored block not occurring as part of an SES.	ASAP_4, STM16_16, STM64_4
RS-UAS	Regenerator Section Unavailable Second (RS-UAS) is a count of the seconds when the regenerator section was unavailable. A section becomes unavailable when ten consecutive seconds occur that qualify as RS-UASs, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as RS-UASs.	—
RS-OFS	Regenerator Section Out of Frame Seconds (RS-OSF) is the count of seconds when the regenerator section was out of frame.	ASAP_4, STM16_16, STM64_4
NE ID	Name of the selected NE.	—

E.2.44 RPR 802.17 PM Table—ONS 15454 SONET, ONS 15454 SDH

The RPR 802.17 PM table shows performance data for the ONS 15454 SONET and ONS 15454 SDH ML-series cards in Resilient Packet Ring (RPR) mode (IEEE 802.17). You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the RPR 802.17 PM table. The fields shown depend on the RPR type selection.

Table E-59 Field Descriptions for the RPR 802.17 PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp *(time zone)*	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Time Last Cleared	When the statistics were last reset.	—
rprSpanStatsInUcastClassA Frames	Number of received (PHY to MAC) class A unicast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInUcastClassA Octets	Number of received (PHY to MAC) class A unicast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInUcastClassB CirFrames	Number of received (PHY to MAC) class B CIR unicast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInUcastClassB CirOctets	Number of received (PHY to MAC) class B CIR unicast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInUcastClassB EirFrames	Number of received (PHY to MAC) class B EIR unicast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInUcastClassB EirOctets	Number of received (PHY to MAC) class B EIR unicast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInUcastClassC Frames	Number of received (PHY to MAC) class C unicast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInUcastClassC Octets	Number of received (PHY to MAC) class C unicast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10

Table E-59 Field Descriptions for the RPR 802.17 PM Table (continued)

Field	Description	Cards Supported
rprSpanStatsInMcastClassA Frames	Number of received (PHY to MAC) class A multicast and broadcast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInMcastClassA Octets	Number of received (PHY to MAC) class A multicast and broadcast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInMcastClassB CirFrames	Number of received (PHY to MAC) class B CIR multicast and broadcast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInMcastClassB CirOctets	Number of received (PHY to MAC) class B CIR multicast and broadcast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInMcastClassB EirFrames	Number of received (PHY to MAC) class B EIR multicast and broadcast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInMcastClassB EirOctets	Number of received (PHY to MAC) class B EIR multicast and broadcast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInMcastClassC Frames	Number of received (PHY to MAC) class C multicast and broadcast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInMcastClassC Octets	Number of received (PHY to MAC) class C multicast and broadcast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInCtrlFrames	Number of received (PHY to MAC) control frames processed by this MAC. This does not include control frames in transit; that is, a multicast control frame received from a ringlet will be counted as In but not Out. This does not include fairness or idle frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInOamEchoFra mes	Number of received (PHY to MAC) OAM echo frames processed by this MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInOamFlushFr ames	Number of received (PHY to MAC) OAM flush frames processed by this MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInOamOrgFra mes	Number of received (PHY to MAC) OAM org frames processed by this MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInTopoAtdFra mes	Number of received (PHY to MAC) topology ATD frames processed by this MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsInTopoChkSu mFrames	Number of received (PHY to MAC) topology checksum frames processed by this MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10

Table E-59 Field Descriptions for the RPR 802.17 PM Table (continued)

Field	Description	Cards Supported
rprSpanStatsInTopoTpFrames	Number of received (PHY to MAC) topology TP frames processed by this MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutUcastClassAFrames	Number of transmitted (PHY to MAC) class A unicast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutUcastClassAOctets	Number of transmitted (PHY to MAC) class A unicast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutUcastClassBCirFrames	Number of transmitted (PHY to MAC) class B CIR unicast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutUcastClassBCirOctets	Number of transmitted (PHY to MAC) class B CIR unicast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutUcastClassBEirFrames	Number of transmitted (PHY to MAC) class B EIR unicast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutUcastClassBEirOctets	Number of transmitted (PHY to MAC) class B EIR unicast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutUcastClassCFrames	Number of transmitted (PHY to MAC) class C unicast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutUcastClassCOctets	Number of transmitted (PHY to MAC) class C unicast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutMcastClassAFrames	Number of transmitted (PHY to MAC) class A multicast and broadcast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutMcastClassAOctets	Number of transmitted (PHY to MAC) class A multicast and broadcast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutMcastClassBCirFrames	Number of transmitted (PHY to MAC) class B CIR multicast and broadcast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutMcastClassBCirOctets	Number of transmitted (PHY to MAC) class B CIR multicast and broadcast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutMcastClassBEirFrames	Number of transmitted (PHY to MAC) class B EIR multicast and broadcast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10

Table E-59 Field Descriptions for the RPR 802.17 PM Table (continued)

Field	Description	Cards Supported
rprSpanStatsOutMcastClassBEirOctets	Number of transmitted (PHY to MAC) class B EIR multicast and broadcast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutMcastClassCFrames	Number of transmitted (PHY to MAC) class C multicast and broadcast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutMcastClassCOctets	Number of transmitted (PHY to MAC) class C multicast and broadcast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutCtrlFrames	Number of transmitted (PHY to MAC) control frames generated by this MAC. This does not include control frames in transit; that is, a multicast control frame transmitted from a ringlet will be counted as In but not Out. This does not include fairness or idle frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutOamEchoFrames	Number of transmitted (PHY to MAC) OAM echo frames generated by this MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutOamFlushFrames	Number of transmitted (PHY to MAC) OAM flush frames generated by this MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutOamOrgFrames	Number of transmitted (PHY to MAC) OAM org frames generated by this MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutTopoAtdFrames	Number of transmitted (PHY to MAC) topology ATD frames generated by this MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutTopoChkSumFrames	Number of transmitted (PHY to MAC) topology checksum frames generated by this MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanStatsOutTopoTpFrames	Number of transmitted (PHY to MAC) topology TP frames generated by this MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInUcastClassAFrames	Number of MAC-to-client class A unicast frames in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInUcastClassAOctets	Number of MAC-to-client class A unicast octets in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInUcastClassBCirFrames	Number of MAC-to-client class B CIR unicast frames in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInUcastClassBCirOctets	Number of MAC-to-client class B CIR unicast octets in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10

Table E-59 Field Descriptions for the RPR 802.17 PM Table (continued)

Field	Description	Cards Supported
rprClientStatsInUcastClassBEirFrames	Number of MAC-to-client class B EIR unicast frames in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInUcastClassBEirOctets	Number of MAC-to-client class B EIR unicast octets in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInUcastClassCFrames	Number of MAC-to-client class C unicast frames in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInUcastClassCOctets	Number of MAC-to-client class C unicast octets in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInMcastClassAFrames	Number of MAC-to-client class A multicast and broadcast frames in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInMcastClassAOctets	Number of MAC-to-client class A multicast and broadcast octets in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInMcastClassBCirFrames	Number of MAC-to-client class B CIR multicast and broadcast frames in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInMcastClassBCirOctets	Number of MAC-to-client class B CIR multicast and broadcast octets in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInMcastClassBEirFrames	Number of MAC-to-client class B EIR multicast and broadcast frames in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInMcastClassBEirOctets	Number of MAC-to-client class B EIR multicast and broadcast octets in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInMcastClassCFrames	Number of MAC-to-client class C multicast and broadcast frames in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInMcastClassCOctets	Number of MAC-to-client class C multicast and broadcast octets in the current interval.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsInBcastFrames	Number of MAC-to-client broadcast frames. This value is used only when deriving the multicast and broadcast packet counters for the interface MIB.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutUcastClassAFrames	Number of client-to-MAC class A unicast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10

Table E-59 Field Descriptions for the RPR 802.17 PM Table (continued)

Field	Description	Cards Supported
rprClientStatsOutUcastClassAOctets	Number of client-to-MAC class A unicast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutUcastClassBCirFrames	Number of client-to-MAC class B CIR unicast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutUcastClassBCirOctets	Number of client-to-MAC class B CIR unicast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutUcastClassBEirFrames	Number of client-to-MAC class B EIR unicast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutUcastClassBEirOctets	Number of client-to-MAC class B EIR unicast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutUcastClassCFrames	Number of client-to-MAC class C unicast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutUcastClassCOctets	Number of client-to-MAC class C unicast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutMcastClassAFrames	Number of client-to-MAC class A multicast and broadcast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutMcastClassAOctets	Number of client-to-MAC class A multicast and broadcast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutMcastClassBCirFrames	Number of client-to-MAC class B CIR multicast and broadcast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutMcastClassBCirOctets	Number of client-to-MAC class B CIR multicast and broadcast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutMcastClassBEirFrames	Number of client-to-MAC class B EIR multicast and broadcast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutMcastClassBEirOctets	Number of client-to-MAC class B EIR multicast and broadcast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutMcastClassCFrames	Number of client-to-MAC class C multicast and broadcast frames.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10

Table E-59 Field Descriptions for the RPR 802.17 PM Table (continued)

Field	Description	Cards Supported
rprClientStatsOutMcastClassCOctets	Number of client-to-MAC class C multicast and broadcast octets.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprClientStatsOutBcastFrames	Number of client-to-MAC broadcast frames. This value is used only when deriving the multicast and broadcast packet counters for the interface MIB.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanErrorStatsTtlExpFrames	Number of received (PHY to MAC) frames that were dropped due to zero Time To Live (TTL).	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanErrorStatsTooLongFrames	Number of received (PHY to MAC) frames that exceed the maximum permitted frame size.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanErrorStatsTooShortFrames	Number of received (PHY to MAC) frames shorter than the minimum permitted frame size.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanErrorStatsBadHecFrames	Number of received (PHY to MAC) frames with HEC errors.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanErrorStatsBadFcsFrames	Number of received (PHY to MAC) data and control frames where the FCS value did not match the expected FCS value.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanErrorStatsSelfSrcUcastFrames	Number of received (PHY to MAC) unicast frames that were transmitted by the station itself; that is, the source MAC is equal to the interface MAC.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanErrorStatsPmdAbortFrames	Number of received (PHY to MAC) frames that were aborted by the PMD.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanErrorStatsBadAddrFrames	Number of received (PHY to MAC) frames with invalid SA values.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanErrorStatsBadParityFrames	Number of received (PHY to MAC) frames where the parity value does not match the expected parity value.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanErrorStatsContainedFrames	Number of received (PHY to MAC) frames that were removed due to context containment.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprSpanErrorStatsScffErrors	Number of received (PHY to MAC) errored SCFFs with bad parity, bad FCS, or both.	ONS 15454 SONET and SDH: ML100T, ML100X-8, ML1000, ML-MR-10
rprErrorOversizeFrames	On the ML-MR-10 card, due to the limitation of the current field programmable gate array (FPGA), the frames coming from a gigabit port to an RPR port are sent to an ASIC driver, which discards the packets.	ONS 15454 SONET and SDH: ML-MR-10
NE ID	Name of the selected NE.	—

E.2.45 FC PM Table—ONS 15454 SONET, ONS 15454 SDH

The FC PM table shows performance data for the ONS 15454 SONET and ONS 15454 SDH. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the FC PM table.

Table E-60 Field Descriptions for the FC PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Time Last Cleared	When the statistics were last reset.	—
Rx Frames	Number of FC frames received without errors.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, MXP_MR_10DME • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME
ifInOctets	Number of bytes received since the last counter reset.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E, MXP_MR_10DME • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E, MXP_MR_10DME

Table E-60 Field Descriptions for the FC PM Table (continued)

Field	Description	Cards Supported
Tx Frames	Number of transmitted FC frames.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, MXP_MR_10DME • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, MXP_MR_10DME
ifOutOctets	Number of bytes transmitted since the last counter reset.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E, MXP_MR_10DME • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E, MXP_MR_10DME
8b10bInvalidOrderedSets	Number of 8b10b code violations.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
8b10bStatsEncodingDispErrors	Number of 8b10b disparity violations on the FC line side.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
fcStatsLinkRecoveries	Number of link recoveries.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E, MXP_MR_10DME • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E, MXP_MR_10DME
mediaIndStatsRxFramesBadCRC	Number of received data frames with payload CRC errors when HDLC framing is used.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E, MXP_MR_10DME • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E, MXP_MR_10DME
mediaIndStatsTxFramesBadCRC	Number of transmitted data frames with payload CRC errors when HDLC framing is used.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E, MXP_MR_10DME • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E, MXP_MR_10DME
mediaIndStatsRxFramesTruncated	Total number of frames received that are less than 5 bytes. This value is a part of HDLC and GFP port statistics.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E, MXP_MR_10DME • ONS 15454 SDH: 2.5G_DM, FCMR, MXP_MR_10DME

Table E-60 Field Descriptions for the FC PM Table (continued)

Field	Description	Cards Supported
mediaIndStatsRxFramesTooLong	Number of received frames that exceed the MTU. This value is part of HDLC and GFP port statistics.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E, MXP_MR_10DME • ONS 15454 SDH: 2.5G_DM, FCMR, TXP_MR_10E, MXP_MR_10DME
mediaIndStatsRxLcvErrors	Number of L1 line code violations received for lower rate FC, which equate to invalid 8b10b ordered sets.	• ONS 15454 SONET: AR_MXP, AR_XP • ONS 15454 SDH: AR_MXP, AR_XP
mediaIndStatsTxLcvErrors	Number of L1 line code violations transmitted for lower rate FC, which equate to invalid 8b10b ordered sets.	• ONS 15454 SONET: AR_MXP, AR_XP • ONS 15454 SDH: AR_MXP, AR_XP
gfpStatsRxSBitErrors	Number of GFP single-bit errors in the CHEC.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
gfpStatsRxMBitErrors	Number of GFP multibit errors in the CHEC.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
gfpStatsRxTypeInvalid	Number of GFP invalid UPI fields in the type field.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
gfpStatsRxCRCErrors	Number of superblock CRC errors in the transparent GFP frame.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
ifInDiscards	Number of inbound packets that were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
ifOutDiscards	Number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent their being transmitted.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
fcIngressRxDistanceExtBuffers	Number of buffers that are available to receive FC data from GFP frames.	—
fcEgressTxDistanceExtBuffers	Number of buffers that are available on the far end to receive FC data over GFP frames.	—
fcStatsRxCredits	Number of current received buffer-to-buffer credits. (Valid only if distance extension is enabled.)	—

Table E-60 Field Descriptions for the FC PM Table (continued)

Field	Description	Cards Supported
fcStatsTxCredits	Number of current transmitted buffer-to-buffer credits. (Valid only if distance extension is enabled.)	—
fcStatsZeroTxCredits	Number of transmitted attempts that failed because of unavailable credits.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
gfpStatsCSFRaised	Number of GFP client signal fail frames.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
gfpStatsRoundTripLatency	Round-trip delay (in milliseconds [ms]) for the end-to-end FC transport.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
ifInErrors	Total number of received errors.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
txTotalPkts	Number of packets transmitted since the last counter reset.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
rxTotalPkts	Number of packets received since the last counter reset.	• ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E • ONS 15454 SDH: 2.5G_DM, 2.5G_DMP, FCMR, TXP_MR_10E
Rx Utilization	Received utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	—
Tx Utilization	Transmitted utilization, which is a percentage of utilization of the Ethernet segment on a scale of 0 to 100 percent.	—
FibreStatsRxRecvrReady	Number of current received receiver-ready buffer-to-buffer credits.	• ONS 15454 SONET: MXP_MR_10DME • ONS 15454 SDH: MXP_MR_10DME
FibreStatsTxRecvrReady	Number of current transmitted receiver-ready buffer-to-buffer credits.	• ONS 15454 SONET: MXP_MR_10DME • ONS 15454 SDH: MXP_MR_10DME
NE ID	Name of the selected NE.	—

E.2.46 ISC PM Table—ONS 15454 SONET, ONS 15454 SDH

The ISC PM table shows performance data for the ONS 15454 SONET and ONS 15454 SDH. You can display 15-minute or 1-day increments.

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.4 Managing Real-Time PM Data, page 10-26.

The following table describes the fields in the ISC PM table.

Table E-61 Field Descriptions for the ISC PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Time Last Cleared	When the statistics were last reset.	• ONS 15454 SONET: MXP_MR_10DME • ONS 15454 SDH: MXP_MR_10DME
rxTotalPkts	Number of packets received since the last counter reset.	
ifInOctets	Number of bytes received since the last counter reset.	
txTotalPkts	Number of packets transmitted since the last counter reset.	
ifOutOctets	Number of bytes transmitted since the last counter reset.	
mediaIndStatsRxLcvErrors	Number of L1 line code violations received for constant bit rate protocols, which equate to invalid 8b10b ordered sets.	• ONS 15454 SONET: AR_MXP, AR_XP • ONS 15454 SDH: AR_MXP, AR_XP
mediaIndStatsTxLcvErrors	Number of L1 line code violations transmitted for constant bit rate protocols, which equate to invalid 8b10b ordered sets.	• ONS 15454 SONET: AR_MXP, AR_XP • ONS 15454 SDH: AR_MXP, AR_XP
NE ID	Name of the selected NE.	—

E.2.47 SONET Line PM Table (Far End)—ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, ONS 15600 SONET

The SONET Line PM table shows far-end performance data for the ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, and ONS 15600 SONET line. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the SONET Line PM table.

Table E-62 Field Descriptions for the SONET Line PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
CV-L	Coding violations–line (CV-L) is a count of bit interleaved parity (BIP) errors detected at the line layer (that is, using the B2 bytes in the incoming SONET signal). Up to 8 x N BIP errors can be detected per STS-N frame; each error increments the current CV-L second register.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16

Table E-62 Field Descriptions for the SONET Line PM Table (Far End) (continued)

Field	Description	Cards Supported
ES-L	Errored seconds–line (ES-L) is a count of the seconds when at least one line-layer BIP error was detected or a line alarm indication signal (AIS-L) defect was present.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
SES-L	Severely errored seconds–line (SES-L) is a count of the seconds when K (see GR-253 for values) or more line-layer BIP errors were detected or an AIS-L defect was present.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
UAS-L	Unavailable seconds–line (UAS-L) is a count of the seconds when the line is unavailable. A line becomes unavailable when ten consecutive seconds occur that qualify as SES-Ls, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as SES-Ls.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16

Table E-62 Field Descriptions for the SONET Line PM Table (Far End) (continued)

Field	Description	Cards Supported
FC-L	Failure count–line (FC-L) is a count of the number of near-end line failure events. A failure event begins when an AIS-L failure or a lower-layer traffic-related, near-end failure is declared. This failure event ends when the failure is cleared. A failure event that begins in one period and ends in another period is counted only in the period where it begins.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
NE ID	Name of the selected NE.	—

E.2.48 SONET Line PM Table (Near End)—ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, ONS 15600 SONET

The SONET Line PM table shows near-end performance data for the ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, and ONS 15600 SONET line. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the SONET Line PM table.

Table E-63 Field Descriptions for the SONET Line PM Table (Near End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—

Table E-63 Field Descriptions for the SONET Line PM Table (Near End) (continued)

Field	Description	Cards Supported
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
CV-L	CV-L lists a count of bit interleaved parity (BIP) errors detected at the line-layer (using the B2 bytes in the incoming SONET signal). Up to 8 x N BIP errors can be detected per STS-N frame, with each error incrementing the current CV-L second register.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
ES-L	ES-L lists a count of the seconds when at least one line-layer BIP error was detected or a line alarm indication signal (AIS-L) defect was present.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16

Table E-63 Field Descriptions for the SONET Line PM Table (Near End) (continued)

Field	Description	Cards Supported
SES-L	SES-L lists a count of the seconds when K (see GR-253-CORE for values) or more line-layer BIP errors were detected or an AIS-L defect was present.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
UAS-L	Unavailable seconds–line (UAS-L) lists a count of the seconds when the line is unavailable. A line becomes unavailable when ten consecutive seconds occur that qualify as SES-Ls, and continues to be unavailable until ten consecutive seconds occur that do not qualify as SES-Ls.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
FC-L	Failure count–line (FC-L) lists a count of the number of near-end line failure events. A failure event begins when an AIS-L failure is declared, or when a lower-layer, traffic-related, near-end failure is declared. This failure event ends when the failure is cleared. A failure event that begins in one period and ends in another period is counted only in the period where it begins.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16

Table E-63 Field Descriptions for the SONET Line PM Table (Near End) (continued)

Field	Description	Cards Supported
PSC	In a 1 + 1 protection scheme for a working card, PSC is a count of the number of times service switches from a working card to a protection card plus the number of times service switches back to the working card. For a protection card, PSC is a count of the number of times service switches to a working card from a protection card plus the number of times service switches back to the protection card. The PSC PM is only applicable if revertive line-level protection switching is used. PSC is supported in revertive and nonrevertive modes. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC3, OC12, OC12_4, OC48, OC192, OC192_XFP • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
PSD	PSD applies to the length of time, in seconds, that service is carried on another line. For a working line, PSD is a count of the number of seconds that service was carried on the protection line. For the protection line, it is a count of the seconds that the line was used to carry service. The PSD PM is only applicable if revertive line-level protection switching is used. PSD is supported in revertive and nonrevertive modes. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC3, OC12, OC12_4, OC48, OC192, OC192_XFP • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
PSC-W	For a working line in a 2-fiber BLSR, protection switching count–working (PSC-W) is a count of the number of times traffic switches away from the working capacity in the failed line and back to the working capacity after the failure is cleared. PSC-W increments on the failed working line and PSC increments on the active protect line. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15327: OC12, OC48 • ONS 15454 SONET: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC12, OC12_4, OC48, OC192, OC192_XFP • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
PSD-W	For a working line in a 2-fiber BLSR, protection switching duration–working (PSD-W) is a count of the number of seconds that service was carried on the protection line. PSD-W increments on the failed working line and PSD increments on the active protect line. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15327: OC12, OC48 • ONS 15454 SONET: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC12, OC12_4, OC48, OC192, OC192_XFP • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16

Table E-63 Field Descriptions for the SONET Line PM Table (Near End) (continued)

Field	Description	Cards Supported
PSC-S	In a four-fiber BLSR, protection switching count–span (PSC-S) is a count of the number of times service switches from a working line to a protection line plus the number of times it switches back to the working line. A count is only incremented if span switching is used. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15327: OC12, OC48 • ONS 15454 SONET: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC12, OC12_4, OC48, OC192, OC192_XFP • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
PSD-S	In a four-fiber BLSR, protection switching duration–span (PSD-S) is a count of the seconds that the protection line was used to carry service. A count is only incremented if span switching is used. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15327: OC12, OC48 • ONS 15454 SONET: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC12, OC12_4, OC48, OC192, OC192_XFP • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
PSC-R	In a 4-fiber BLSR, protection switching count–ring (PSC-R) is a count of the number of times service switches from a working line to a protection line plus the number of times it switches back to a working line. A count is only incremented if ring switching is used. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15327: OC12, OC48 • ONS 15454 SONET: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC12, OC12_4, OC48, OC192, OC192_XFP • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
PSD-R	In a 4-fiber BLSR, protection switching duration–ring (PSD-R) is a count of the seconds that the protection line was used to carry service. A count is only incremented if ring switching is used. **Note** This parameter is not supported for transponder or muxponder cards.	• ONS 15327: OC12, OC48 • ONS 15454 SONET: MRC_4, MRC_12, MRC_12_2.5G, MXP_MR_10DME, OC12, OC12_4, OC48, OC192, OC192_XFP • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
NE ID	Name of the selected NE.	—

E.2.49 SONET Section PM Table—ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, ONS 15600 SONET

The SONET Section PM table shows performance data at the section layer. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.

- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the SONET Section PM table.

Table E-64 Field Descriptions for the SONET Section PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Coding Violations–Section	Number of BIP errors detected at the section-layer (using the B1 byte in the incoming SONET signal). Up to eight section BIP errors can be detected per STS-N frame, with each error incrementing the current CV-S second register.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16

Table E-64 Field Descriptions for the SONET Section PM Table (continued)

Field	Description	Cards Supported
Errored Seconds–Section	Number of seconds when at least one section-layer BIP error was detected or an SEF or LOS defect was present.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
Severely Errored Seconds–Section	Number of seconds when K (see GR-253-CORE for value) or more section-layer BIP errors were detected or an SEF or LOS defect was present.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
Severely Errored Framing Seconds–Section	Number of seconds when an SEF defect was present. A SEF defect is expected to be present during most seconds when a LOS or LOF defect is present. However, there can be situations when that is not the case, and the SEFS-S parameter is only incremented based on the presence of the SEF defect.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, ADM_10G, DS3_EC1_48, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, MXP_2.5G_10G, MXP_MR_10DME, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, OSC_CSM, OTU2_XP, TXP_MR_2.5G, TXPP_MR_2.5G, TXP_MR_10E, TXP_MR_10G • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
NE ID	Name of the selected NE.	—

E.2.50 SONET STS Path PM Table (Far End)—ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, ONS 15600

The SONET STS Path PM table shows far-end performance data for the ONS 15310 CL, ONS 15310 MA, ONS 15327, ONS 15454 SONET, and ONS 15600 SONET STS path. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the SONET STS Path PM table.

Table E-65 Field Descriptions for the SONET STS Path PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—

Table E-65 Field Descriptions for the SONET STS Path PM Table (Far End) (continued)

Field	Description	Cards Supported
CV-P	STS path coding violations (STS CV-P) is a count of BIP errors detected at the STS path layer (that is, using the B3 byte). Up to eight BIP errors can be detected per frame; each error increments the current CV-P second register.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48, XTC • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS-1, DS1N, DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS1_E1_56, DS3N, DS3NE, DS3XM, DS3XM_12, FCMR, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, OTU2_XP, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
ES-P	STS path errored seconds (STS ES-P) is a count of the seconds when at least one STS path BIP error was detected. A path alarm indication signal (AIS-P) defect (or a lower-layer, traffic-related, near-end defect) or a path loss of pointer (LOP-P) defect can also cause an STS ES-P.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48, XTC • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS-1, DS1N, DS1_E1_56, DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS3N, DS3NE, DS3XM, DS3XM_12, FCMR, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, OTU2_XP, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
SES-P	STS path severely errored seconds (STS SES-P) is a count of the seconds when K (2400) or more STS path BIP errors were detected. An AIS-P defect (or a lower-layer, traffic-related, near-end defect) or an LOP-P defect can also cause an STS SES-P.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48, XTC • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS-1, DS1N, DS1_E1_56, DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS3N, DS3NE, DS3XM, DS3XM_12, FCMR, EC1, EC1N, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, OTU2_XP, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16

Table E-65 Field Descriptions for the SONET STS Path PM Table (Far End) (continued)

Field	Description	Cards Supported
UAS-P	STS path unavailable seconds (STS UAS-P) is a count of the seconds when the STS path was unavailable. An STS path becomes unavailable when ten consecutive seconds occur that qualify as SES-Ps, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as SES-Ps.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48, XTC • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS-1, DS1N, DS1_E1_56, DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS3N, DS3NE, DS3XM, DS3XM_12, EC1, EC1N, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, OTU2_XP, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
FC-P	STS path failure counts (STS FC-P) is a count of the number of near-end STS path failure events. A failure event begins when an AIS-P failure, an LOP-P failure, a UNEQ-P failure, or a path trace identifier mismatch (TIM-P) failure is declared, or if the STS PTE that is monitoring the path supports ERDI-P for that path. The failure event ends when these failures are cleared.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48, XTC • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS-1, DS1N, DS1_E1_56, DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS3N, DS3NE, DS3XM, DS3XM_12, EC1, EC1N, FCMR, MRC_4, MRC_12, MRC_12_2.5G, MXP_2.5G_10E, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, OTU2_XP, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
NE ID	Name of the selected NE.	—

E.2.51 SONET STS Path PM Table—ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, ONS 15600 SONET

The SONET STS Path PM table shows performance data for the ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, and ONS 15600 SONET STS path. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.

- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the SONET STS Path PM table.

Table E-66 Field Descriptions for the SONET STS Path PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
CV-P	STS path coding violations (STS CV-P) is a count of BIP errors detected at the STS path layer (that is, using the B3 byte). Up to eight BIP errors can be detected per frame; each error increments the current CV-P second register.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48, XTC • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS-1, DS1N, DS1_E1_56, DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS3N, DS3NE, DS3XM, DS3XM_12, EC1, EC1N, FCMR, MRC_4, MRC_12, MRC_12_2.5G, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, MXP_2.5G_10E, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16

Table E-66 Field Descriptions for the SONET STS Path PM Table (continued)

Field	Description	Cards Supported
ES-P	STS path errored seconds (STS ES-P) is a count of the seconds when at least one STS path BIP error was detected. A path alarm indication signal (AIS-P) defect (or a lower-layer, traffic-related, near-end defect) or a path loss of pointer (LOP-P) defect can also cause an STS ES-P.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48, XTC • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS-1, DS1N, DS1_E1_56, DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS3N, DS3NE, DS3XM, DS3XM_12, EC1, EC1N, FCMR, MRC_4, MRC_12, MRC_12_2.5G, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, MXP_2.5G_10E, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
SES-P	STS path severely errored seconds (STS SES-P) is a count of the seconds when K (2400) or more STS path BIP errors were detected. An AIS-P defect (or a lower-layer, traffic-related, near-end defect) or an LOP-P defect can also cause an STS SES-P.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48, XTC • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS-1, DS1N, DS1_E1_56, DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS3N, DS3NE, DS3XM, DS3XM_12, EC1, EC1N, FCMR, MRC_4, MRC_12, MRC_12_2.5G, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, MXP_2.5G_10E, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
UAS-P	STS path unavailable seconds (STS UAS-P) is a count of the seconds when the STS path was unavailable. An STS path becomes unavailable when ten consecutive seconds occur that qualify as SES-Ps, and it continues to be unavailable until ten consecutive seconds occur that do not qualify as SES-Ps.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48, XTC • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS-1, DS1N, DS1_E1_56, DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS3N, DS3NE, DS3XM, DS3XM_12, EC1, EC1N, FCMR, MRC_4, MRC_12, MRC_12_2.5G, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, MXP_2.5G_10E, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16

Table E-66 Field Descriptions for the SONET STS Path PM Table (continued)

Field	Description	Cards Supported
FC-P	STS path failure counts (STS FC-P) is a count of the number of near-end STS path failure events. A failure event begins when an AIS-P failure, an LOP-P failure, a UNEQ-P failure, or a path trace identifier mismatch (TIM-P) failure is declared, or if the STS PTE that is monitoring the path supports ERDI-P for that path. The failure event ends when these failures are cleared.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48, XTC • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS-1, DS1N, DS1_E1_56, DS-3, DS3E, DS3_EC1_48, DS3I, DS3IN, DS3N, DS3NE, DS3XM, DS3XM_12, EC1, EC1N, FCMR, MRC_4, MRC_12, MRC_12_2.5G, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, MXP_2.5G_10E, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
PPJC-PDET	Positive pointer justification count, STS path detected (PPJC-Pdet) is a count of the positive pointer justifications detected on a particular path on an incoming SONET signal.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48, • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS3_EC1_48, EC1, EC1N, FCMR, MRC_4, MRC_12_2.5G, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, MXP_2.5G_10E, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
NPJC-PDET	Negative pointer justification count, STS path detected (NPJC-Pdet) is a count of the negative pointer justifications detected on a particular path on an incoming SONET signal.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS3_EC1_48, EC1, EC1N, FCMR, MRC_4, MRC_12_2.5G, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, MXP_2.5G_10E, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
PPJC-PGEN	Positive pointer justification count, STS path generated (PPJC-Pgen) is a count of the positive pointer justifications generated for a particular path to reconcile the frequency of the SPE with the local clock.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS3_EC1_48, EC1, EC1N, FCMR, MRC_4, MRC_12_2.5G, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, MXP_2.5G_10E, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16

Table E-66 Field Descriptions for the SONET STS Path PM Table (continued)

Field	Description	Cards Supported
NPJC-PGEN	Negative pointer justification count, STS path generated (PPJC-Pgen) is a count of the negative pointer justifications generated for a particular path to reconcile the frequency of the SPE with the local clock.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS3_EC1_48, EC1, EC1N, FCMR, MRC_4, MRC_12_2.5G, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, MXP_2.5G_10E, TXP_MR_10E • ONS 15600 SONET: ASAP_4, OC192_4, OC48_16
PJ-DIFF	Sum of the absolute values of differences between positive transmitted and received, and negative transmitted and received. The important metric on pointer justification is not the exact counts, but how many were absorbed.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS3_EC1_48, EC1, EC1N, FCMR, MRC_4, MRC_12_2.5G, OC3, OC3_8, OC12, OC12_4, OC48, OC192, OC192_XFP, MXP_2.5G_10E, TXP_MR_10E
PJCS-Pdet	Number of pointer justification count seconds detected on a particular path.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15454 SONET: MRC_4, MRC_12_2.5G, OC192_XFP
PJCS-Pgen	Number of pointer justification count seconds generated for a particular path.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15454 SONET: MRC_4, MRC_12_2.5G, OC192_XFP
PJP-SEC	Number of positive pointer justification seconds.	• ONS 15310 CL: CTX • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS3_EC1_48, EC1, EC1N, FCMR, OC3, OC3_8, OC12, OC12_4, OC48, OC192, MXP_2.5G_10E, TXP_MR_10E

Table E-66 Field Descriptions for the SONET STS Path PM Table (continued)

Field	Description	Cards Supported
PJN-SEC	Number of negative pointer justification seconds.	• ONS 15310 CL: CTX • ONS 15327: OC3, OC12, OC48 • ONS 15454 SONET: 2.5G_DM, 2.5G_DMP, CE-100T-8, DS3_EC1_48, EC1, EC1N, FCMR, OC3, OC3_8, OC12, OC12_4, OC48, OC192, MXP_2.5G_10E, TXP_MR_10E
NE ID	Name of the selected NE.	—

E.2.52 SONET VT1.5 PM Table

The SONET VT1.5 PM table contains PM information at the virtual tributary (VT1.5) layer. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the SONET VT1.5 PM table.

Table E-67 Field Descriptions for the SONET VT1.5 PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—

Table E-67 Field Descriptions for the SONET VT1.5 PM Table (continued)

Field	Description	Cards Supported
CV-V	Code violations VT layer (CV-V) is a count of the BIP errors detected at the VT path layer. Up to two BIP errors can be detected per VT Super Frame, with each error incrementing the current CV-V second register.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM, DS3XM_12
ES-V	Errored seconds VT layer (ES-V) is a count of the seconds when at least one VT Path BIP error was detected. An AIS-V defect (a lower-layer, traffic-related, near-end defect) or a LOP-V defect can also cause an ES-V.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM, DS3XM_12
SES-V	Severely errored seconds VT layer (SES-V) is a count of seconds when K (600) or more VT Path BIP errors were detected. SES-V can also be caused by an AIS-V defect (a lower-layer, traffic-related, near-end defect) or a LOP-V defect.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM, DS3XM_12
UAS-V	Unavailable second VT layer (UAS-V) is a count of the seconds when the VT path was unavailable. A VT path becomes unavailable when ten consecutive seconds occur that qualify as SES-Vs, and continues to be unavailable until ten consecutive seconds occur that do not qualify as SES-Vs.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM, DS3XM_12
NE ID	Name of the selected NE.	—

E.2.53 SONET VT2 PM Table

The SONET VT2 PM table contains PM information at the virtual tributary (VT2) layer. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.

- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the SONET VT2 PM table.

Table E-68 Field Descriptions for the SONET VT2 PM Table

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
CV-V	Code violations VT layer (CV-V) is a count of the BIP errors detected at the VT path layer. Up to two BIP errors can be detected per VT Super Frame, with each error incrementing the current CV-V second register.	• ONS 15454 SONET: DS1_E1_56
ES-V	Errored seconds VT layer (ES-V) is a count of the seconds when at least one VT Path BIP error was detected. An AIS-V defect (a lower-layer, traffic-related, near-end defect) or a LOP-V defect can also cause an ES-V.	• ONS 15454 SONET: DS1_E1_56
SES-V	Severely errored seconds VT layer (SES-V) is a count of seconds when K (600) or more VT Path BIP errors were detected. SES-V can also be caused by an AIS-V defect (a lower-layer, traffic-related, near-end defect) or a LOP-V defect.	• ONS 15454 SONET: DS1_E1_56
UAS-V	Unavailable second VT layer (UAS-V) is a count of the seconds when the VT path was unavailable. A VT path becomes unavailable when ten consecutive seconds occur that qualify as SES-Vs, and continues to be unavailable until ten consecutive seconds occur that do not qualify as SES-Vs.	• ONS 15454 SONET: DS1_E1_56
NE ID	Name of the selected NE.	—

E.2.54 SONET VT PM Table (Far End)—ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET

The SONET VT PM table shows far-end performance data for the ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, and ONS 15454 SONET VT. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the SONET VT PM table.

Table E-69 Field Descriptions for the SONET VT PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
CV-V	Coding violations–VT.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM, DS3XM_12

Table E-69 Field Descriptions for the SONET VT PM Table (Far End) (continued)

Field	Description	Cards Supported
ES-V	Errored seconds–VT.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS3XM, DS1_E1_56, DS3XM_12
SES-V	Severely errored seconds–VT.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM, DS3XM_12
UAS-V	Unavailable seconds–VT.	• ONS 15310 CL: CTX • ONS 15310 MA SONET: CTX_2500, DS1_28_DS3_EC1_3, DS1_84_DS3_EC1_3 • ONS 15327: XTC • ONS 15454 SONET: DS-1, DS1N, DS1_E1_56, DS3XM, DS3XM_12
NE ID	Name of the selected NE.	—

E.2.55 SONET VT2 PM Table (Far End)—ONS 15454 SONET

The SONET VT2 PM table shows far-end performance data for the ONS 15454 SONET VT2. You can display performance data for 15-minute, 1-day, or real-time increments:

- 15-minute—Data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- 1-day—Data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.
- Real-time—When a real-time PM session is running, it polls the NE for *x* number of attributes every 10 to 900 seconds. This feature allows you to examine the current value of a PM parameter in granularities finer than the standard 15-minute or 1-day interval. For more information, see 10.4.4 Managing Real-Time PM Data, page 10-26.

Performance monitoring can be done either on selected modules, or on specific locations in the NE. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

The following table describes the fields in the SONET VT2 PM table.

Table E-70 Field Descriptions for the SONET VT2 PM Table (Far End)

Field	Description	Cards Supported
Alias ID	Alias name of the selected NE.	—
Module Name	Module for which PM data is displayed.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
CV-V	Coding violations–VT.	• ONS 15454 SONET: DS1_E1_56
ES-V	Errored seconds–VT.	• ONS 15454 SONET: DS1_E1_56
SES-V	Severely errored seconds–VT.	• ONS 15454 SONET: DS1_E1_56
UAS-V	Unavailable seconds–VT.	• ONS 15454 SONET: DS1_E1_56
NE ID	Name of the selected NE.	—

E.3 ONS 15530 and ONS 15540 PM Tables

This section describes the PM tables that are specific to ONS 15530 and ONS 15540 NEs.

E.3.1 Overview of Supported PM Parameters

The following ONS 15530 and ONS 15540 PM parameters are available on any of the interfaces listed in the following table. Table E-72 to Table E-77 list all the ONS 15530 and ONS 15540 PM parameters with the corresponding description and a list of interfaces supported.

Table E-71 ONS 155xx Optical Interfaces

ONS 15530	ONS 15540
cevPortTransparent	cevPortTransparent
cevPortWave	cevPortWave
cevPortWaveEthPhy	cevPortWaveEthPhy
cevPort10GigEthPhy	cevport10GigEthBhy
cevPortWavePatch	cevPortWavePatch

Table E-71 ONS 155xx Optical Interfaces (continued)

ONS 15530	ONS 15540
cevPortEsconPhy	cevportWaveOSC
cevPortGEFCPhy	
cevPortVOAIn	
cevPortVOAFilterIn	
cevPortWaveOSC	
cevPortWaveSonetPhy	
cevPort2GFCPhy	

Table E-72 Section PM Parameters—Near End

Parameter	Description	Interfaces Supported
Alias ID	Alias name of the selected NE.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Validity	Whether the data in the entry is valid. **Note** The first entry for each interface and port is always invalid and is used as the baseline entry. The description of the baseline entry is "invalid–not enough time has elapsed."	—
CV-S	Coding violations—section.	cevPortTransparent[1], cevPortWave[1], cevPortWaveSonetPhy[1]
ES-S	Errored seconds—section.	
SES-S	Severely errored seconds—section.	
SEFS-S	Severely errored framing seconds—section.	
Module Name	Module for which PM data is displayed.	—
NE ID	Name of the selected NE.	—

1. Available on ONS 15530 and ONS 15540 NEs

Table E-73 Line PM Parameters

Parameter	Description	Interfaces Supported
Alias ID	Alias name of the selected NE.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Validity	Whether the data in the entry is valid. **Note** The first entry for each interface and port is always invalid and is used as the baseline entry. The description of the baseline entry is "invalid–not enough time has elapsed."	—
Rx CVRD	Represents the counter associated with the number of code violations and running disparity errors encountered in the received direction.	cevPortTransparent[1], cevPortWave[1], cevPortWaveEthPhy[1], cevPort10GigEthPhy[1], cevPortEsconPhy, cevPortGEFCPhy
RX CRC	Represents the counter associated with CRC errors. It has a valid value only for interfaces that provide CRC error monitoring.	cevPortWaveEthPhy[2], cevPort10GigEthPhy[2], cevPortEsconPhy[2], cevPortGEFCPhy[2]
TxEncapFarEndPacketErrors	Represents the counter associated with ESCON ingress error indications from the far end of an Ethernet network, where an ESCON stream.	cevPortEsconPhy[2]
Module Name	Module for which PM data is displayed.	—
NE ID	Name of the selected NE.	—

1. Available on ONS 15530 and ONS 15540 NEs.
2. Available on ONS 15530.

Table E-74 CDL PM Parameters

Parameter	Description	Interfaces Supported
Alias ID	Alias name of the selected NE.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—

Table E-74 CDL PM Parameters (continued)

Parameter	Description	Interfaces Supported
Validity	Whether the data in the entry is valid. **Note** The first entry for each interface and port is always invalid and is used as the baseline entry. The description of the baseline entry is "invalid–not enough time has elapsed."	—
Rx Header CRC Error	Number of CDL frames received with CDL header CRC errors.	cevPortWaveEthPhy[1], cevPort10GigEthPhy[1], cevPortWaveOSC[1]
Rx Invalid FlowID	Number of CDL flow identifier lookup errors in the received direction.	cevPortWaveEthPhy[2], cevPort10GigEthPhy[2]
Rx Non CDL Packets	Number of packets received without a CDL header on this interface. This counter is incremented only when CDL is enabled on this interface.	cevPortWaveEthPhy[1], cevPort10GigEthPhy[1]
Net Ethernet CRC	Number of Ethernet packets with CRC errors.	cevPortGEFCPhy
Module Name	Module for which PM data is displayed.	—
NE ID	Name of the selected NE.	—

1. Available on ONS 15530 and ONS 15540 NEs.
2. Available on ONS 15530.

Table E-75 Physical PM Parameters

Parameter	Description	Interfaces Supported
Alias ID	Alias name of the selected NE.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Validity	Whether the data in the entry is valid. **Note** The first entry for each interface and port is always invalid and is used as the baseline entry. The description of the baseline entry is "invalid–not enough time has elapsed."	—
Mean Optical Power	Mean optical power, received direction.	cevPortWavePatch[1]
Optical Power (Max)	Maximum optical power, received direction.	
Optical Power (Min)	Minimum optical power, received direction.	

Table E-75 Physical PM Parameters (continued)

Parameter	Description	Interfaces Supported
Optical Power (Max)	Maximum optical power, received direction, post adjustment.	cevPortVOAIn[2], cevPortVOAFilterIn[2]
Optical Power (Min)	Minimum optical power, received direction, post adjustment.	
Optical Power (Mean)	Mean optical power, received direction, post adjustment.	
Ambient Temp (Max)	Maximum ambient temperature, received direction, post adjustment.	
Ambient Temp (Min)	Minimum ambient temperature, received direction, post adjustment.	
Ambient Temp (Mean)	Mean ambient temperature, received direction, post adjustment.	
Available Seconds	Number of seconds for which the performance data was accounted for in the interval.	cevPortWavePatch[1], cevPortVOAIn[2], cevPortVOAFilterIn[2]
Module Name	Module for which PM data is displayed.	—
NE ID	Name of the selected NE.	—

1. Available on ONS 15530 and ONS 15540 NEs.
2. Available on ONS 15530.

Table E-76 ONS 15530 Fiber Channel Port Errors PM Parameters

Parameter	Description	Interfaces Supported
Alias ID	Alias name of the selected NE.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Validity	Whether the data in the entry is valid. **Note** The first entry for each interface and port is always invalid and is used as the baseline entry. The description of the baseline entry is "invalid–not enough time has elapsed."	—
Rx Link Resets	Number of link resets (LR primitives) that are received.	cevPortGEFCPhy, cevPort2GFCPhy
Tx Link Resets	Number of link resets (LR primitives) that are transmitted.	
Link Resets	Number of times the reset link protocol was initiated on this port.	
Rx Offline Sequences	Number of offline primitive OLS received on this port.	
Tx Offline Sequences	Number of offline primitive OLS transmitted by this port.	
Loss of Synchs	Number of instances of synchronization loss detected at this port. This count is part of FC-PH's link error status block (LESB).	

Table E-76 ONS 15530 Fiber Channel Port Errors PM Parameters (continued)

Parameter	Description	Interfaces Supported
Loss of Signals	Number of instances of signal loss detected at this port. This count is part of FC-PH's LESB.	cevPortGEFCPhy
Link Failures	Number of link failures. This count is part of FC-PH's LESB.	
Prim Seq Protocol Errors	Number of primitive sequence protocol errors detected at this port. This count is part of FC-PH's LESB.	
Invalid Tx Words	Number of invalid transmission words received at this port. This count is part of FC-PH's LESB.	
Invalid CRCs	Number of frames received with invalid CRC. This count is part of FC-PH's LESB.	
Invalid Ordered Sets	Number of invalid ordered sets received at this port.	
FrameTooLong	Number of frames received at this port where the frame length was greater than what was agreed to in FLOG/PLOGI.	
Truncated Frames	Number of frames received at this port where the frame length was less than the minimum indicated by the frame header, which is normally 24 bytes.	
Address Errors	Number of frames received with unknown addressing.	
Delimiter Errors	Number of invalid frame delimiters received at this port.	
Encoding Disparity Errors	Number of encoding disparity errors received at this port.	
Other Errors	Number of errors that were detected on this port but were not counted by another error counter in this row.	
Module Name	Module for which PM data is displayed.	—
NE ID	Name of the selected NE.	—

Table E-77 ONS 15530 RMON Ethernet History PM Parameters

Parameter	Description	Interfaces Supported
Alias ID	Alias name of the selected NE.	—
Physical Location	Slot and port number for which PM data is displayed.	—
Interface	Interface name of the selected NE.	—
Time Stamp (*time zone*)	When the data was collected. You can select GMT, Local, or User-Defined time for the Time Stamp display. Use the User Preferences dialog box to make your time zone selection.	—
Maintenance	Whether the NE was under maintenance when the performance data was collected.	—
Validity	Whether the data in the entry is valid. **Note** The first entry for each interface and port is always invalid and is used as the baseline entry. The description of the baseline entry is "invalid–not enough time has elapsed."	—

Table E-77 ONS 15530 RMON Ethernet History PM Parameters (continued)

Parameter	Description	Interfaces Supported
Octets	Total number of octets of data (including the bad packets) received in the network. This also includes FCS octets but excludes framing bits.	cevPortGEFCPhy
Packets	Number of packets (including bad packets) received during the sampling interval.	
CRCAlignErrors	Number of packets received during the sampling interval that had a length of 64 to 1518 octets but had either a bad FCS with an integral number of octets (FCS error) or a bad FCS with a nonintegral number of octets (alignment error).	
Undersize Packets	Number of packets received during the sampling interval that were are less than 64 octets long excluding framing bits but including FCS octets.	
Oversize Packets	Number of packets received during the sampling interval that were longer than 1518 octets excluding framing bits but including FCS octets.	
Module Name	Module for which PM data is displayed.	—
NE ID	Name of the selected NE.	—

E.3.2 CDL PM Table—ONS 15530 and ONS 15540

The Converged Data Link (CDL) PM table provides OAM&P in Ethernet packet-based optical networks without a SONET/SDH layer.

You can display performance data for 15-minute or 1-day increments:

- For the 15-minute table, data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- For the 1-day table, data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.

When the NE is rebooted, all performance data is cleared on the NE and the first new entry for each interface becomes the new baseline entry. (Baseline entries are always marked invalid.) You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

Entries for performance parameters with associated threshold alarms (traps) are flagged in red. Orange represents a major performance problem, yellow represents a minor problem, and blue represents a warning.

Note Display of performance data is affected by settings in the Control Panel.

The following table describes the fields in the CDL PM table.

Table E-78 Field Descriptions for the CDL PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Physical Location	Physical location of the NE: slot, subslot, and port.
Interface	Whether the interface is transparent or trunk side.
Time Stamp	Time when the performance statistics were collected.
Validity	Whether the data in the entry is valid. **Note** The first entry for each interface and port is always invalid and is used as the baseline entry. The description of the baseline entry is "invalid–not enough time has elapsed."
Maintenance	Whether the NE was under maintenance when the performance data was collected.
RX HEC	Number of CDL frames received with CDL Header CRC errors.
RX Non CDL	Number of packets received without a CDL header on this interface.
RX Invalid Flow ID	Number of CDL Flow Identifier lookup errors in the received direction.
Net Ethernet CRC *(ONS 15530 only)*	Number of net Ethernet CRC errors.
Module Name	Name of the module.
NE ID	Name of the selected NE.

E.3.3 Ethernet History PM Table—ONS 15530

The Ethernet History PM table shows Ethernet history performance data for ONS 15530 interfaces.

You can display performance data for 15-minute or 1-day increments:

- For the 15-minute table, data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- For the 1-day table, data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.

When the NE is rebooted, all performance data is cleared on the NE and the first new entry for each interface becomes the new baseline entry. (Baseline entries are always marked invalid.) You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

Entries for performance parameters with associated threshold alarms (traps) are flagged in red. Orange represents a major performance problem, yellow represents a minor problem, and blue represents a warning.

Note Display of performance data is affected by settings in the Control Panel.

The following table describes the fields in the Ethernet History PM table.

Table E-79 Field Descriptions for the Ethernet History PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Physical Location	Physical location of the NE: slot, subslot, and port.
Interface	Name of the interface on which the performance data was collected.
Time Stamp	Time when the performance statistics were collected.
Validity	Whether the data in the entry is valid. **Note** The first entry for each interface and port is always invalid and is used as the baseline entry. The description of the baseline entry is "invalid–not enough time has elapsed."
Maintenance	Whether the NE was under maintenance when the performance data was collected.
Octets	Total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets).
Packets	Number of packets (including bad packets) received during this sampling interval.
CRC Alignment Errors	Number of packets received during this sampling interval that had a length (excluding framing bits but including FCS octets) from 64 to 1518 octets, inclusive, but had either a bad FCS with an integral number of octets (FCS error) or a bad FCS with a nonintegral number of octets (alignment error).
Under Size Packets	Number of packets received during this sampling interval that were less than 64 octets long (excluding framing bits but including FCS octets) and were otherwise well formed.
Over Size Packets	Number of packets received during this sampling interval that were longer than 1518 octets (excluding framing bits but including FCS octets) but were otherwise well formed.
Module Name	Name of the selected NE module.
NE ID	Name of the selected NE.

E.3.4 FC Port Error PM Table—ONS 15530

The Fibre Channel (FC) Port Error PM table shows performance data for the ONS 15530.

You can display performance data for 15-minute or 1-day increments:

- For the 15-minute table, data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- For the 1-day table, data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.

When the NE is rebooted, all performance data is cleared on the NE and the first new entry for each interface becomes the new baseline entry. (Baseline entries are always marked invalid.) You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

Entries for performance parameters with associated threshold alarms (traps) are flagged in red. Orange represents a major performance problem, yellow represents a minor problem, and blue represents a warning.

Note Display of performance data is affected by settings in the Control Panel.

The following table describes the fields in the FC Port Error PM table.

Table E-80 Field Descriptions for the FC Port Error PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Physical Location	Physical location of the NE—slot, subslot, and port.
Interface	Whether the interface is transparent or trunk side.
Time Stamp	Time when the performance statistics were collected.
Validity	Whether the data in the entry is valid. **Note** The first entry for each interface and port is always invalid and is used as the baseline entry. The description of the baseline entry is "invalid–not enough time has elapsed."
Maintenance	Whether the NE was under maintenance when the performance data was collected.
Rx Link Resets	Number of link resets (LR primitives) received.
Tx Link Resets	Number of link resets (LR primitive) transmitted.
Link Resets	Number of times the reset link protocol was initiated on the port. This includes the number of Loop Initialization Primitive (LIP) events on an arbitrated loop port.
Rx Offline Sequences	Number of offline primitive OLS received at the port.
Tx Offline Sequences	Number of offline primitive OLS transmitted by the port.
Link Failures	Number of link failures. This count is part of the FC-PH Link Error Status Block (LESB).
Loss of Synchs	Number of instances of synchronization loss detected at the port. This count is part of the FC-PH LESB.
Loss of Signals	Number of instances of signal loss detected at the port. This count is part of the FC-PH LESB.
Primitive Sequence Protocol Errors	Number of primitive sequence protocol errors detected at the port. This count is part of the CFC-PH LESB.
Invalid Tx Words	Number of invalid transmission words received at the port. This count is part of the FC-PH LESB.
Invalid CRCs	Number of frames received with an invalid CRC. This count is part of the FC-PH LESB.
Invalid Ordered Sets	Number of invalid ordered sets received at the port.
Frame Too Longs	Number of frames received at the port where the frame length was greater than what was agreed to in FLOGI/PLOGI. This could be caused by losing the end of frame delimiter.
Truncated Frames	Number of frames received at the port where the frame length was less than the minimum indicated by the frame header (normally 24 bytes, but it could be more if the DFCTL field indicates an optional header should have been present).
Address Errors	Number of frames received with unknown addressing, such as an unknown SID or DID. The SID or DID is not known to the routing algorithm.

Table E-80 Field Descriptions for the FC Port Error PM Table (continued)

Field	Description
Delimiter Errors	Number of invalid frame delimiters received at the port. An example is a frame with a class 2 start and a class 3 at the end.
Encoding Disparity Errors	Number of encoding disparity errors received at the port.
Other Errors	Number of errors that were detected on the port but were not counted by any other error counter in the row.
Module Name	Name of the selected NE module.
NE ID	Name of the selected NE.

E.3.5 Line PM Table—ONS 15530 and ONS 15540

The Line PM table shows physical performance data for ONS 15530 and ONS 15540 client and trunk side interfaces. The data shown is from the following modules:

- The transparent and trunk side interfaces of the transponders
- The Optical Supervisory Channel (OSC) interface on the MUX cards

You can display performance data for 15-minute or 1-day increments:

- For the 15-minute table, data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- For the 1-day table, data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.

When the NE is rebooted, all performance data is cleared on the NE and the first new entry for each interface becomes the new baseline entry. (Baseline entries are always marked invalid.) You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

Entries for performance parameters with associated threshold alarms (traps) are flagged in red. Orange represents a major performance problem, yellow represents a minor problem, and blue represents a warning.

Note Display of performance data is affected by settings in the Control Panel.

The following table describes the fields in the Line PM table.

Table E-81 Field Descriptions for the Line PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Physical Location	Physical location of the NE–slot, subslot, and port.
Interface	Whether the interface is transparent or trunk side.

Table E-81 Field Descriptions for the Line PM Table (continued)

Field	Description
Time Stamp	Time when the performance statistics were collected.
Validity	Whether the data in the entry is valid. **Note** The first entry for each interface and port is always invalid and is used as the baseline entry. The description of the baseline entry is "invalid–not enough time has elapsed."
Maintenance	Whether the NE was under maintenance when the performance data was collected.
RX CVRD	Code violations and running disparity errors encountered in the received direction for both types of interfaces. A threshold is associated with this parameter, and the table cell will be flagged in red when the parameter exceeds the threshold. You can set thresholds by using the command line interface (CLI).
RX CRC	Number of CRC errors. This column has a valid value only for interfaces that provide CRC error monitoring. This column is not applicable to ONS 15540.
Tx Packet Errors	Number of ingress error indications from the far end of an Ethernet network, where an ESCON stream is encapsulated in Ethernet packets. This number is incremented whenever an ESCON packet or control character has 8b/10b code violations or running disparity errors in the ingress direction at the far end of the Ethernet network. This column has a valid value only for ESCON interfaces where Ethernet encapsulation is performed. This column is not applicable to ONS 15540.
Module Name	Name of the selected module.
NE ID	Name of the selected NE.

E.3.6 Physical PM Table—ONS 15530 and ONS 15540

The Physical PM table shows physical performance data for ONS 15530 and ONS 15540 client and trunk side interfaces. The data shown is from the following modules:

- The transparent and trunk side interfaces of the transponders
- The OSC interface on the MUX cards

You can display performance data for 15-minute or 1-day increments:

- For the 15-minute table, data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on). The data shown represents the difference in counter values between successive 15-minute intervals.
- For the 1-day table, data is collected at midnight GMT. The data shown represents the difference between the counter values read at successive midnights.

When the NE is rebooted, all performance data is cleared on the NE and the first new entry for each interface becomes the new baseline entry. (Baseline entries are always marked invalid.) You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

Entries for performance parameters with associated threshold alarms (traps) are flagged in red. Orange represents a major performance problem, yellow represents a minor problem, and blue represents a warning.

Note Display of performance data is affected by settings in the Control Panel.

The following table describes the fields in the Physical PM table.

Table E-82 Field Descriptions for the Physical PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Physical Location	Physical location of the NE: slot, subslot, and port.
Interface	Whether the interface is transparent or trunk side.
Time Stamp	Time when the performance statistics were collected.
Validity	Whether the data in the entry is valid. **Note** The first entry for each interface and port is always invalid and is used as the baseline entry. The description of the baseline entry is "invalid–not enough time has elapsed."
Maintenance	Whether the NE was under maintenance when the performance data was collected.
Mean Power	Mean laser power in dBm.
Maximum Power	Maximum laser power in dBm.
Minimum Power	Minimum laser power in dBm.
Mean Device Temperature	Mean device temperature in degrees Celsius. **Note** This field applies only to the ONS 15530 NE.
Maximum Device Temperature	Maximum device temperature in degrees Celsius. **Note** This field applies only to the ONS 15530 NE.
Minimum Device Temperature	Minimum device temperature in degrees Celsius. **Note** This field applies only to the ONS 15530 NE.
Direction	Line direction.
Available Seconds	Available seconds.
Module Name	Name of the module.
NE ID	Name of the selected NE.

E.3.7 SONET Section PM Table—ONS 15530 and ONS 15540

The SONET Section PM table shows section layer performance data for ONS 15530 and ONS 15540 SONET interfaces. The data shown is from modules with the protocol configured as SONET or SDH. You can use the Plot tab to plot the data in a graphical view that is stored in the Prime Optical database. See 10.4.6 Using PM Data Graphs, page 10-28.

You can display performance data for 15-minute or 1-day increments:

- For the 15-minute table, data is collected at the quarter-hour (for example, at 10:00, 10:15, and so on).
- For the 1-day table, the values shown are the total of 96 15-minute values, ending at midnight GMT.

Entries for performance parameters with associated threshold alarms (traps) are shown in red. Orange represents a major problem, yellow represents a minor problem, and blue represents a warning.

When the NE is rebooted, all performance data is cleared on the NE and the first new entry for each interface becomes the new baseline entry (baseline entries are always marked invalid).

Note Display of performance data is affected by settings in the Control Panel.

The following table describes the fields in the SONET Section PM table.

Table E-83 Field Descriptions for the SONET Section PM Table

Field	Description
Alias ID	Alias name of the selected NE.
Physical Location	Physical location of the NE–slot, subslot, and port.
Interface	Whether the interface is transparent or wave.
Time Stamp	Time when the performance statistics were collected.
Validity	Whether the data in the entry is valid. **Note** The first entry for each interface and port is always invalid and is used as a baseline entry. The description field of a baseline entry is "invalid–not enough time has elapsed."
Maintenance	Whether the NE was under maintenance when the performance data was collected.
Errored Seconds–Section	Number of errored seconds encountered by the SONET/SDH section in the current interval. An errored second is a one-second period with one or more coding violations at that layer or one or more incoming defects at that layer.
Severely Errored Seconds–Section	Number of severely errored seconds encountered by the SONET/SDH section in the current interval. A severely errored second is a one-second period with *x* or more coding violations at that layer one or more incoming defects at that layer. The value of *x* depends on the line rate and bit error rate.
Severely Errored Framing Seconds–Section	Number of severely errored framing seconds encountered by the SONET/SDH section in the current interval. A severely errored framing second is a a one-second period containing one or more severely errored framing events.
Code Violations–Section	Number of coding violations encountered by the SONET/SDH section in the interval. Coding violations are bit interleaved parity errors that are detected in the incoming signal. A threshold is associated with this parameter, and the table cell will be flagged in red when it exceeds the threshold. You can set thresholds by using the CLI.
Module Name	Name of the selected module.
NE ID	Name of the selected NE.

Error Messages

This appendix describes the Cisco Prime Optical error messages and recommends solutions. It contains the following sections:

- F.1 Prime Optical Client Error and Warning Messages, page F-1
- F.2 Prime Optical Server Error Messages, page F-98
- F.3 Prime Optical Server Audit Messages, page F-148

F.1 Prime Optical Client Error and Warning Messages

Error and warning messages are categorized by message type and are listed in ascending numeric order within each category.

Note Because error and warning messages are grouped in number ranges, they are not listed in exact numeric order.

Error Message `EID-2: The NE Explorer is not supported for this NE type.`

Recommended Action Select a different NE for which NE explorer is supported. Table 1-14 on page 1-32 lists the NEs supported in Prime Optical and describes the NE Explorer for each NE.

Error Message `EID-3: The connection to the JMS server was lost.`

Recommended Action No action is required. The service reconnects automatically to the JMS server.

Error Message `EID-100: Fatal error: Cannot connect to EMS server. Check the configuration and retry.`

Recommended Action Verify IP connectivity from the client to the server. Verify that the Prime Optical application is running. See Appendix G, "Troubleshooting," for additional information.

Error Message `EID-102: Fatal error: This service is currently disabled. If the problem persists, contact your service provider.`

Recommended Action Retry later. If the problem persists, contact your Prime Optical system administrator.

Error Message `EID-103: Fatal error: Connection to the EMS server was lost. The application will be shut down.`

Recommended Action Restart the application after verifying that the Prime Optical server is operational and available from the client LAN.

Error Message `EID-104: CTM internal error: Invalid help URL.`

Recommended Action The Prime Optical client cannot connect to the Prime Optical HTTP server. Contact your Prime Optical system administrator.

Error Message `EID-105: This user is currently logged in. Second connection to the EMS server is not allowed.`

Recommended Action If you know where you are logged in currently, close that session. If you do not know where you are logged in, ask the administrator to end the session. After the session ends, start a new session.

Error Message `EID-106: Fatal error: Cannot initialize database connection. Verify that the EMS database is operational.`

Recommended Action Ask the administrator to check the database configuration. Contact Cisco technical support if you cannot find problems with the database.

Error Message `EID-107: Cannot launch a JVM for help.`

Recommended Action Xterm is missing from the Sun Solaris path. Edit the ems-client.cfg file and provide the correct xterm path.

Otherwise, there might not be enough memory to launch a separate help process. Shut down some applications to free memory.

Error Message `EID-108: The administrator has logged out your session. The CTM client will be closed.`

Recommended Action Try logging into the Prime Optical client again.

Error Message `EID-109: Could not log into the CTM server. Cannot start server.`

Recommended Action Run the **opticalctl status** command to see what Prime Optical server processes are running. Restart the Prime Optical server using the **opticalctl start** command.

Error Message `EID-110: Cannot relogin to CTM standby server(s).`

Recommended Action Prime Optical client cannot connect to the servers listed in the Control Panel > Recovery Properties > Server List. Ping the IP address of the server that you are trying to connect to.

Error Message `EID-111: Your password has expired. You must set a new password. Do you want to continue?`

Recommended Action Enter a new password.

Error Message `EID-112: You are entering a protected Cisco domain. Do you want to continue?`

Recommended Action Click **OK** to continue.

Error Message `EID-113: Invalid password. The password cannot contain the same characters as the user ID, even in a different order.`

Recommended Action Choose a different password, one that does not contain the same characters as your username.

Error Message `EID-114: Invalid password. The new password must differ from the old password by at least` *`n`* `characters.`

Recommended Action Choose a different password, one that differs from your old password by at least the number of configured characters.

Error Message `EID-115: Cannot save Auto Refresh state in the User Preferences database table.`

Recommended Action Check your database. Cannot update Auto Refresh Mode in the USER_PREFERENCES_TABLE.

Error Message `EID-116: Cannot launch a browser. CTM uses the default browser to display the online help. The directory where your Mozilla executable is installed must be in your PATH environment variable. Also, verify that the DISPLAY variable is set correctly.`

Recommended Action Use the following procedure to correct the error:

Step 1 Verify that graphical applications can be launched from the terminal window where you execute the Prime Optical client; for example, type:

```
/usr/openwin/bin/xterm
```

Step 2 Verify that Mozilla is in your PATH. Type:

```
which mozilla
```

If the **which mozilla** command returns "mozilla: command not found," verify that Mozilla is installed and is in your PATH variable.

Step 3 Verify that the browser version is supported.

Step 4 Ensure that the browser is Javascript-enabled.

Step 5 If Steps 1 to 4 do not correct the error, install a new browser.

Error Message `EID-117: Cannot launch a browser. CTM uses the default browser to display the online help. If you want to use a specific browser to launch the CTM online help, verify that it is the default browser for your workstation.`

Recommended Action Use the following procedure to correct the error:

Step 1 Choose **Start > Run** from the Windows taskbar.

Step 2 Enter the following command:

```
cmd / start http://www.cisco.com
```

If a browser does not start, verify that an Internet browser is installed and that it is in the global Windows PATH.

Step 3 Verify that the browser version is supported.

Step 4 Ensure that the browser is Javascript-enabled.

Step 5 If Steps 1 to 4 do not correct the error, install a new browser.

Error Message `EID-118: Your password has been set by the administrator. You must set a new password. Do you want to continue?`

Recommended Action Continue setting a new password.

Error Message `EID-119: Error in retrieving backup categories.`

Recommended Action The restore categories could not be retrieved. Restart the Prime Optical client and retry the operation.

Error Message `EID-120: Erroneous filename or NE selections.`

Recommended Action Select a valid filename or NE.

Error Message `EID-121: Categories in backed up file are empty.`

Recommended Action Choose a category for the backed-up file.

Error Message `EID-122: Cannot continue with Finish. Verify that the backup file is not corrupted and that its contents are valid for the restore operation.`

Recommended Action Verify that the backup file is not corrupted and that its contents are valid.

Error Message `EID-123: The ONS 15216 OADM password does not match the confirmation password. Retype the password.`

Recommended Action Retype the password.

Error Message `EID-125: The ONS 155XX username is a mandatory field. Specify a username.`

Recommended Action Enter a username.

Error Message `EID-126: The table view has changed. You must refresh the table before performing this operation.`

Recommended Action Click the **Refresh Data** tool.

Error Message `EID-127: An error occurred while scheduling the SNTP configuration.`

Recommended Action Error occurred while scheduling Simple Network Time Protocol (SNTP). Try performing the task again.

Error Message `EID-128: Maximum number of unlock attempts exceeded. Application will be shut down.`

Recommended Action Contact your system administrator to unlock your user account.

Error Message `EID-129: The current user account has been locked. Please try again later.`

Recommended Action This error occurs during Prime Optical user login authentication when a user account is locked out. Wait for the lockout period to expire; then, log into the Prime Optical client.

Error Message `EID-130: Cannot authenticate user. Please try again.`

Recommended Action Enter your username and password and retry.

Error Message `EID-131: Cannot connect to the specified EMS server. Check IP connectivity and try again.`

Recommended Action Ping the server workstation to see if you have IP connectivity. If there is no connectivity, contact the administrator to verify that connectivity is established.

Error Message `EID-132: User disabled due to a security violation. Contact the administrator to enable the user account.`

Recommended Action Contact the administrator to re-enable the user account.

Error Message `EID-133: Please specify a username.`

Recommended Action Enter the username.

Error Message `EID-134: Please enter or select an IP address.`

Recommended Action Enter the IP address.

Error Message `EID-135: There are no undeleted NEs in the selection context.`

Recommended Action The NEs are no longer available. Relaunch the window.

Error Message `EID-136: There is no finish action defined for the selected model.`

Recommended Action No action was defined to complete the operation on the NE. Select a different NE.

Error Message `EID-137: The selection list contains only the deleted NE.`

Recommended Action Relaunch the window.

Error Message `EID-138: Your password has expired. Please contact your service provider for assistance.`

Recommended Action This error occurs during Prime Optical user login authentication when a user's password has expired and the user is not allowed to change the password. Contact your Prime Optical system administrator for assistance.

Error Message `EID-139: Invalid password. The new password must differ from the previous` *`n`* `passwords used. The password you have entered is a duplicate of the password set on` *`date`*`. Enter another password.`

Recommended Action Enter a different password.

Error Message `EID-140: Select at least one NE or select Export EMS Alarms.`

Recommended Action Select at least one NE or select **Export EMS Alarms**.

Error Message `EID-141: Specify the alarm severity.`

Recommended Action Select at least one alarm severity from the list provided.

Error Message `EID-142: Specify the export destination file.`

Recommended Action Specify the export destination file.

Error Message `EID-143: Cannot write to specified export file.`

Recommended Action Verify that the user has the required permission in the directory where the export file is being created. Verify that there is enough disk space available; then, retry.

Error Message `EID-144: Cannot create directory: directory-name.`

Recommended Action Verify that the user has the required permission in the directory where the export file is being created. Verify that there is enough disk space available; then, retry. Verify that there is no existing directory with the name *directory-name.*

Error Message `EID-145: Illegal record count. Enter a positive integer.`

Recommended Action Enter a positive integer.

Error Message `EID-146: Event Export Manager - Cannot create or append to filename. Check access rights and disk space.`

Recommended Action Check access rights and disk space.

Error Message `EID-147: Event Export Manager - Cannot write to filename. Check access rights and disk space.`

Recommended Action Check access rights and disk space.

Error Message `EID-148: Enter message to be sent.`

Recommended Action No message is specified. Enter the message you want to send.

Error Message `EID-149: Message is too long. Only the first 512 bytes will be sent.`

Recommended Action The maximum message size allowed is 512 bytes. If you entered more than 512 bytes, only the first 512 bytes will be sent.

Error Message `EID-150: Illegal threshold value. Enter a number between 0 and 100.`

Recommended Action Enter a number from 0 to 100.

Error Message `EID-151: Copying of CTC binary to CTM server failed. Ensure that server-install-directory/cms/ on the server is not write protected.`

Recommended Action Write-enable the location *server-install-directory*/cms/ and retry.

Error Message `EID-154: The ML Series Card to NE Connection username is a mandatory field. Specify a username.`

Recommended Action Enter a username for ML card-to-NE connections.

Error Message `EID-155: The CTM Server to NE Connection username is a mandatory field. Specify a username.`

Recommended Action Enter a username for Prime Optical server-to-NE connections.

Error Message `EID-157: The CTM Server to NE Connection username is a mandatory field. Specify a username.`

Recommended Action Enter a username for Prime Optical server-to-NE connections.

Error Message `EID-159: Selected NEs for software download are of different model types.`

Recommended Action Reselect the NEs. All NEs selected for software download must be the same model type.

Error Message `EID-160: Year entered is before the current year. Enter a year greater than or equal to the current year.`

Recommended Action Enter a year that is later than, or the same as, the current year.

Error Message `EID-161: Month entered is before the current month. Enter a month greater than or equal to the current month.`

Recommended Action Enter a month that is later than, or the same as, the current month.

Error Message `EID-162: Date entered is before the current date. Enter a date equal to or greater than the current date.`

Recommended Action Enter a day of the month that is the same as, or later than, the current day of the month. The day should be a valid day for the month and year selected.

Error Message `EID-163: Hour entered is before the current hour. Enter an hour greater than or equal to the current hour.`

Recommended Action Enter an hour that is later than, or the same as, the current hour.

Error Message `EID-164: Minute entered is before the current minute. Enter a minute greater than or equal to the current minute.`

Recommended Action Enter a minute that is later than, or the same as, the current minute.

Error Message `EID-165: Source filename is empty. Enter a valid filename.`

Recommended Action Enter a source filename, which is required for the software download or memory restore operation.

Error Message `EID-166: Source file does not exist. Enter a valid filename.`

Recommended Action The source filename specified for the software download or memory restore operation does not exist. Specify a valid source filename.

Error Message `EID-167: Selected NE list is empty. Select NEs from the Available NEs list.`

Recommended Action Select at least one NE for the memory backup or software download operation.

Note You can run the memory restore operation for only one NE at a time.

Error Message `EID-168: An error occurred while scheduling the software download operation.`

Recommended Action The software download operation could not be scheduled. Restart the Prime Optical client and retry the software download operation.

Error Message `EID-169: An error occurred while scheduling the memory restore operation.`

Recommended Action The memory restore operation could not be scheduled. Restart the Prime Optical client and retry the memory restore operation.

Error Message `EID-170: An error occurred while scheduling the memory backup operation.`

Recommended Action The memory backup operation could not be scheduled. Restart the Prime Optical client and retry the memory backup operation.

Error Message `EID-171: Selected Users list is empty. Select users from the Available Users list.`

Recommended Action Select users from the Available Users list and click **Add** to move them to the Selected Users list.

Error Message `EID-172: There are no NEs available in the local user table. Add local NE users first.`

Recommended Action Add local NE users first.

Error Message `EID-173: An error occurred while sending the message.`

Recommended Action The message could not be delivered. Restart the Prime Optical client, retype the message, and resend.

Error Message `EID-174: Cannot retrieve the list of existing configuration files for the NE.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-175: The maximum number of Cisco ONS 15454 NEs must be less than or equal to 100.`

Recommended Action Specify 100 or fewer ONS 15454 NEs.

Error Message `EID-176: An error occurred while reading the global CTM configuration.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-177: An error occurred while modifying the global CTM configuration. Changes made might not take effect.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-178: An error occurred while modifying the global CTM configuration. Changes made might not be communicated to other CTM clients.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-179: No CTM Server to NE Connection username. Username is a mandatory field. Specify a username.`

Recommended Action Enter a username for Prime Optical server-to-NE connections.

Error Message `EID-180: An error occurred while starting this service. Verify that this service is installed on the CTM server and retry.`

Recommended Action Use the following procedure to verify that the Prime Optical processes are running:

Step 1 Log into the Prime Optical server as the root user and enter the following command:

```
opticalctl status
```

Step 2 Contact Cisco technical support with the results of the **opticalctl status** command.

Error Message `EID-181: An internal state error occurred. Do you want to continue using a default standard configuration?`

Recommended Action Click **Yes** or **No**; then, continue accordingly. Alternatively, reopen the Control Panel window.

Error Message `EID-182: An internal state denied the request to read the configuration. Do you want to continue using a default standard configuration?`

Recommended Action Click **Yes** or **No**; then, continue accordingly. Alternatively, reopen the Control Panel window.

Error Message `EID-183: An I/O error occurred. Do you want to continue using a default standard configuration?`

Recommended Action Click **Yes** or **No**; then, continue accordingly. Alternatively, reopen the Control Panel window.

Error Message `EID-184: An internal protocol error occurred. Do you want to continue using a default standard configuration?`

Recommended Action Click **Yes** or **No**; then, continue accordingly. Alternatively, reopen the Control Panel window.

Error Message `EID-185: An internal error would not allow the current configuration to be opened.`

Recommended Action An incorrect server configuration appears on the Control Panel window. Reopen it and verify that the server parameters are correct.

Error Message `EID-186: The request to open the current configuration file was denied.`

Recommended Action An incorrect server configuration appears on the Control Panel window. Reopen it and verify that the server parameters are correct.

Error Message `EID-187: There was a problem opening the current configuration file.`

Recommended Action An incorrect server configuration appears on the Control Panel window. Reopen it and verify that the server parameters are correct.

Error Message `EID-188: There was an exception opening the current configuration file.`

Recommended Action An incorrect server configuration appears on the Control Panel window. Reopen it and verify that the server parameters are correct.

Error Message `EID-189: There is an input character problem in the current configuration file.`

Recommended Action An incorrect server configuration appears on the Control Panel window. Reopen it and verify that the server parameters are correct.

Error Message `EID-190: There is an error in the server configuration file at line` *`line-number`*.

Recommended Action The server configuration file contains an invalid entry (or is missing a mandatory entry) at the line specified. If the line number specified is one more than the last line in the file, invalid data exists on the last line, or some mandatory field values are missing after the last line.

Error Message `EID-191: An error occurred while writing the changes to the server configuration file. The changes made to the server configuration have been lost.`

Recommended Action Refresh the Control Panel window. Redo the changes and click **Save**.

Error Message `EID-192: Server configuration has been modified by another user since it was last read. Click` **`Refresh Data`** `to refresh this view before any changes can be made to the server configuration file.`

Recommended Action To proceed with the save, click the **Refresh Data** tool, change the selected Control Panel property sheet, and click **Save**.

Error Message `EID-193: This IP address was already added as an {0}.`

Recommended Action Enter a different IP address.

Error Message `EID-194: A maximum of` *`n`* `can be configured. You must remove an existing host if you want to add another host.`

Recommended Action Remove an existing Simple Network Management Protocol (SNMP) host; then, add a new host.

Error Message `EID-196: An error occurred while sending the truncate queue event to the server.`

Recommended Action Error while sending event to the server. Restart client.

Error Message `EID-197: Maximum number of login attempts exceeded. Application will be shut down.`

Recommended Action You logged in incorrectly more than the configured number of times. Restart the application and try logging in with the correct username and password. If your user account is locked, contact your system administrator.

Error Message `EID-198: An error occurred while scheduling the alarm profile management operation.`

Recommended Action Reschedule the job.

Error Message `EID-199: An error occurred while scheduling the disclaimer message management operation.`

Recommended Action Reschedule the job.

Error Message `EID-200: An error occurred while scheduling the NE defaults management operation.`

Recommended Action Reschedule the job.

Error Message `EID-201: An error occurred while scheduling the configure node operation.`

Recommended Action Verify that the node is reachable and in service. Try again.

Error Message `EID-202: The archive log backup directory does not exist. Enter a different directory.`

Recommended Action Specify a valid directory for archive log backups.

Error Message `EID-203: Cannot delete the user from the database. Verify that the user is not logged in.`

Recommended Action Check if the user is logged in. Log out the user; then, delete the user.

Error Message `EID-205: The TL1 password does not match the confirmation password. Retype the password.`

Recommended Action Retype the TL1 password.

Error Message `EID-206: Duplicate server address. Enter a unique address.`

Recommended Action Enter a unique server address.

Error Message `EID-207: A maximum of n servers can be configured. You must remove an existing server to add another server.`

Recommended Action Remove an existing server; then, configure another server.

Error Message `EID-208: Could not cancel selected task(s). Action failed.`

Recommended Action The selected task or job is already running or has already been cancelled. Click the **Refresh Data** tool to see the current status.

Error Message `EID-209: Could not cancel selected job(s). Action failed.`

Recommended Action The selected task or job is already running or has already been cancelled. Click the **Refresh Data** tool to see the current status.

Error Message `EID-210: Could not activate selected task(s). Action failed.`

Recommended Action Activate (Commit) fails when the active software version is newer than the standby software version. Only the reactivate (Revert) operation is allowed in this case.

Reactivate (Revert) fails when the active software version is older than the standby software version. Only the activate (Commit) operation is allowed in this case.

Activate or reactivate might fail because a similar administrative operation (such as backup, restore, download, or commit/revert) occurs on the NE. Wait several minutes and try again.

Error Message `EID-211: Could not reactivate job(s). Action failed.`

Recommended Action Activate (Commit) fails when the active software version is newer than the standby software version. Only the reactivate (Revert) operation is allowed in this case.

Reactivate (Revert) fails when the active software version is older than the standby software version. Only the activate (Commit) operation is allowed in this case.

Activate or reactivate might fail because a similar administrative operation (such as backup, restore, download, or commit/revert) occurs on the NE. Wait several minutes and try again.

Error Message `EID-212: Software image download failed for NE-ID.`

Recommended Action The software image file might be empty or corrupt. Or, the problem might be the communication link between Prime Optical and the NE; the NE might not perform the correct handshake response with the Prime Optical. Retry the software download.

Error Message `EID-213: The CTM Server to NE Connection username is a mandatory field. Specify a username.`

Recommended Action Enter a username for Prime Optical server-to-NE connections.

Error Message `EID-215: There are no reachable or known model NEs.`

Recommended Action The NE you chose is unreachable or the NE model type does not support the operation. Choose a different NE.

Error Message `EID-216: No partitions for NEs.`

Recommended Action Initial discovery might still be in progress. Try again later.

Error Message `EID-217: The selected NEs do not have a partition selected to download the image file.`

Recommended Action The selected NE does not have a partition selected for downloading the image. Select a partition to which the image will be downloaded.

Error Message `EID-218: Some NEs do not have associated partitions to download the image file. Do you want to continue?`

Recommended Action One or more of the selected NEs have no partition selected for downloading the image. Select appropriate Flash partitions for all NEs. If you proceed anyway, those NEs will not be scheduled for image download.

Error Message `EID-219: Some selected NE flash partitions do not have enough space for the image: image-name.`

Recommended Action Clean up the space on the Flash partition before job execution time or the job will fail.

Error Message `EID-220: This operation will append only the new commands to the already running configuration. It will not replace the existing running configuration. Do you want to continue?`

Recommended Action Restoring the configuration file as running configuration will only append to the existing running configuration and will not delete the commands that are now present in the new configuration file. This is not a replacement of the running configuration.

Error Message `EID-221: Add at least one NE and a flash bank to Selected Downloads to download the image file.`

Recommended Action Add at least one NE and a Flash bank to the Selected Downloads list.

Error Message `EID-222: Cannot add the user. The total number of users on this NE has reached 20.`

Recommended Action Delete an existing user before adding a new NE user.

Error Message EID-223: Cannot change password at this time. Passwords are allowed to change once every *n* days. You still have *n* (hh:mm:ss) before you will be allowed to change your password.

Recommended Action Wait the specified length of time before changing the password. Alternatively, ask your system administrator to reduce the number of days required between password changes (in the Control Panel > Security Properties pane > Password Rules tab > Interval between password change field).

Error Message EID-224: The FTP password does not match the confirmation password. Retype the password.

Recommended Action Retype the password.

Error Message EID-225: OSS Client Name is a required field. Specify a unique name for this OSS client and retry.

Recommended Action Enter a unique OSS profile name and retry.

Error Message EID-227: IP Address is a required field. Specify a unique IP address for this OSS client and retry.

Recommended Action Enter a unique IP address and retry.

Error Message EID-228: An OSS client with the same name already exists. Specify a unique OSS client name and retry.

Recommended Action Enter a unique OSS client name and retry.

Error Message EID-230: An OSS IP address with the same name already exists. Specify a unique IP address and retry.

Recommended Action Enter a unique IP address and retry.

Error Message EID-231: An error occurred while reading the database. Restart the CTM client and retry.

Recommended Action Restart the Prime Optical client and retry.

Error Message EID-232: An error occurred while creating a new EFD. Add the EFD again.

Recommended Action A database error occurred during this operation. Add the EFD again.

Error Message EID-233: Cannot delete the user from the database. Make the changes again and retry.

Recommended Action Check if the user is logged in.

Error Message `EID-234: EFD Name is a required field. Specify a unique name for the EFD and retry.`

Recommended Action Enter a unique EFD name and retry.

Error Message `EID-235: The password confirmation does not match the actual password. Please try again.`

Recommended Action Retype the password.

Error Message `EID-236: An error occurred while saving the OSS client properties to the database. Make the changes again and retry.`

Recommended Action Redo the EFD changes; then, retry.

Error Message `EID-237: The Password field is mandatory. Enter the password.`

Recommended Action Enter a password that is at least four characters in length.

Error Message `EID-238: At least one NE must be allowed.`

Recommended Action Add at least one NE to the EFD.

Error Message `EID-239: At least one access element must be allowed.`

Recommended Action Add at least one access element to the EFD.

Error Message `EID-241: An error occurred while logging out a CTM user.`

Recommended Action Retry.

Error Message `EID-242: The OSS client name cannot be <NEW>. Enter a different name.`

Recommended Action Enter an OSS client profile name other than "<NEW>."

Error Message `EID-243: An error occurred while stopping this service.`

Recommended Action Use the following procedure to verify that the Prime Optical processes are running:

Step 1 Log into the Prime Optical server as the root user and enter the following command:

```
opticalctl status
```

Step 2 Contact Cisco technical support with the results of the **opticalctl status** command.

Error Message `EID-244: Cannot retrieve the model or service type for this service.`

Recommended Action Try again.

Error Message `EID-245: The modified OSS client was not found in the database.`

Recommended Action Database user data is missing. Recreate the OSS user.

Error Message `EID-246: An error occurred while sending events to other clients.`

Recommended Action Java Management Object and Configuration Object (JMOCO) notification error. Restart the Prime Optical client.

Error Message `EID-247: Cannot delete a new client.`

Recommended Action An error occurred while deleting the selected OSS client. Select another OSS client with an OSS name length greater than 0 characters.

Error Message `EID-248: The ONS 15216 OADM username is a mandatory field. Specify a username.`

Recommended Action Enter a valid username.

Error Message `EID-249: The critical threshold value must be greater than or equal to the major and minor threshold values. The major threshold value must be greater than or equal to the minor threshold value. Enter valid values.`

Recommended Action Enter threshold values where the critical value is greater than the major value, which is greater than the minor value.

Error Message `EID-250: In the Time Period selection, the start time is greater than the end time.`

Recommended Action Enter a start time that is before the end time.

Error Message `EID-251: The username, password, and IP address cannot be changed for an active user. Log out the user and try again.`

Recommended Action Log out the user; then, change the user's username, password, or IP address.

Error Message `EID-252: An error occurred while saving the OSS client properties to the database. All OSS configuration parameters (except OSS username) can be modified when an active OSS user is logged in. Make the changes again and retry.`

Recommended Action All OSS configuration parameters (except OSS username) can be modified when an active OSS user is logged in. Verify the input parameters and try again.

Error Message `EID-253: The selection list contains only the deleted NE.`

Recommended Action Relaunch the window.

Error Message `EID-253: Database error: The EFD profile name must be unique. Make the changes again and retry.`

Recommended Action Enter a unique EFD profile name.

Error Message `EID-254: The deleted NE has been removed from the selection list.`

Recommended Action One or more NEs has been deleted. Relaunch the window.

Error Message `EID-255: The tag can contain only alphanumeric, underscore (_), and period (.) characters.`

Recommended Action Add a tag that contains only alphanumeric characters, an underscore, or a period.

Error Message `EID-256: This username is being used by another CTM user. Choose a different username.`

Recommended Action Choose a different username.

Error Message `EID-257: The new password does not match the confirmation password. Retype the password.`

Recommended Action Retype the password.

Error Message `EID-258: An error occurred while scheduling the NE user management job.`

Recommended Action Error occurred while scheduling the job. Try doing the task again.

Error Message `EID-259: Select a user to modify.`

Recommended Action Select a user.

Error Message `EID-260: Select an NE for the user.`

Recommended Action Select an NE.

Error Message `EID-261: This user is already defined on some or all of the selected NEs.`

Recommended Action Select a different user.

Error Message `EID-262: Select at least one user.`

Recommended Action Select at least one user.

Error Message `EID-263: Change the user attributes.`

Recommended Action Change the user attributes.

Error Message `EID-264: The selected user has been deleted from the NE.`

Recommended Action Select a different user.

Error Message `EID-265: Fatal error occurred while notifying the` *`product-name`* `server of this change. Please restart the server and all the clients.`

Recommended Action Restart the Prime Optical server and clients.

Error Message `EID-266: Old CTM User Password field cannot be empty. Enter the old CTM user password and retry.`

Recommended Action Enter the old user password and retry.

Error Message `EID-267: The CTM password you have entered does not match the CTM user password. Please try again.`

Recommended Action Retype the user password.

Error Message `EID-268: The new password does not match the confirmation password. Please try again.`

Recommended Action Retype the confirmation password.

Error Message `EID-269: Database error: Cannot change the user password.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-270: The ONS 15600 username is a mandatory field. Specify a username.`

Recommended Action Enter a username.

Error Message `EID-271: The ONS 15600 password does not match the confirmation password. Retype the password.`

Recommended Action Retype the password.

Error Message `EID-272: The new CTC password does not match the confirmation password. Please try again.`

Recommended Action Retype the CTC password confirmation.

Error Message `EID-273: Change password feature has been disabled by the administrator for this user.`

Recommended Action Contact the Prime Optical administrator to enable the change password feature for this user.

Error Message `EID-274: All of the fields are blank. Enter valid entries.`

Recommended Action Enter valid entries.

Error Message `EID-275: The ONS 155XX password does not match the confirmation password. Retype the password.`

Recommended Action Retype the password.

Error Message `EID-276: The ONS 1530X username is a mandatory field. Specify a username.`

Recommended Action Enter a username.

Error Message `EID-277: The ONS 1530X password does not match the confirmation password. Retype the password.`

Recommended Action Retype the password.

Error Message `EID-278: An error occurred while truncating the historical PM collection queue. Please try again.`

Recommended Action Try the operation again.

Error Message `EID-283: The ONS 15216 EDFA3 password does not match the confirmation password. Retype the password.`

Recommended Action Retype the password.

Error Message `EID-284: Lockout period must be between 1 and 120.`

Recommended Action Enter a lockout period from 1 to 120.

Error Message `EID-285: Logout period must be between 1 and 1440.`

Recommended Action Enter a logout period from 1 to 1440.

Error Message `EID-286: Enter a valid profile name. Either the profile name is blank, or you selected 'Default' or 'Inherited' as the profile name.`

Recommended Action Enter a valid profile name.

Error Message `EID-287: Error: Cannot retrieve profiles from the selected NE.`

Recommended Action View the Alarm Profile tab on the Cisco Transport Controller (CTC).

Error Message `EID-288: Select the two configuration files to be compared.`

Recommended Action Select two different configuration files for comparison.

Error Message `EID-289: No archived configuration files were found. Schedule a memory backup to archive configuration files.`

Recommended Action Schedule a memory backup to archive configuration files.

Error Message `EID-290: The logout period must be greater than the lockout period. Changes will not take effect.`

Recommended Action Enter a logout period that is greater than the lockout period.

Error Message `EID-291: The SNTP address cannot be empty when Use SNTP Server is selected.`

Recommended Action Enter a valid SNTP address.

Error Message `EID-292: The username cannot be empty when the password is entered. Enter a valid username.`

Recommended Action Enter a valid username.

Error Message `EID-299: The ONS 15216 EDFA2 password does not match the confirmation password. Retype the password.`

Recommended Action Retype the password.

Error Message `EID-300: Cannot open file filename. Privileges to write data are not available.`

Recommended Action You have read access only; this operation requires read/write access. Log out and login again with a username and password that have read/write access.

Error Message `EID-301: Export data error: Table not instantiated.`

Recommended Action You cannot export data before the table is fully open. Wait until the table opens fully; then, click the **Export** tool.

Error Message `EID-302: Export data: Error occurred while opening file filename to export data.`

Recommended Action The file could not be opened for writing the data. This could be due to insufficient permission in the selected directory. Choose a directory with write permission or change the permission to allow writing data in the selected directory.

Error Message `EID-303: The Resync Time (1530X only) value must be in the range 30 to 2147483647.`

Recommended Action Enter a value from 30 to 2147483647.

Error Message `EID-304: Enter a filename for export.`

Recommended Action Enter a filename for the exported file.

Error Message `EID-305: File filename already exists. Do you want to overwrite it?`

Recommended Action The file that you have provided already exists. Verify that you want to overwrite the file before clicking **OK**.

Error Message `EID-306: Cannot write to filename. Check if you have sufficient disk space and permissions to write. Check if another application is using the file.`

Recommended Action Change the permission on the specified file or choose a different filename. If there is insufficient disk space, delete some files to make space on the disk.

Error Message `EID-307: Filename: Path does not exist or no permission to write. Check that the path to the file exists and you have sufficient permissions to write.`

Recommended Action A directory that is part of the path that you specified to the file does not exist or has no permissions to read or write. Create the directory structure to store the file with read/write permissions; then, specify the path. Or, specify a valid path.

Error Message `308: Directory-name is a directory. Enter a filename.`

Recommended Action Enter a filename instead of a directory name.

Error Message `EID-309: Enter a character for separating fields during export.`

Recommended Action You clicked the **Other** radio button but did not specify a separation character. Specify the character that you want to use as the separation character.

Error Message `EID-310: Graph is not available at this time.`

Recommended Action The graph could not be started because the NE could not be contacted. Verify that the NE is available and retry.

Error Message `EID-311: BER statistics are not available at this time.`

Recommended Action The bit error rate (BER) window could not be opened because the NE could not be contacted. Verify that the NE is available and retry.

Error Message `EID-312: The table will be sorted on the Time Stamp column to show new rows. Press OK to sort. You can cancel and sort the table on the Time Stamp column later to see the new rows.`

Recommended Action If you click **Cancel**, the rows will not be sorted in chronological order. If you click **OK**, the rows will be sorted in chronological order and the latest rows appear on top.

Error Message `EID-313: The password change interval cannot be equal to or greater than the password age interval.`

Recommended Action Enter a password change interval that is less than the password age interval.

Error Message `EID-314: Cannot retrieve NE data from the server.`

Recommended Action Restart the Prime Optical client.

Error Message `EID-315: An error occurred while retrieving data from the database.`

Recommended Action Restart the Prime Optical client and retry. Also, check the available memory on the server workstation.

Error Message `EID-316: An error occurred while setting filter criteria in the database.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-317: An error occurred while adding filter criteria in the database.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-318: An error occurred while retrieving the total number of rows from the database.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-319: An error occurred while sorting data in the database.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-320: An error occurred while attempting read/write to the database.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-321: An error occurred while sending a JMOCO request for alarm changed.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-322: An error occurred while initializing the table.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-323: You cannot delete an EFD profile that is used by an OSS client.`

Recommended Action Verify that the EFD profile you want to delete is not being used by an OSS client.

Error Message `EID-324: Cannot add an EFD profile.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-325: Cannot modify an EFD profile.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-326: An error occurred while deleting the selected EFD profile.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-327: An error occurred while deleting the selected EFD profile.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-328: An error occurred while accessing the database.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-329: An error occurred while loading the Java class from the subdirectory.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-330: Cannot launch the table.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-331: An error occurred. The table will be closed.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-332: An exception occurred while creating metadata for` *`object`*`.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-333: A database timeout occurred. Reduce the scope of the query or increase the timeout.`

Recommended Action Your database query is too broad and the time it needs to collect the corresponding data from the database exceeds the configured timeout. To solve this problem, you can do one of the following:

- Reduce the scope of the query. To do so, close the error message box, open the filter of the table that generated the problem, and select a more restrictive criterion. For example, if the table, by default, opens with a "Last 4 Hours" time frame, change it to "Last one hour."
- (Not Recommended) Increase the database timeout by editing the DB_Query_Timeout_Seconds parameter in the config/ems-client.cfg file. The default timeout is 60 seconds.

Error Message `EID-335: Are you sure you want to delete the selected CTC binary?`

Recommended Action Confirm whether you want to delete the selected CTC binary.

Error Message `EID-336: Are you sure you want to activate the selected CTC binary?`

Recommended Action Confirm whether you want to activate the selected CTC binary.

Error Message `EID-337: You cannot delete the active CTC binary.`

Recommended Action Do not delete the active CTC binary.

Error Message `EID-338: The NE is synchronizing the IOS configuration. Try after some time.`

Recommended Action Wait for the NE to synchronize with the IOS configuration; then, try again.

Error Message `EID-339: An error occurred while comparing the two configuration files.`

Recommended Action Check the configuration files being compared and try again.

Error Message `EID-340: The end ID must be greater than the start ID. Enter an end ID value that is greater than the start ID value.`

Recommended Action Enter an end ID value that is greater than the start ID value; then, click **OK** to filter the data.

Error Message `EID-341: The start and end IDs must be valid values. Enter valid values.`

Recommended Action Enter valid values for starting and ending IDs.

Error Message `EID-342: You cannot delete the selected network partition because it is associated with a subnetwork.`

Recommended Action Do not delete this network partition because it is associated with a subnetwork.

Error Message `EID-343: This network partition is not associated with an NE.`

Recommended Action Restart the Prime Optical client and retry.

Error Message `EID-344: You cannot delete the last network partition.`

Recommended Action At least one network partition must be present. Do not delete this last network partition.

Error Message `EID-345: The exported data contains the separator character. Select another separator or check the check box to enclose text in double quotes, which includes the separator.`

Recommended Action Choose another separator or check the **Enclose text in double quotes** check box.

Error Message `EID-346: The two files selected for comparison are identical.`

Recommended Action Select two different configuration files for comparison.

Error Message `EID-347: The search text was not found.`

Recommended Action Repeat the search with new search criteria.

Error Message `EID-348: Enter a valid username.`

Recommended Action Enter a valid username.

Error Message `EID-350: Database error: Cannot unlock the user.`

Recommended Action Retry the unlock operation.

Error Message `EID-351: No more matches.`

Recommended Action This error occurs when the search finds one or more matches, after which no additional matches are found. No action required.

Error Message `EID-352: Enter a valid username.`

Recommended Action Enter a valid username.

Error Message `EID-354: Invalid password change interval.`

Recommended Action Enter the number of days a user must wait between password changes. The range is from 0 to 99 days; the Cisco default is 20 days. A value of 0 disables this feature.

Error Message `EID-355: The start time cannot be before the end time.`

Recommended Action Enter a start time that is earlier than the end time.

Error Message `EID-356: A maximum of 3 parameters can be plotted on a graph.`

Recommended Action Select no more than three parameters to plot.

Error Message `EID-357: Cannot remove all parameters from all lists.`

Recommended Action Select at least one parameter to plot.

Error Message `EID-358: You cannot compare configuration files between different NE families.`

Recommended Action Select two different configuration files for comparison. The configuration files must be for NEs of the same type.

Error Message `EID-359: Select two NEs.`

Recommended Action Select two NEs.

Error Message `EID-360: Cannot create the protection group. The working and protect cards must not be part of a regeneration group, must have the same payload data type and termination mode, and must have G.709 OTN enabled (for MXP cards only).`

Recommended Action Verify that the working and protect cards are not part of a regeneration group, that both cards have the same payload data type and termination mode, and that G.709 OTN is enabled on both cards.

Error Message `EID-361: The selected network partition ID is no longer present. Select another network partition ID.`

Recommended Action This error occurs while adding an NE. If a selected network partition has been deleted by another user, this error message appears. Select a different network partition or a different subnetwork under a different network partition.

Error Message `EID-362: Searched item not found.`

Recommended Action Repeat the search with new search criteria.

Error Message `EID-363: A database error occurred while trying to delete the selected CTC user profile.`

Recommended Action Contact the system administrator.

Error Message `EID-364: The selected CTC user profile has already been deleted from the database.`

Recommended Action Select a different CTC user profile.

Error Message `EID-365: This operation will result in deleting the selected CTC user profile(s) from the database. However, this delete action performed in CTM will not affect the CTC users already configured on the NEs using these profiles. Press 'OK' to continue or 'Cancel' to cancel the operation.`

Recommended Action Click **OK** to continue or **Cancel** to cancel the operation.

Error Message `EID-366: You cannot create a link from an unmanaged NE to a group containing SONET and SDH NEs. Select a destination group that contains only SONET or only SDH NEs.`

Recommended Action Select a different destination group, one that contains only SONET or SDH NEs.

Error Message `EID-367: The corresponding .dbf file does not exist for the selected .shp file.`

Recommended Action Choose a different file.

Error Message `EID-368: An error occurred while modifying the L2 topology bandwidth. Could not modify bandwidth values.`

Recommended Action A provisioning error occurred while modifying the output quality of service (QoS) policy for the selected topology. Check the Error Log for the reason for the failure.

Error Message `EID-369: The Committed Bandwidth value is invalid. Enter a valid value.`

Recommended Action Enter a value from 1 to 99.

Error Message `EID-370: Failed to enable POS ports.`

Recommended Action Log into the card and enter the **no shutdown** command on all of the packet-over-SONET (POS) ports in the topology. If you encounter problems while opening a Telnet connection to the card, reset the card; then, enter the **no shutdown** command on the POS ports.

Error Message `EID-371: Specified VLAN number is already in use.`

Recommended Action Enter a VLAN number that is not already used.

Error Message `EID-372: Failed to retrieve next VLAN number.`

Recommended Action Enter a new VLAN number and provision using that VLAN number.

Error Message `EID-373: For Layer 2 service creation on an RPR topology, select at least two service drops on two different ML cards.`

Recommended Action Select at least two drops on two different ML-series cards that are in Resilient Packet Ring (RPR) topology.

Error Message `EID-374: For Layer 2 service creation on a point-to-point topology, select at least one service drop per ML card.`

Recommended Action Select at least one drop per ML-series card that is in a point-to-point topology.

Error Message `EID-375: No Ether ports exist for the selected topology.`

Recommended Action All of the front ports are used up. Delete drops or L2 services that are not used to free up some front ports.

Error Message `EID-376: An error occurred while retrieving front ports for the selected topology.`

Recommended Action All of the front ports are used. Delete drops or L2 services that are not used to free up some front ports.

Error Message `EID-377: Failed to provision the Layer 2 service.`

Recommended Action If the topology is not synchronized, close the L2 service wizard and try again after the topology synchronization is complete. If there is an invalid username or password, verify that the username and password configured in the ML-series card are synchronized with the NE username and password. Close the L2 service wizard and try again. Check the command-line interface (CLI) configuration on all ML-series cards in the topology and retry the operation. If the problem persists, contact Cisco technical support.

Error Message `EID-378: No Layer 2 service is selected to show drops. Select a Layer 2 service.`

Recommended Action Select one L2 service.

Error Message `EID-379: Select only one Layer 2 service.`

Recommended Action Select one L2 service.

Error Message `EID-380: Failed to retrieve record from the database.`

Recommended Action Select a row in the VLAN table before selecting the Show Drops button.

Error Message `EID-381: Failed to create the QoS template.`

Recommended Action Verify the error details.

Error Message `EID-382: The CTM server is initializing. Please try again later.`

Recommended Action Wait for the Prime Optical server to finish initializing; then, try logging in again.

Error Message `EID-383: The NEs are not reachable. An error occurred while setting the nodes.`

Recommended Action Try again later. If the problem persists, contact the system administrator.

Error Message `EID-384: Failed to retrieve the links in the protect path.`

Recommended Action Verify that there are links in the protect path and that the nodes are in service.

Error Message `EID-385: Circuits involving ML cards cannot be deleted. Delete the associated topologies.`

Recommended Action Delete the associated topologies.

Error Message `EID-386: Editing the UPSR attributes was not successful. There might be a higher-priority request.`

Recommended Action No action is required.

Error Message `EID-387: Failed to retrieve TUG2s.`

Recommended Action Verify that there are available in-service TUG2s on the selected VC3.

Error Message `EID-388: Failed to retrieve VC12s.`

Recommended Action Verify that there are available in-service VC12s on the selected object.

Error Message `EID-389: J1 path trace is not supported by VT circuits or VT tunnels.`

Recommended Action Launch the J1 path trace window for a different circuit type.

Error Message `EID-390: J1 path trace is not supported on this card.`

Recommended Action Launch the J1 path trace window for a different card.

Error Message `EID-391: Failed to retrieve trace data from the server. Contact the system administrator.`

Recommended Action Try again later. If the problem persists, contact your system administrator.

Error Message `EID-392: This circuit has been deleted from another interface. This window will be closed.`

Recommended Action No action.

Error Message `EID-393: Failed to retrieve LAP spans.`

Recommended Action Contact your system administrator.

Error Message `EID-394: Failed to retrieve LO options.`

Recommended Action Contact your system administrator.

Error Message `EID-395: Failed to set LAP destination.`

Recommended Action Contact your system administrator.

Error Message `EID-396: There are no paths available on this link. Make another selection.`

Recommended Action This link does not have enough bandwidth for the current circuit size. Select another route for the current circuit or delete some circuits going through the selected link. If you need help to do this, contact your system administrator.

Error Message `EID-397: This link cannot be included in the required list. There can be only one incoming and outgoing link for a node. The link source cannot be the destination NE. Check the direction and try again.`

Recommended Action Your selection is invalid. Change the direction and try again.

Error Message `EID-398: This NE is not reachable.`

Recommended Action The NE is not reachable. Check whether the NE is down or has lost connectivity with Prime Optical.

Error Message `EID-399: Error: Grooming node selection.`

Recommended Action Select the grooming node for the aggregation circuit.

Error Message `EID-400: No circuits are selected for deletion. Select one or more circuits for deletion.`

Recommended Action Select one or more circuits for deletion.

Error Message `EID-401: Access violation. Check user privileges.`

Recommended Action Select the grooming node for the aggregation circuit.

Error Message `EID-402: The Hold Off Time value must be between 0 to 10000 with a precision of 100.`

Recommended Action Enter a valid hold off time value.

Error Message `EID-403: There are no NEs selected or the selected NEs are not in service.`

Recommended Action Select an in-service NE.

Error Message `EID-404: Incorrect subnetwork selection. The NEs in the selection context belong to different subnetworks.`

Recommended Action Use the Subnetwork Explorer to change the allocation of NEs to the subnetworks.

Error Message `EID-405: Failed to trace the following VLANs: VLANs`

Recommended Action Contact the system administrator.

Error Message `EID-406: ONS 15454 CM Module error while creating selection context for launching the Circuit VLAN table.`

Recommended Action Contact the system administrator.

Error Message `EID-407: ONS 15454 CM Module error while creating selection context for launching the Circuit VLAN table.`

Recommended Action Contact the system administrator.

Error Message `EID-408: Base circuit and span module error while creating selection context for launching the Circuit Span table.`

Recommended Action Contact the system administrator.

Error Message `EID-409: Base circuit and span module error while creating selection context for launching the Circuit Span table.`

Recommended Action Contact the system administrator.

Error Message `EID-410: Number of concurrent active sessions exceeded for this user profile. Application will be shut down.`

Recommended Action The number of permitted simultaneous logins assigned to the user profile has been exceeded. Additional users with the same profile cannot login until current users log out.

Error Message `EID-411: This session has been logged out. CTM client will be closed.`

Recommended Action The logout timer has logged you out of this session. Log back into Prime Optical client and modify the client inactivity timer settings in Control Panel > Security Properties > Security tab.

Error Message `EID-412: Client application cannot be restarted because the required port is not available.`

Recommended Action Restart Prime Optical client.

Error Message `EID-413: Your account has been disabled due to inactivity. Contact your administrator for details.`

Recommended Action Contact your system administrator to re-enable your user account.

Error Message `EID-414: The Flow Control Low value must be less than the Flow Control High value for all ports on the card.`

Recommended Action Enter a Flow Control Low value that is less than the Flow Control High value.

Error Message `EID-415: No configuration data has been detected for this network element.`

Recommended Action If the NE is available, wait a few minutes; then, reopen the NE Explorer window.

Error Message `EID-420: Error occurred while reading the STM-1 configuration from the database. The data shown may be inconsistent with the network element's actual configuration.`

Recommended Action Wait for a few minutes; then, click the **Refresh Data** tool to refresh the view.

Error Message `EID-421: Error occurred while reading the VC4 configuration from the database. The data shown may be inconsistent with the network element's actual configuration.`

Recommended Action Wait for a few minutes; then, click the **Refresh Data** tool to refresh the view.

Error Message `EID-422: Error occurred while reading the VC3 configuration from the database. The data shown may be inconsistent with the network element's actual configuration.`

Recommended Action Wait for a few minutes; then, click the **Refresh Data** tool to refresh the view.

Error Message `EID-423: Error occurred while reading the VC2 configuration from the database. The data shown may be inconsistent with the network element's actual configuration.`

Recommended Action Wait for a few minutes; then, click the **Refresh Data** tool to refresh the view.

Error Message `EID-424: Error occurred while reading the VC12 configuration from the database. The data shown may be inconsistent with the network element's actual configuration.`

Recommended Action Wait for a few minutes; then, click the **Refresh Data** tool to refresh the view.

Error Message `EID-425: Cannot launch NE Explorer because the CTM server is retrieving data from the NE. Try again in a few minutes.`

Recommended Action The server configuration is incomplete. You must wait until all the data for that NE is retrieved and stored in the database. Wait for a few minutes; then, retry.

Error Message `EID-426: Cannot refresh the configuration. Close and reopen the NE Explorer.`

Recommended Action Close and reopen the NE Explorer window.

Error Message `EID-427: Cannot process the configuration change. Close and reopen the NE Explorer.`

Recommended Action Close and reopen the NE Explorer window.

Error Message `EID-428: Cannot clear the Security Violation/Intrusion alarm on` *`NE-name`*`.`

Recommended Action Use CTC to clear the alarm.

Error Message `EID-429: DCC/GCC/OSC was created successfully, but the Admin State was not set.`

Recommended Action The port could not be set. Go to the property sheet of the related card and try to set the Admin State in the Line Config tab.

Error Message `EID-430: You attempted to set unallowed severities for some alarm conditions. The change was not saved successfully. Severities will be reset to the previous values.`

Recommended Action Specify a valid alarm severity.

Error Message `EID-435: Cannot launch the NE Explorer because data retrieval from the NE has failed. You can force the data retrieval by marking the NE Out Of Service and In Service.`

Recommended Action Mark the NE as Out of Service and then In Service.

Error Message `EID-448: You cannot delete the default or inherited alarm profiles.`

Recommended Action Default and inherited alarm profiles cannot be deleted.

Error Message `EID-449: You cannot change the default or inherited alarm profiles.`

Recommended Action Default and inherited alarm profiles cannot be changed or deleted.

Error Message `EID-450: An alarm profile with the same name already exists. Enter another name.`

Recommended Action The selected name is already in use. Choose a different name.

Error Message `EID-451: Enter a valid SNTP server IP address.`

Recommended Action Enter a valid SNTP server IP address.

Error Message `EID-452: Enter a valid DHCP server IP address.`

Recommended Action Enter a valid Dynamic Host Configuration Protocol (DHCP) server IP address.

Error Message `EID-453: The protection group must have working card(s).`

Recommended Action Select a protection group that contains at least one working card.

Error Message `EID-454: Enter valid values for Protection Group Name, Protection Type, Protect Module, and Working Entities.`

Recommended Action Enter valid values.

Error Message `EID-455: Enter a valid value for Protection Group Name.`

Recommended Action Enter a valid protection group name.

Error Message `EID-456: Enter a valid value for Protect Module.`

Recommended Action Enter a valid protect module value.

Error Message `EID-457: Enter a valid value for Working Entities.`

Recommended Action Enter a valid working entities value.

Error Message `EID-458: Enter a valid value for Protection Type.`

Recommended Action Enter a valid protection type value.

Error Message `EID-459: The protection group name is too long. The maximum length is 32 characters.`

Recommended Action Enter a protection group name that does not exceed 32 characters.

Error Message `EID-460: Enter a valid SNMP trap destination IP address.`

Recommended Action Enter a valid SNMP trap destination IP address.

Error Message `EID-461: Enter a valid SNMP community name.`

Recommended Action Enter a valid SNMP community name.

Error Message `EID-462: 0.0.0.0 is not a valid DHCP server IP address. Enter a valid IP address.`

Recommended Action Enter a valid IP address.

Error Message `EID-463: 0.0.0.0 is not a valid SNTP server IP address. Enter a valid IP address.`

Recommended Action Enter a valid IP address.

Error Message `EID-464: The creation of Ethernet thresholds failed on the following ports: port-number(s).`

Recommended Action Try creating the thresholds again. See 5.3.16 Creating an Ethernet Threshold, page 5-29 for more information.

Error Message `EID-465: The change was not saved successfully. Data will be reset to the previous values.`

Recommended Action Some attributes were not saved successfully. Check documentation to see any conditions that must be set up before setting the attributes.

Error Message `EID-466: One VLAN must be marked as Untagged for each port. The changes for the following port will not be applied to ports: port-number.`

Recommended Action Mark one VLAN as untagged for each port.

Error Message `EID-467: Delete request already submitted for topology: topology-name.`

Recommended Action The selected topology has already been marked for deletion.

Error Message `EID-468: Ports cannot be provisioned in transponder mode when autonegotiation is enabled (unidirectional transponding only).`

Recommended Action Disable autonegotiation to complete this operation.

Error Message `EID-469: Autonegotiation cannot be enabled when ports are provisioned in transponder mode (unidirectional transponding only).`

Recommended Action Disable autonegotiation to complete this operation.

Error Message `EID-470: The creation of FCMR thresholds failed on the following ports: port-numbers.`

Recommended Action Check the parameters used for threshold creation and verify that the rising threshold is greater than the falling threshold. Verify that there are no thresholds defined on the same variable on the same port. Then, try this operation again.

Error Message `EID-471: Enter a valid value for Range OSPF Area ID. The value should be one of the DCC area IDs or the LAN port area ID if OSPF is enabled on the LAN.`

Recommended Action Enter a valid value for Range OSPF Area ID.

Error Message `EID-472: Invalid UDP port. The port number must be 162, 391, or any number between 1024 and 65535. The port number is 161 for NE versions earlier than R4.6.`

Recommended Action Enter a valid User Datagram Protocol (UDP) port number.

Error Message `EID-473: Relays must be provided in order. Enter data for Relay A before using Relay B or Relay C.`

Recommended Action Enter relays in order.

Error Message `EID-474: Relays must be provided in order. Enter data for Relay B before using Relay C.`

Recommended Action Enter relays in order.

Error Message `EID-475: If OSPF is active on the LAN, the DCC area IDs cannot be 0.0.0.0. Change all DCC area IDs to not be 0.0.0.0 before enabling OSPF on the LAN.`

Recommended Action Enter a valid DCC area ID value.

Error Message `EID-476: Ordering error. The absolute value must be ELWBATVG <= LWBATVG < HIBATVG <= EHIBATVG.`

Recommended Action Enter the voltages in the correct order.

Error Message `EID-477: Ordering error. The absolute value must be ELWBATVG < EHIBATVG.`

Recommended Action Enter the voltages in the correct order.

Error Message `EID-478: Enter a valid value for OSPF Area Range Address.`

Recommended Action Enter a valid Open Shortest Path First (OSPF) area range address value. See 5.3.4.3.1 Viewing OSPF Virtual Links, page 5-6 for more information.

Error Message `EID-479: A community name without an associated IP address is not allowed.`

Recommended Action Enter a community name associated with an IP address.

Error Message `EID-480: Enter a valid value for RIP Summary Address.`

Recommended Action Enter a valid Routing Information Protocol (RIP) summary address value.

Error Message `EID-481: Enter a valid value for Neighbor Address.`

Recommended Action Enter a valid neighbor address value.

Error Message `EID-482: Authentication key mismatch. Re-enter:`

Recommended Action Retype the authentication key.

Error Message `EID-483: The Dead Interval value must be greater than the Hello Interval value.`

Recommended Action Enter a dead interval that is greater than the hello interval.

Error Message `EID-484: The RIP metric range is 1 to 15.`

Recommended Action Enter a RIP metric from 1 to 15.

Error Message `EID-485: Invalid subnet mask for static route.`

Recommended Action Enter a valid subnet mask address for the static route.

Error Message `EID-486: Invalid virtual link neighbor address.`

Recommended Action Enter a valid virtual link neighbor address.

Error Message EID-487: Invalid Telnet port. The selected port cannot be used to telnet to the node. Choose any port in the range 0 to 9998, but do not use any of the following ports because they might be in use by the node for other services. Some of these ports are configurable or are not always in use, in which case Telnet would be able to use them, but this might interfere with the operation of the node.
0 (reserved)
20 (FTP-data)
21 (FTP-control)
22 (SSH)
80 (HTTP)
111 (RCP)
513 (LOGIN)
1024
1025
1080 (SOCKS)
2001-2018 (ML card access)
2361 (TL1)
3082 (TL1)
3083 (TL1)
5080
9100
9102
9999
10240-12280 (SOCKS Internal)
57790 (CORBA IIOP)

Recommended Action Enter a valid Telnet port number that is not one of the port numbers listed above.

Error Message EID-488: Change the port state to Out of Service before changing card parameters.

Recommended Action Mark the port as Out of Service.

Error Message EID-489: The ONS 15327 password does not match the confirmation password. Retype the password.

Recommended Action Retype the password.

Error Message EID-492: The ONS 15454 ML-series password does not match the confirmation password. Retype the password.

Recommended Action Retype the password.

Error Message EID-494: The ONS 15454 SDH password does not match the confirmation password. Retype the password.

Recommended Action Retype the password.

Error Message `EID-495: The ONS 15454 password does not match the confirmation password. Retype the password.`

Recommended Action Retype the password.

Error Message `EID-496: Cannot change Credits Available unless Auto Detect Credits is unchecked. Data will be reset to the previous values.`

Recommended Action Uncheck the **Auto Detect Credits** check box in the Distance Extension tab. Then, retype the new value in the **Credits Available** field.

Error Message `EID-497: Cannot change GFP Buffers Available unless Autoadjust GFP Buffer Threshold is unchecked. Data will be reset to the previous values.`

Recommended Action Uncheck the **Autoadjust GFP Buffer Threshold** check box in the Distance Extension tab. Then, retype the new value in the **GFP Buffers Available** field.

Error Message `EID-498: A network element with this IP address already exists in the database, or this is a secure IP address.`

Recommended Action Enter a unique IP address that is not in use.

Error Message `EID-500: Searched item not found.`

Recommended Action No item in the Domain Explorer topology tree matches the search criteria that you specified. Redefine the search criteria and run a new search.

Error Message `EID-501: Cannot launch a remote console to the selected NE.`

Recommended Action Xterm is missing from the Sun Solaris path. Edit the ems-client.cfg file and provide the correct xterm path.

Or, there is not enough memory to launch a separate Telnet process. Shut down some applications to free up memory.

Error Message `EID-502: Group Name is a mandatory field. Enter a unique group name and retry.`

Recommended Action Enter a unique name for the new group.

Error Message `EID-503: A group with the same name already exists. Specify a unique group name and retry.`

Recommended Action Enter a unique name for the new group.

Error Message `EID-504: A group name cannot be the same as a domain name. A domain with the same name already exists. Specify a unique group name and retry.`

Recommended Action Enter a unique name for the new group.

Error Message `EID-505: Database error: An error occurred while adding the new group to the database.`

Recommended Action A database error occurred while adding the new group. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry adding a new group.

Error Message `EID-506: Error in launching CTC Node View for` *`NE-ID`*.

Recommended Action If the CTC progress screen and login dialog box appear, the CTC username or password is incorrect. If you are trying to launch CTC but CTC is locked, you receive this EID. To correct this error:

Step 1 Choose **Administration > Users**.

Step 2 In the Cisco Prime Optical Users table, choose **Edit > Modify**.

Step 3 Click **Next**. In the CTC User Properties panel, change the CTC username and password to match those configured for the device.

If the CTC progress screen idles for a long time before the login dialog box appears, there might be network connectivity problems to the device.

Step 4 (Optional) From a DOS command window or a Sun Solaris terminal, ping the device. If there is no response, set up the routes so that the device is available; then, restart CTC.

Step 5 (Optional) If CTC does not start, your workstation might have resource constraints. Close some open applications and try again. Close some instances of CTC that are managing other groups of ONS 15454 NEs and try again.

Error Message `EID-507: Error in launching CTC node view for selected NE.`

Recommended Action Please try again later.

Error Message `EID-508: Error in launching CTC node view for 15600 NE.`

Recommended Action Please try again later.

Error Message `EID-509: Error in launching CTC node view for 15600 SDH NE.`

Recommended Action Please try again later.

Error Message `EID-511: NE ID is a mandatory field. Enter a unique NE ID and retry.`

Recommended Action Enter a unique ID for the NE.

Error Message `EID-512: An NE or GNE with the same ID already exists in the database. Enter a unique NE ID and retry.`

Recommended Action Enter a unique ID for the NE.

Error Message `EID-513: An NE with the same IP address already exists. Enter a unique IP address and retry.`

Recommended Action Enter a unique ID for the NE that does not exceed 128 alphanumeric characters.

Error Message `EID-514: IP Address is a mandatory field. Enter a unique IP address and retry.`

Recommended Action Enter a unique IP address for the NE.

Error Message `EID-515: No IP address is selected. Select an IP address and retry.`

Recommended Action Enter a unique IP address and retry.

Error Message `EID-516: Invalid IP address. Enter a valid IP address in four decimal bytes (for example, 196.100.200.300) and retry.`

Recommended Action Enter a unique IP address that uses the specified format.

Error Message `EID-519: The selected NEs do not have a partition selected to download the image file.`

Recommended Action The selected NE does not have a partition selected for downloading the image. Select a partition to which the image will be downloaded.

Error Message `EID-520: Database error: An error occurred while adding the new NE to the database.`

Recommended Action A database error occurred while adding the new NE. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry adding a new NE.

Error Message `EID-522: The IOS FTP username is a mandatory field.`

Recommended Action Specify a username.

Error Message `EID-523: The IOS Config Engine username is a mandatory field. Specify a username.`

Recommended Action Enter the username.

Error Message `EID-524: Database error: Cannot set the In-Service time stamp in the database.`

Recommended Action A database error occurred while storing the NE's in-service time stamp in the database. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-525: Database error: Cannot set the Config Mode in the database.`

Recommended Action A database error occurred while setting the NE type in the database. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-526: Invalid tree node selected. You cannot perform this operation with the current selection. Select a group or domain node and retry.`

Recommended Action Select a group or domain node and retry.

Error Message `EID-527: Error occurred while registering with the CTM event notification subsystem. Exit and restart the application.`

Recommended Action Restart the Prime Optical server and all of the clients. Contact Cisco technical support if the problem persists.

Error Message `EID-528: A fatal error occurred while notifying the` *`server-name`* `server of this change. Restart the server and all the clients.`

Recommended Action Restart the Prime Optical server and all of the clients. Contact Cisco technical support if the problem persists.

Error Message `EID-529: An error occurred while writing data to the database.`

Recommended Action Exit and restart the Prime Optical client.

Error Message `EID-530: An error occurred while reading data from the database.`

Recommended Action Exit and restart the Prime Optical client.

Error Message `EID-531: A domain with the same name already exists. Specify a unique domain name and retry.`

Recommended Action Specify a unique domain name.

Error Message `EID-532: Database error: Cannot modify the domain description.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-533: Database error: Cannot modify the domain name.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-534: Domain Name is a mandatory field. Specify the domain name and retry.`

Recommended Action Enter a name for the domain.

Error Message `EID-535: Group Name is a mandatory field. Specify the group name and retry.`

Recommended Action Enter a name for the group.

Error Message `EID-536: Database error: Cannot modify the group name.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-537: Database error: Cannot modify the group description.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-538: Database error: Cannot modify the group location.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-539: Database error: Cannot modify the NE name.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-540: Database error: Cannot modify the NE IP address.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-541: Database error: Cannot modify the network element NSAP address.`

Recommended Action A database error occurred when you tried to modify the NE Network Service Access Point (NSAP) address. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-542: Database error: Cannot modify the NE state.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-543: Database error: Cannot modify the NE description.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-544: Database error: Cannot modify the NE community string.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-545: Database error: Cannot modify the NE location name.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-546: Database error: Cannot modify the NE GNE ID.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-549: Database error: Cannot set the NE type in the database.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-550: Database error: Cannot set the NE PM collection state in the database.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-551: Database error: Cannot set the model type in the database.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-552: Database error: Cannot set the NE username in the database.`

Recommended Action This error occurs when there is a database exception while setting the username for the NE in the NE Authentication tab. Perform the operation again.

Error Message `EID-553: Database error: Cannot set the NE user password in the database.`

Recommended Action This error occurs when there is a database exception while setting the username for the NE in the NE Authentication tab. Perform the operation again.

Error Message `EID-554: Database error: Cannot create the new user.`

Recommended Action Perform the operation again.

Error Message `EID-555: Username is a mandatory field. Enter a unique username and retry.`

Recommended Action Enter a unique username. See Table 8-3 on page 8-16 for the Prime Optical username restriction.

Error Message `EID-556: Username is a mandatory field. Enter a username and retry.`

Recommended Action Enter a unique username.

Error Message `EID-557: A CTM user with the same name already exists. Enter a unique username and retry.`

Recommended Action Enter a unique username.

Error Message `EID-558: A CTC user with the same name already exists. Enter a unique username and retry.`

Recommended Action Enter a unique username.

Error Message `EID-559: User Password is a mandatory field. Enter a unique user password and retry.`

Recommended Action Enter a unique user password. See Table 8-3 on page 8-16 for the Prime Optical user password restriction.

Error Message `EID-560: Enter a username that contains at least 3 characters.`

Recommended Action Enter a username that contains at least three characters.

Error Message EID-561: The username must start with an alphabetic character (A - Z, a - z). Enter a valid username and retry.

Recommended Action Enter a valid username.

Error Message EID-562: A CTC password cannot be specified without a username. Enter a username and retry.

Recommended Action Enter a valid username.

Error Message EID-563: A user password is mandatory to create a CTM user. Enter a unique user password and retry.

Recommended Action Enter a unique user password.

Error Message EID-564: The Add User wizard has been closed because the user privileges list has changed. Launch the wizard again.

Recommended Action Relaunch the Create User Profile wizard.

Error Message EID-565: User Password is a mandatory field. Enter a unique user password and retry.

Recommended Action Enter a unique password for the user. The user password must contain at least six characters. Of those six characters, at least one must be a nonalphanumeric character (*, -, &, %, and so on).

Error Message EID-566: Database error: Cannot modify user properties.

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message EID-567: The password confirmation does not match the actual password. Try again.

Recommended Action Retype the password.

Error Message EID-568: The domain name cannot be the same as a group name. A group with the same name already exists. Specify a unique domain name and retry.

Recommended Action Specify a unique domain name.

Error Message EID-569: No objects are assigned to the user. Assign at least one object to the user.

Recommended Action Assign an object to the user.

Error Message `EID-570: Database error: Cannot create the new user type.`

Recommended Action This error occurs when a new user profile is being created or if an existing profile is being modified. If it occurs while creating a user profile, delete the newly created user profile and try recreating the user profile. If it occurs while modifying an existing user profile, perform the operation again.

Error Message `EID-571: User Type Name is a mandatory field. Enter a unique name and retry.`

Recommended Action Enter a unique user type name.

Error Message `EID-572: Database error: Cannot modify user properties.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-573: The password confirmation does not match the actual password. Reconfirm the password.`

Recommended Action Reconfirm the password.

Error Message `EID-574: A CTM user type with the same name already exists. Enter a unique name and retry.`

Recommended Action Enter a unique user type name.

Error Message `EID-575: No objects are assigned to the user. Assign at least one object to the user.`

Recommended Action Assign at least one object to the user and retry.

Error Message `EID-576: Enter a user type name that contains at least 6 characters.`

Recommended Action Enter a user type name that contains at least 6 characters.

Error Message `EID-577: Enter a user type name that contains at least 6 characters.`

Recommended Action Enter a user type name that contains at least 6 characters.

Error Message `EID-578: Database error: Cannot delete one or more users.`

Recommended Action Perform the operation again.

Error Message `EID-579: Fatal error: Restart the server-name server and all the clients.`

Recommended Action Restart the Prime Optical server and all of the clients.

Error Message `EID-580: The selected user is currently logged in. The user cannot be deleted until he or she logs out.`

Recommended Action Ask the selected users to log out from all of the clients and retry.

Error Message `EID-581: User(s) with this profile already exist(s). The profile cannot be deleted until you delete the user(s) from the CTM Users table.`

Recommended Action Delete the user(s) from the Cisco Prime Optical Users table.

Error Message `EID-582: This is a default user profile. It cannot be deleted.`

Recommended Action You cannot delete the default user profile. Select a different user profile to delete.

Error Message `EID-583: A GNE or NE with the same name already exists. Specify a unique GNE name and retry.`

Recommended Action Enter a unique gateway network element (GNE) name.

Error Message `EID-584: The to and from IP addresses are from different subnetworks.`

Recommended Action This error occurs during the addition of bulk NEs. When a range of IP addresses is specified in the Add NE wizard, the subnet mask of the From and To IP Address must be the same. Verify that the first three parts of the IP address are the same in order to add a range of NEs.

Error Message `EID-585: The "to" IP Address is lower than the "from" IP Address.`

Recommended Action This error occurs during the addition of bulk NEs. Verify that the To IP Address is greater than the From IP Address.

Error Message `EID-586: The selected GNE ID is no longer present. Select another GNE ID.`

Recommended Action This error occurs while adding an NE. If a selected GNE has been deleted by another user, this error message appears. Select a different GNE.

Error Message `EID-587: Database error: Cannot delete one or more user profiles.`

Recommended Action Database error occurred while checking for uniqueness of the user type name or deleting the user from the USER_TYPE_TABLE. It also occurred while writing rows in the OPERATIONS_PERMISSION_TABLE. Check your database connection.

Error Message `EID-588: The selected subnetwork ID is no longer present. Select another subnetwork ID.`

Recommended Action Select another subnetwork ID.

Error Message `EID-589: The specified IP address has already been included in the list.`

Recommended Action Select another IP address.

Error Message `EID-590: Database error: An error occurred after saving the new privileges in the database.`

Recommended Action Check the database connection. If the problem persists, restart the Prime Optical server.

Error Message `EID-591: User profiles have changed. You must refresh the table before modifying a profile.`

Recommended Action Choose **File > Refresh Data** to refresh the table. Then, modify the user profile.

Error Message `EID-592: A CTC user with the same name is used by the server. Enter another username and retry.`

Recommended Action Enter a unique CTC username.

Error Message `EID-593: A CTC user with the same name already exists. Enter a unique username that will be created on all NEs and retry.`

Recommended Action Enter a unique CTC username.

Error Message `EID-594: A CTC user with the same name already exists on all NEs. Enter a unique username and retry.`

Recommended Action Enter a unique CTC username.

Error Message `EID-595: A CTC user with the same name already exists among users created on all NEs. Enter another username and retry.`

Recommended Action Enter a unique CTC username.

Error Message `EID-596: The password cannot be equal to the Username.`

Recommended Action Enter a unique user password. See Table 8-3 on page 8-16 for the Prime Optical user password restriction.

Error Message `EID-597: The last reference of a group can be deleted only after removing all the network elements it contains. Remove all the network elements this group contains and retry.`

Recommended Action Copy or move all of the NEs in this group to another group; then, retry.

Error Message `EID-598: A database error occurred while deleting the selected group from all references of its parent. The group might not be deleted completely.`

Recommended Action Restart the Prime Optical client. Check if the deleted group still exists under all references of its parents. If it does, select each reference in the Domain Explorer tree and choose **Edit > Delete**.

Error Message `EID-599: The autodisable interval range is 0 to 365 days. Enter a new disable interval and retry.`

Recommended Action Enter an autodisable interval from 0 to 365 days.

Error Message `EID-600: Internal error: Cannot register with the event notification subsystem for events. You might not receive updates from other users.`

Recommended Action Restart the Prime Optical client.

Error Message `EID-603: An error occurred while subscribing to EMS events.`

Recommended Action Restart the Prime Optical client.

Error Message `EID-604: An error occurred while unsubscribing from the Cisco Transport Manager event notification subsystem.`

Recommended Action Restart the Prime Optical client.

Error Message `EID-607: A GNE or NE with the same IP address already exists. Enter a unique IP address and retry.`

Recommended Action Enter a unique IP address.

Error Message `EID-608: You cannot change this user's privilege, because this user is the last one with SysAdmin privilege. To change this user's privilege, you must create another user with SysAdmin privilege.`

Recommended Action Create a second user with SysAdmin privileges. Then, you can change the user privilege of the first SysAdmin user.

Error Message `EID-609: There is not enough space in the backup directory. Do you want to continue?`

Recommended Action This error indicates that there is not enough memory for the database backup. You can click OK to continue, but the backup might not succeed if there is not enough space. To ensure a successful database backup, free up space in the backup directory.

Error Message `EID-610: Error starting database backup. Re-enter the password and try again.`

Recommended Action Re-enter the password and try again.

Error Message `EID-611: Error starting database export.`

Recommended Action In the Domain Explorer window, choose **Administration > Audit Log**. Read the details of the failure in the Audit Log, and correct the problem accordingly.

Error Message `EID-612: Cannot connect to the database. Check whether the database is up and retry.`

Recommended Action If the database is down, restart it. Verify that the workstation where the database is installed is IP-reachable from the client machine. If the database is not reachable, make the appropriate corrections to the network. When the database is up and reachable, start the client.

If the database is up and reachable but the problem persists on Windows, check the following:

- Verify that your path contains *client-installation-directory*/lib by opening a command prompt and entering **set path**.
- Verify that an Oracle client is installed on your PC. The earliest Oracle client version that Prime Optical supports is Oracle 10g. If you installed an earlier Oracle release (such as Oracle version 8), upgrade to a later Oracle release.

Error Message `EID-614: A database error occurred while deleting the selected subnetwork from the database. The subnetwork might not be deleted completely.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-615: An error occurred while changing the subnetwork name.`

Recommended Action Restart the Prime Optical client.

Error Message EID-616: An error occurred while changing the subnetwork title.

Recommended Action Restart the Prime Optical client.

Error Message EID-617: An error occurred while changing the subnetwork description.

Recommended Action Restart the Prime Optical client.

Error Message EID-618: An error occurred while changing the subnetwork type.

Recommended Action Restart the Prime Optical client.

Error Message EID-619: An error occurred while changing the subnetwork topology.

Recommended Action Restart the Prime Optical client.

Error Message EID-621: Community String is a mandatory field. Enter the community string and retry.

Recommended Action Enter the community string.

Error Message EID-622: A fatal error occurred while requesting the topology change.

Recommended Action Restart the Prime Optical server and all of the clients.

Error Message EID-623: An error occurred in response to a topology change. Refresh the view.

Recommended Action Close, then reopen the topology window.

Error Message EID-624: Subnetwork Name is a mandatory field. Enter a unique subnetwork name and retry.

Recommended Action Enter a unique subnetwork name.

Error Message EID-625: A subnetwork with the same name already exists. Specify a unique subnetwork name and retry.

Recommended Action Enter a unique subnetwork name.

Error Message EID-626: Database error: An error occurred while adding the new subnetwork to the database.

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-627: You cannot add this NE model under the selected network partition. Select a different subnetwork or network partition.`

Recommended Action Select a different subnetwork or network partition.

Error Message `EID-628: Cisco Transport Manager initialization failed. Cannot connect to the CTM database.`

Recommended Action The Prime Optical client cannot read a required table from the database. Restart the application and start the Debug Log (choose **File > Debug Options**). If the problem persists, contact Cisco technical support with the Debug Log trace.

Error Message `EID-629: A fatal error occurred while trying to retrieve new assignments from the server. The application will be shut down. Restart the application.`

Recommended Action Restart the Prime Optical server and all of the clients.

Error Message `EID-630: The selected NE was not found in the database. The database might be corrupted.`

Recommended Action Restart the Prime Optical client.

Error Message `EID-631: A user with administrator privileges has changed your password. The application will be closed. Login again with the new password.`

Recommended Action Log in with the revised user password.

Error Message `EID-632: A user with administration privileges has disabled this user. The application will be closed.`

Recommended Action The administrator disabled the selected user's access. Contact the administrator to re-enable user access.

Error Message `EID-633: The administrator has deleted this user. The application will be closed.`

Recommended Action The administrator deleted the selected user. Contact the administrator to create a new user account.

Error Message `EID-634: The IOS Config Engine password does not match the confirmation password. Retype the password.`

Recommended Action Retype the password.

Error Message `EID-638: A CTM administrator has modified the CTM domain. As a result, your request to modify the CTM topology is invalid. Try again.`

Recommended Action While you were adding an NE or group to an existing group, another administrator deleted the existing group. Consequently, your request to add an NE or group is now invalid. Reselect the node and retry.

Error Message `EID-640: Search string was not found.`

Recommended Action Repeat the search with new search criteria.

Error Message `EID-641: Cannot create the new subnetwork. Try again.`

Recommended Action Create the new subnetwork again.

Error Message `EID-642: Database error: Cannot paste the requested node.`

Recommended Action Try the paste action again. If the problem persists, contact Cisco technical support.

Error Message `EID-643: Database error: Cannot delete the requested node.`

Recommended Action Delete the node again. If the problem persists, contact Cisco technical support.

Error Message `EID-644: Database error: Cannot undelete the requested node.`

Recommended Action Undelete the node again. If the problem persists, contact Cisco technical support.

Error Message `EID-645: Cannot purge the requested NE. Action failed.`

Recommended Action An NE can be purged only if it is marked Out of Service. If the operational state of the NE is not Out of Service, undelete the NE, mark it Out of Service, and delete it again. Try to purge the NE again.

Error Message `EID-646: Cannot add the new NE. An NE with the same name or IP address still exists in the CTM domain. Contact Cisco TAC for support.`

Recommended Action Contact Cisco technical support.

Error Message `EID-647: Cannot copy because the source and destination are the same.`

Recommended Action Specify a different source and destination.

Error Message `EID-648: Selected subnetwork contains deleted NEs. Delete those NEs from the database before deleting the subnetwork.`

Recommended Action Delete the NEs in the Deleted NEs group; then, delete the subnetwork.

Error Message `EID-649: A duplicate target is not allowed.`

Recommended Action Specify a target that has not been used before.

Error Message `EID-650: Specify a target.`

Recommended Action Specify a target.

Error Message `EID-651: The target cannot contain` *`string`*`.`

Recommended Action Specify a target that does not contain this string.

Error Message `EID-652: The target must contain 4 dot-separated integers.`

Recommended Action Specify a target that contains four dot-separated integers.

Error Message `EID-653: The target is invalid.`

Recommended Action Specify a valid target.

Error Message `EID-654: Retry values must be integers between 0 and 5.`

Recommended Action Specify the retry value as an integer from 0 to 5.

Error Message `EID-655: Timeout values must be integers between 1 and 60.`

Recommended Action Specify the timeout as an integer from 1 to 60.

Error Message `EID-656: Specify a write string.`

Recommended Action Specify a write string.

Error Message `EID-657: An error occurred while retrieving the flash partition files.`

Recommended Action Contact the system administrator.

Error Message `EID-658: Rediscover request has been accepted.`

Recommended Action Your rediscover request was accepted; no action is required.

Error Message `EID-659: Rediscover request failed.`

Recommended Action This error occurs when rediscovery is done manually from the ONS 155xx configuration menu. Perform the operation again.

Error Message `EID-660: This will result in rediscovery of the selected ONS 155xx devices. Do you want to continue?`

Recommended Action Click **OK** to continue with the rediscovery of the selected NEs.

Error Message `EID-661: This will result in rediscovery of all ONS 155xx devices. Do you want to continue?`

Recommended Action Click **OK** to continue with the rediscovery of all ONS 155xx NEs.

Error Message `EID-662: Power level refresh failed.`

Recommended Action Connection to the device might have timed out. Contact your system administrator.

Error Message `EID-663: The circuit ID cannot exceed 64 characters.`

Recommended Action Enter a circuit ID that does not exceed 64 characters.

Error Message `EID-665: Config exception: Cannot change EMS identification.`

Recommended Action Enter an EMS ID that has from 1 to 64 characters and does not contain an apostrophe (‘), a semicolon (;), a colon (:), or a comma (,).

Error Message `EID-667: Network Partition ID is a mandatory field. Enter a unique network partition ID and retry.`

Recommended Action Enter a unique network partition ID.

Error Message `EID-668: A network partition with the same ID already exists. Specify a unique network partition ID and retry.`

Recommended Action Enter a unique network partition ID.

Error Message `EID-669: Cannot create the new network partition. Try again.`

Recommended Action Check the database connection. If the problem persists, restart the Prime Optical server.

Error Message `EID-670: Cannot modify the network partition. Try again.`

Recommended Action Check the database connection. If the problem persists, restart the Prime Optical server.

Error Message `EID-671: An error occurred while changing the network partition.`

Recommended Action This error occurs while changing the name of the network partition. Retry changing the network partition name.

Error Message `EID-672: Invalid browser path.`

Recommended Action Verify that a browser is installed on your system and that the browser path in ems-client.cfg is set correctly.

Error Message `EID-673: Network Partition Description is a mandatory field. Enter a unique network partition description and retry.`

Recommended Action Enter a unique network partition description.

Error Message `EID-675: Cannot export data on {0}.`

Recommended Action A critical malfunction occurred on the property sheet; the data cannot be exported. Contact Cisco technical support.

Error Message `EID-676: Some of the data was not exported correctly. See the file` *`filename`* `for details.`

Recommended Action A malfunction occurred while displaying data in the property sheet. A parameter cannot be exported, but the export operation will continue processing other parameters. Contact Cisco technical support.

Error Message `EID-677: Cannot execute the operation. Another NE configuration report is in progress.`

Recommended Action Wait until the report is finished; then, repeat the operation.

Error Message `EID-678: Error: Cannot export some of the data in the` *`tab-name`* `tab.`

Recommended Action A malfunction occurred while displaying data in the property sheet. A parameter cannot be exported, but the export operation will continue processing other parameters. Contact Cisco technical support.

Error Message `EID-679: Enter a directory for the export.`

Recommended Action Specify the name of the directory to use for the export operation.

Error Message EID-680: {path} is not a directory path. Enter a directory.

Recommended Action Specify the name of the directory to use for the export operation.

Error Message EID-681: The ONS 15305 CTC password does not match the confirmation password. Retype the password.

Recommended Action Retype the password.

Error Message EID-682: The ONS 15305 CTC username is a mandatory field. Specify a username.

Recommended Action Enter a unique username.

Error Message EID-683: Cannot plot all the graphs for the selected row. Select valid parameters for plotting.

Recommended Action Choose another row that contains valid parameters for plotting.

Error Message EID-684: An error occurred while scheduling the export inventory table operation.

Recommended Action This error is a job scheduling error. Check the Job Monitor table to see what type of error is reported.

Error Message EID-689: The CTC User Password field cannot be empty. Enter a unique CTC user password and retry.

Recommended Action Enter a unique CTC user password.

Error Message EID-690: A similar job is currently in progress. Wait for the job to finish; then, try again.

Recommended Action No action is required.

Error Message EID-691: Cannot add the new GNE. A GNE with the same name or IP address still exists in the CTM domain. Contact Cisco TAC for support.

Recommended Action Contact Cisco technical support.

Error Message EID-692: No circuit sizes are assigned to the user. Assign at least one circuit size to the user.

Recommended Action Assign at least one circuit size to the user.

Error Message `EID-693: Cannot purge the requested NE because it is connected to another node with a link.`

Recommended Action This error occurs when you purge an NE that has links to other NEs. Delete all links associated with this NE and retry the purge operation.

Error Message `EID-694: Cannot move the requested NE or subnetwork because there are existing links. Delete the links before changing the partition.`

Recommended Action Delete all of the links before moving the NE or subnetwork to another partition.

Error Message `EID-695: You cannot create a link from an unmanaged NE to a group that contains SONET and SDH NEs.`

Recommended Action The destination group must contain either SONET or SDH NEs.

Error Message `EID-697: A database error occurred while trying to modify the selected CTC user profile.`

Recommended Action Contact the system administrator.

Error Message `EID-698: A database error occurred while trying to add the CTC user profile to the database.`

Recommended Action Contact the system administrator.

Error Message `EID-699: A CTC user profile with the same ID already exists. Select a different user ID and retry.`

Recommended Action Select a different CTC user and retry.

Error Message `EID-700: An error occurred while saving node coordinates to the database. Refresh the view and retry.`

Recommended Action Click the **Refresh Data** tool to refresh the view and recustomize the coordinates.

Error Message `EID-701: An error occurred while saving the node icon to the database. Refresh the view and retry.`

Recommended Action Click the **Refresh Data** tool to refresh the view and recustomize the node icons.

Error Message `EID-703: An error occurred while creating the new link between the selected nodes. Recreate the link.`

Recommended Action Recreate the link.

Error Message `EID-704: Links must be created between two distinct nodes of compatible types on the same network map. Recreate the link.`

Recommended Action Recreate the link between two distinct nodes.

Error Message `EID-705: An error occurred while deleting the selected link(s). Check the communication status of the source and destination nodes.`

Recommended Action Click the **Refresh Data** tool to refresh the view and attempt to delete the link again.

Error Message `EID-706: An error occurred while deleting the selected link(s).`

Recommended Action Retry the link deletion later. If the problem persists, contact Cisco technical support.

Error Message `EID-709: An error occurred while opening the selected image file at the specified file path.`

Recommended Action The selected image file does not exist in the selected file path. Select an image file from the file list in the selected subdirectory.

Error Message `EID-710: An error occurred while loading the node icon image. Retry.`

Recommended Action The image could not be loaded from the file you selected. Check the size of the file and reload the icon image. The size of the map file should not exceed 100 KB.

Error Message `EID-711: An error occurred while loading the default background map image.`

Recommended Action Exit the Prime Optical client and retry. If the error persists, some map images were deleted. Reinstall the Prime Optical client.

Error Message `EID-712: An error occurred while loading the link from the database.`

Recommended Action Restart the Network Map. If the error persists, exit the Prime Optical client and retry.

Error Message `EID-713: An error occurred while opening the node.`

Recommended Action Restart the Network Map. If the error persists, exit the Prime Optical client and retry.

Error Message `EID-714: An error occurred while opening the parent node.`

Recommended Action Restart the Network Map. If the error persists, exit the Prime Optical client and retry.

Error Message `EID-715: An error occurred while loading the background map image file. Retry.`

Recommended Action The image could not be loaded from the file you selected. Check the size of the file and reload the background image. The size of the map file should not exceed 100 KB.

Error Message `EID-716: An error occurred while deleting a node from the map. Refresh the view and retry.`

Recommended Action Click the **Refresh Data** tool to refresh the view.

Error Message `EID-717: An error occurred while saving the map background image file. Refresh the view and retry.`

Recommended Action The image could not be saved to the database. Click the **Refresh Data** tool to refresh the view and recustomize the background image. If the problem persists on a Solaris workstation, check the file permissions for the map background and map icon subdirectories under your installed subdirectory.

Error Message `EID-718: You cannot delete the selected link(s) because they are autodiscovered. Action failed.`

Recommended Action You selected an autodiscovered link that is not in an invalid state, and therefore cannot be deleted. You can delete only manual or invalid links.

Error Message `EID-719: Cannot initiate the Rediscover operation because the NE Service is not active. Activate the NE Service before trying the Rediscover operation.`

Recommended Action In the Control Panel, check the NE Service status and activate the NE Service if it is not active.

Error Message `EID-721: Links must be created between two nodes that are in service and available. Recreate the link.`

Recommended Action Recreate the link.

Error Message `EID-722: Circuits must be created between two nodes that are in service and available. Recreate the circuit.`

Recommended Action Recreate the circuit.

Error Message `EID-723: Links cannot be created between two off-view nodes. Recreate the link.`

Recommended Action Recreate the link.

Error Message `EID-724: An exception occurred while launching the Circuit table.`

Recommended Action An error occurred while launching the Circuit table. Try to relaunch the Circuit table.

Error Message `EID-725: Enter a valid link name that contains 1 to 256 characters.`

Recommended Action Enter a valid link name that contains 1 to 256 characters.

Error Message `EID-726: Enter a valid link description that contains 1 to 256 characters.`

Recommended Action Enter a valid link description that contains 1 to 256 characters.

Error Message `EID-727: Enter a valid link name (1 to 64 characters) and description (1 to 256 characters).`

Recommended Action Enter a valid link name and link description.

Error Message `EID-728: There is no support for this model yet.`

Recommended Action The network element software version is not supported. Contact Cisco technical support for more information.

Error Message `EID-731: Action was not completed or was partially completed.`

Recommended Action A link already exists with the same name. Create a link with a unique name.

Error Message `EID-732: Source and destination nodes cannot be the same. Choose a different destination node.`

Recommended Action Choose a different destination node.

Error Message `EID-733: The node is not available or there are no available physical termination points for the given link size in the specified layer and direction.`

Recommended Action All link termination points have links for the specified link size. Delete existing links and perform the operation again.

Error Message `EID-735: Create link action was not completed or was partially completed for the link. The link name might be in use.`

Recommended Action A link already exists with the same name. Create a link with a unique name.

Error Message `EID-736: Modify link action was not completed or was partially completed for the link: link-ID.`

Recommended Action A link already exists with the same name. Create a link with a unique name.

Error Message `EID-738: Cannot create a link with link name name. Verify that both source and destination NEs are in the same network partition.`

Recommended Action Verify that both the source and destination NEs belong to the same network partition.

Error Message `EID-739: Cannot retrieve possible link sizes or link protection information.`

Recommended Action Cannot retrieve possible link sizes on the node. Check if the node is in service.

Error Message `EID-740: A link has already been created with this PTP. Enter a different PTP value.`

Recommended Action Enter a different physical termination point (PTP) value.

Error Message `EID-741: An error occurred while retrieving PTP information through CORBA for the unmanaged NE.`

Recommended Action CORBA exception occurred. Check if the node is in service. For more information, contact Cisco technical support.

Error Message `EID-742: The link rate or protection type selected is not supported by the unmanaged NE. Choose 'Not Applicable' and recreate the link.`

Recommended Action Select Not Applicable as the link rate or protection type and retry. If the problem persists, contact Cisco technical support.

Error Message `EID-744: There is no common link layer or size currently supported between the selected source and destination NE(s).`

Recommended Action Specify different source and destination NEs that share a common link layer or size.

Error Message `EID-745: Enter a link cost between 1 and 2,147,483,647.`

Recommended Action Enter a link cost within the valid range.

Error Message `EID-746: Enter 5 comma-separated alphanumeric group names.`

Recommended Action Enter up to five comma-separated, alphanumeric, unique group names.

Error Message `EID-747: Group names must be unique.`

Recommended Action Enter unique group names.

Error Message `EID-748: The group name cannot contain more than 32 characters.`

Recommended Action Enter a group name that contains 32 characters or fewer.

Error Message `EID-750: The selected row does not contain valid parameters for plotting.`

Recommended Action Choose another row that contains valid parameters for plotting.

Error Message `EID-751: Error in launching CTC provisioning view (NE Explorer) for` *`NE-ID`*`.`

Recommended Action Use the following procedure to correct this error:

Step 1 Choose **Administration > Users**.

Step 2 In the Cisco Prime Optical Users table, choose **Edit > Modify**.

Step 3 Click **Next**. In the CTC User Properties panel, change the CTC username and password to match those configured for the device.

If the CTC progress screen idles for a long time before the login dialog box appears, there might be network connectivity problems to the device.

Step 4 (Optional) From a DOS command window or a Sun Solaris terminal, ping the device. If there is no response, set up the routes so that the device is available; then, restart CTC.

Step 5 (Optional) If CTC does not start, your workstation might have resource constraints. Close some open applications and try again. Close some instances of CTC that are managing other groups of ONS 15454 NEs and try again.

Error Message `EID-755: The CTM Server to NE Connection username is a mandatory field. Specify a username.`

Recommended Action Enter a username for Prime Optical server-to-NE connections.

Error Message `EID-757: The ONS 15310 password does not match the confirmation password. Retype the password.`

Recommended Action Retype the password.

Error Message `EID-759: You cannot delete this user, because this user is the last one with SysAdmin privileges. To delete this user, you must first create another SysAdmin user.`

Recommended Action Create a second user with SysAdmin privileges. Then, you can delete the first SysAdmin user.

Error Message `EID-800: Selected NEs are invalid or not reachable. NEs must be in the same network partition and must be reachable.`

Recommended Action This error occurs because all NEs under a group are in service or under maintenance but are not reachable, or because the NEs are reachable but in different network partitions. Verify that the selected NEs are in the same network partition.

Error Message `EID-801: None of the NEs contain ML cards or all ML cards are used for an L2 topology.`

Recommended Action This error occurs if there are no ML cards with both POS ports available for the NEs selected during RPR circuit creation. Verify that all ML-series cards used for topology creation are available.

Error Message `EID-802: An error occurred while creating the service provisioner.`

Recommended Action Wait until the NEs under the selected group are in service; then, try again.

Error Message `EID-803: An error occurred while retrieving card list from server. Selected NE does not have ML cards or all cards are used for L2 topology creation.`

Recommended Action This error occurs if there are no ML-series cards with both POS ports available in the NEs selected during RPR creation. Verify that the selected NEs have ML-series cards and are available for L2 topology creation.

Error Message `EID-804: Failed to delete the topologies.`

Recommended Action Verify that you have user privileges to perform the delete operation. If the L2 Service Resync status is Complete, Partially Completed, In Progress, or Sync Needed, delete all of the VLANs in the topology; then, try the operation again.

Error Message `EID-805: Failed to delete circuit(s).`

Recommended Action This is an informational message. Wait for some time; then, try to delete the circuit(s) again.

Error Message `EID-806: An L2 topology with the same name already exists. Enter a unique L2 topology name.`

Recommended Action Enter a unique topology name.

Error Message `EID-807: The L2 topology name conflicts with an existing topology or circuit. Enter a unique L2 topology name.`

Recommended Action Enter a unique topology name.

Error Message `EID-808: The CoS Commit value is invalid. Enter a valid value in the range 0 to 7.`

Recommended Action Enter a valid value within the range specified.

Error Message `EID-809: Failed to create RPR.`

Recommended Action If RPR creation is partial, create the remaining circuits using CTC or Prime Optical to complete the RPR. If no circuits were created in the RPR, try performing the same operation again. If the error persists, use CTC to create circuits in the RPR; then, report the problem to Cisco technical support.

Error Message `EID-810: An L2 topology with the same name already exists. Change the L2 topology name.`

Recommended Action Enter a unique L2 topology name.

Error Message `EID-811: Enter a valid L2 topology name.`

Recommended Action The L2 topology name that you entered is empty or starts with a blank space. Enter a valid L2 topology name.

Error Message `EID-812: You cannot create an L2 topology between ports on the same card.`

Recommended Action Create a topology between ports on different cards.

Error Message `EID-813: Select at least two NEs.`

Recommended Action Select at least two NEs.

Error Message `EID-814: Select at least two cards.`

Recommended Action Select at least two cards.

Error Message `EID-815: Select at least one card per NE.`

Recommended Action Select at least one card per NE.

Error Message `EID-816: Select an L2 topology to modify.`

Recommended Action Select a topology to modify.

Error Message `EID-817: Select an L2 topology to delete.`

Recommended Action Select a topology to delete.

Error Message `EID-818: Select an L2 topology to view circuits in the topology.`

Recommended Action Select a topology.

Error Message `EID-819: The selected L2 topology is resynchronizing. Wait until the resynchronization is complete.`

Recommended Action Select the topology after the resynchronization is complete.

Error Message `EID-820: Some of the selected L2 topologies are resynchronizing. Wait until the resynchronization is complete. Click Details to see the list of L2 topologies that are resynchronizing.`

Recommended Action Select the topologies after the resynchronization is complete.

Error Message `EID-821: Select a row and click the Create L2 Service button.`

Recommended Action Select a row and click **Create L2 Service**.

Error Message `EID-822: The selected L2 topology is resynchronizing. Wait until the resynchronization is complete.`

Recommended Action Select the topology after the resynchronization is complete.

Error Message `EID-823: Bandwidth mismatch on the existing topologies on the source and destination cards. Cannot set bandwidth values. Change the source or destination for PTP creation.`

Recommended Action The selected source and destination cards are already configured with a PTP L2 topology. The two cards have different bandwidth values. Select a different source or destination and try again.

Error Message `EID-824: The NEs in the L2 topology are not in the user domain.`

Recommended Action Verify that the NEs are in the user domain.

Error Message `EID-825: Failed to update the L2 topology name or description.`

Recommended Action Verify that the Prime Optical server is up and running.

Error Message `EID-826: No ports are available for modification.`

Recommended Action Verify that the selected L2 topology state is Complete and that the L2 Service Resync status is Complete. Close the Modify Ports window and try again.

Error Message `EID-827: Failed to modify the ports.`

Recommended Action Verify that the selected L2 topology state is Complete and that the L2 Service Resync status is Complete. Close the Modify Ports window and try again.

Error Message `EID-828: There are no ML cards in the L2 topology.`

Recommended Action Verify that the selected L2 topology state is Complete and that the L2 Service Resync status is Complete. Close the Modify Ports window and try again.

Error Message `EID-829: Select a segment or select the Automatically Route RPR option.`

Recommended Action Select a segment or select the **Automatically Route RPR** option.

Error Message `EID-830: Manual routing failed.`

Recommended Action This error occurs if manual creation of a PTP or RPR circuit fails. Try performing the same operation again. If error persists, use CTC; then, report the problem.

Error Message `EID-831: Route validation failed for the selected segment.`

Recommended Action This error occurs if manual or automatic creation of an RPR circuit segment fails. Try performing the same operation again. If the error persists, use CTC to create segment; then, report the problem to Cisco technical support.

Error Message `EID-832: Unexpected exception. Failed to provision the segment.`

Recommended Action This error occurs if manual or automatic circuit creation of an RPR circuit segment throws a generic exception. Try performing the same operation again. If the error persists, use CTC to create the segment; then, report the problem to Cisco technical support.

Error Message `EID-833: Invalid source or destination selected for routing.`

Recommended Action Select a valid source or destination.

Error Message `EID-834: An error occurred while retrieving L2 topology segments from the server.`

Recommended Action This error occurs because the server is still initializing. Close the wizard and perform the operation again later.

Error Message `EID-835: Invalid L2 topology segment.`

Recommended Action Select a valid topology segment.

Error Message `EID-836: The segment is already provisioned.`

Recommended Action Select an unprovisioned segment.

Error Message `EID-837: You cannot delete this topology because there are L2 services on this topology. Delete all the L2 services for this topology before deleting it.`

Recommended Action Delete the L2 services on the topology before deleting the topology itself.

Error Message `EID-838: The sum of bandwidth values for SP Management, Committed Rate, AVVID Control, Best Effort, and Multicast Traffic cannot exceed 99%.`

Recommended Action Enter combined bandwidth values that do not exceed 99%.

Error Message `EID-839: The CoS values for both the multicast commands cannot be the same. Change the values and try again.`

Recommended Action Enter unique CoS values for the different multicast bandwidth parameters.

Error Message `EID-840: The SP Management Bandwidth value is invalid. Enter a valid value.`

Recommended Action Enter a value from 1 to 99.

Error Message `EID-841: The Committed CoS value is invalid. Enter a valid value.`

Recommended Action Enter comma-separated values from 0 to 7.

Error Message `EID-842: The Best Effort Bandwidth value is invalid. Enter a valid value.`

Recommended Action Enter a value from 1 to 99.

Error Message `EID-843: Cannot remove this card. You must retain at least two cards from different NEs to form an RPR.`

Recommended Action You cannot delete this card because an RPR must contain at least two cards from different NEs. Select a different card for deletion.

Error Message `EID-844: The AVVID Voice Video Bandwidth value is invalid. Enter a valid value.`

Recommended Action Enter a value from 1 to 99.

Error Message `EID-845: The SP Management CoS value is invalid. Enter a valid value.`

Recommended Action Enter a value from 1 to 99.

Error Message `EID-846: The AVVID Control CoS value is invalid. Enter a valid value.`

Recommended Action Enter comma-separated values from 0 to 7.

Error Message `EID-847: The AVVID Voice Video CoS value is invalid. Enter a valid value.`

Recommended Action Enter comma-separated values from 0 to 7.

Error Message `EID-848: The existing L2 topology on one of the selected ML cards is not synchronized completely. Bandwidth parameters cannot be determined.`

Recommended Action There is a PTP L2 topology on the other POS port of the selected ML card. Wait until the L2 Service Resync status is Complete.

Error Message `EID-849: Failed to shut down POS ports.`

Recommended Action This problem occurs because the Telnet connection to the card failed, or because the card was reset while performing the Add/Remove card operation. Try the operation again. If the problem persists, contact Cisco technical support.

Error Message `EID-850: Failed to create IOS user.`

Recommended Action Verify that the Cisco IOS configuration exists on the card. The default Cisco IOS user must be visible in the IOS Users table before you can perform any Cisco IOS user-related operations. Wait until the default user is visible in the IOS Users table; then, try the operation again.

Error Message `EID-851: Failed to delete IOS user.`

Recommended Action Verify that the Cisco IOS configuration exists on the card. The default Cisco IOS user must be visible in the IOS Users table before you can perform any Cisco IOS user-related operations. Wait until the default user is visible in the IOS Users table; then, try the operation again.

Error Message `EID-852: Failed to delete IOS user.`

Recommended Action Verify that the Cisco IOS configuration exists on the card. The default Cisco IOS user must be visible in the IOS Users table before you can perform any Cisco IOS user-related operations. Wait until the default user is visible in the IOS Users table; then, try the operation again.

Error Message `EID-853: IOS user is not selected.`

Recommended Action Select a Cisco IOS user.

Error Message `EID-854: One or more default IOS users selected. You cannot delete the default IOS user.`

Recommended Action Select a different user for deletion.

Error Message `EID-855: You cannot modify the default IOS user.`

Recommended Action Select a different user for modification.

Error Message `EID-856: No data cards are available to create the IOS user.`

Recommended Action Add data cards to the network before creating Cisco IOS users.

Error Message `EID-857: No IOS cards are selected. Select at least one IOS card from the available IOS cards.`

Recommended Action Select at least one Cisco IOS card.

Error Message `EID-858: The user VLAN ID is already in use.`

Recommended Action Enter a unique user VLAN ID.

Error Message `EID-859: Failed to modify the Layer 2 service.`

Recommended Action If the topology is not synchronized, close the L2 service wizard and try again after the topology synchronization is complete. If there is an invalid username or password, verify that the username and password configured in the ML-series card are synchronized with the NE

username and password. Close the L2 service wizard and try again. Check the command-line interface (CLI) configuration on all ML-series cards in the topology and retry the operation. If the problem persists, contact Cisco technical support.

Error Message `EID-860: Failed to add service drops to the Layer 2 service.`

Recommended Action If the topology is not synchronized, close the L2 service wizard and try again after the topology synchronization is complete. If there is an invalid username or password, verify that the username and password configured in the ML-series card are synchronized with the NE username and password. Close the Add/Delete Drops wizard and try again. Check the CLI configuration on all ML-series cards in the topology and retry the operation.

Error Message `EID-861: Failed to delete service drops on the Layer 2 service.`

Recommended Action If the topology is not synchronized, close the L2 service wizard and try again after the topology synchronization is complete. If there is an invalid username or password, verify that the username and password configured in the ML-series card are synchronized with the NE username and password. Close the Add/Delete Drops wizard and try again. Check the CLI configuration on all ML-series cards in the topology and retry the operation.

Error Message `EID-862: No Layer 2 service is selected to modify service drops. Select a Layer 2 service.`

Recommended Action Select an L2 service.

Error Message `EID-863: Select only one Layer 2 service.`

Recommended Action Select one L2 service.

Error Message `EID-864: Failed to retrieve record from the database.`

Recommended Action Select a row in the VLAN table before clicking the Add or Delete button.

Error Message `EID-865: No Layer 2 service is selected for modification. Select a Layer 2 service.`

Recommended Action Select one L2 service.

Error Message `EID-866: Select only one Layer 2 service.`

Recommended Action Select one L2 service.

Error Message `EID-867: Failed to retrieve record from the database.`

Recommended Action Select a row in the VLAN table before clicking the Modify button.

Error Message `EID-868: No Layer 2 service drop is selected. Select a Layer 2 service drop.`

Recommended Action Select one L2 service drop.

Error Message `EID-869: Select only one Layer 2 service drop.`

Recommended Action Select one L2 service drop.

Error Message `EID-870: Failed to retrieve record from the database.`

Recommended Action Select a row in the VLAN table before selecting the Show Drops button.

Error Message `EID-871: PIR should be greater than or equal to CIR.`

Recommended Action Enter a peak information rate (PIR) value that is greater than or equal to the committed information rate (CIR).

Error Message `EID-872: Max PIR burst should be greater than or equal to max CIR burst.`

Recommended Action Enter a PIR that is greater than or equal to the maximum CIR burst.

Error Message `EID-873: Failed to modify service drops on the Layer 2 service.`

Recommended Action If the topology is not synchronized, close the L2 service wizard and try again after the topology synchronization is complete. If there is an invalid username or password, verify that the username and password configured in the ML-series card are synchronized with the NE username and password. Close the Add/Delete Drops wizard and try again. Check the CLI configuration on all ML-series cards in the topology and retry the operation.

Error Message `EID-874: Failed to modify some drops on the Layer 2 service. Click Details to see the list.`

Recommended Action If the topology is not synchronized, close the L2 service wizard and try again after the topology synchronization is complete. If there is an invalid username or password, verify that the username and password configured in the ML-series card are synchronized with the NE username and password. Close the Add/Delete Drops wizard and try again. Check the CLI configuration on all ML-series cards in the topology and retry the operation.

Error Message `EID-875: Select at least one drop to delete.`

Recommended Action Select at least one drop to delete to complete the delete drop port operation. Otherwise, cancel the delete drop port operation.

Error Message `EID-876: Select at least one new drop to add.`

Recommended Action Select at least one drop to add to complete the add drop port operation. Otherwise, cancel the add drop port operation.

Error Message `EID-877: Enter a valid port VLAN ID for the following drops. Click Details to see the list.`

Recommended Action Enter a valid port VLAN ID from 1 to 2095.

Error Message `EID-878: Failed to reset general Layer 2 service attributes.`

Recommended Action Close the modify L2 service window and try again.

Error Message `EID-879: Failed to reset QoS values for the Layer 2 service.`

Recommended Action Close the modify L2 service window and try again.

Error Message `EID-880: Failed to reset the Enable/Disable values for the drops in the Layer 2 service.`

Recommended Action Close the modify L2 service window and try again.

Error Message `EID-881: There are not enough drops for Layer 2 service creation on the RPR topology.`

Recommended Action All drop ports are used. Delete unused drops on VLANs on the cards belonging to the topology; then, launch the wizard.

Error Message `EID-882: There are not enough drops for Layer 2 service creation on the point-to-point topology.`

Recommended Action All drop ports are used. Delete unused drops on VLANs on the cards belonging to the topology; then, launch the wizard.

Error Message `EID-883: The Layer 2 topology is resynchronizing. Wait until the resynchronization is complete.`

Recommended Action Wait until the topology resynchronization has completed before starting the operation.

Error Message `EID-884: The Layer 2 topology state is incomplete.`

Recommended Action Selected topology is incomplete. Complete the topology by creating missing circuits. Try the operation again after completing the topology.

Error Message `EID-885: There are no ML cards in the topology.`

Recommended Action Add the ML-series cards to the topology and wait until the topology is completed. Wait until the topology resynchronization status becomes complete. If the problem persists, contact Cisco technical support.

Error Message `EID-886: The Layer 2 service creation request timed out. The operation is running in the background.`

Recommended Action No action required.

Error Message `EID-887: Select at least one drop to create the Layer 2 service.`

Recommended Action Select at least one drop to create the L2 service.

Error Message `EID-888: The ONS 15216 EDFA3 password does not match the confirmation password. Retype the password.`

Recommended Action Retype the password.

Error Message `EID-889: Failed to modify the QoS template.`

Recommended Action Verify the error details.

Error Message `EID-890: Failed to delete the QoS template.`

Recommended Action Verify the error details.

Error Message `EID-891: The QoS profile name is invalid.`

Recommended Action Enter a valid QoS profile name.

Error Message `EID-892: Enter a valid value for CoS.`

Recommended Action Enter comma-separated values from 0 to 7.

Error Message `EID-893: Enter a valid value for DSCP.`

Recommended Action Enter comma-separated values from 0 to 63.

Error Message `EID-894: Enter a valid value for IP Precedence.`

Recommended Action Enter comma-separated values from 0 to 7.

Error Message `EID-895: Select at least one traffic match criteria.`

Recommended Action No match criteria are selected. Make at least one selection.

Error Message `EID-896: Failed to clone the QoS profile.`

Recommended Action Verify the error details.

Error Message `EID-897: Mark CoS for violate action.`

Recommended Action The Allow radio button is selected on the Violations tab, but CoS is not marked. Click the **Mark CoS** radio button and specify the CoS value.

Error Message `EID-898: Failed to delete some QoS profiles. Click Details to see the list.`

Recommended Action This is an informational message; no action is required.

Error Message `EID-899: You cannot delete the selected L2 topology because it is in Incomplete/Sync Failed state, which prevents any provisioning. Refer to the Circuit table to see what is preventing this L2 topology from transitioning to Complete state.`

Recommended Action Launch the Circuit table to see what is preventing this L2 topology from transitioning to Complete state. After the topology transitions to Complete, you can delete it.

Error Message `EID-900: You must be the root user to upgrade the client.`

Recommended Action Login as the root user to perform this operation.

Error Message `EID-901: Cannot launch the wizard. The selected source(s) and destination(s) are in different subnetworks, or are incompatible NE models, or are not reachable, or not inter-connected.`

Recommended Action You can only create circuits between reachable NEs that are compatible for circuit creation when NEs are in the same subnetwork, or when NEs are connected (even if they are in different subnetworks of the same network partition). Select NEs that are interconnected directly or indirectly through links known by Prime Optical.

Error Message `EID-902: Failed to set the circuit attributes.`

Recommended Action Prime Optical enforces the uniqueness of the circuit ID. Change the circuit name and retry.

Error Message `EID-903: Circuit Name is a mandatory field. Enter a valid circuit name (1 or more characters or a word other than the keyword 'Unknown') and retry.`

Recommended Action Enter a circuit name.

Error Message `EID-904: Failed to set the circuit end points for circuit creation.`

Recommended Action The server service is not ready. Wait several minutes and try again.

Error Message `EID-905: Source is not fully specified.`

Recommended Action Specify the source NE and connection termination points (CTPs).

Error Message `EID-906: Destination is not fully specified.`

Recommended Action Specify the destination NE and CTPs.

Error Message `EID-907: Slot selection is mandatory. Select the slot and retry.`

Recommended Action Select a slot and retry.

Error Message `EID-908: Port selection is mandatory. Select the port and retry.`

Recommended Action Select a port and retry.

Error Message `EID-909: STS/VT selection is mandatory. Select the STS or VT and retry.`

Recommended Action Select a synchronous transport signal (STS) or Virtual Tributary (VT) and retry.

Error Message `EID-910: Secondary slot selection is mandatory. Select the slot and retry.`

Recommended Action Select a secondary slot and retry.

Error Message `EID-911: Secondary port selection is mandatory. Select the port and retry.`

Recommended Action Select a secondary port and retry.

Error Message `EID-912: Secondary STS/VT selection is mandatory. Select the STS or VT and retry.`

Recommended Action Select a secondary STS or VT and retry.

Error Message `EID-913: Failed to retrieve slots.`

Recommended Action The server service is not ready. Wait several minutes and try again.

Error Message `EID-914: Failed to retrieve ports.`

Recommended Action Verify that there are available in-service ports on the selected slot.

Error Message `EID-915: Failed to retrieve STSs.`

Recommended Action The server service is not ready. Wait several minutes and try again.

Error Message `EID-916: Failed to retrieve VTs.`

Recommended Action Verify that there are available in-service VTs on the selected STS.

Error Message `EID-917: Sources cannot be the same.`

Recommended Action You cannot select the same CTPs for the source and secondary source. Select a different source or secondary source and retry.

Error Message `EID-918: Destinations cannot be the same.`

Recommended Action You cannot select the same CTPs for the destination and secondary destination. Select a different destination or secondary destination and retry.

Error Message `EID-919: Source and destination CTPs cannot be identical.`

Recommended Action You cannot select the same CTPs for the source and destination.

Error Message `EID-920: Failed to retrieve adjacent nodes for the current nodes.`

Recommended Action Verify that there is at least one link between the selected nodes.

Error Message `EID-921: Failed to retrieve links between the current node and the adjacent node.`

Recommended Action Verify that there is at least one link between the selected nodes.

Error Message `EID-922: Failed to retrieve segments for the selected link.`

Recommended Action Verify that CTC contains spans for the selected link.

Error Message `EID-923: VLAN selection is mandatory. Select the VLAN and retry.`

Recommended Action Select a VLAN and retry.

Error Message `EID-924: The VLAN ID must be an integer greater than 1.`

Recommended Action Enter a VLAN ID that is greater than 1.

Error Message `EID-925: Failed to retrieve VLANs.`

Recommended Action The server is not ready. Wait several minutes and try again. If the error persists, restart the server.

Error Message `EID-926: Failed to set VLANs.`

Recommended Action The underlying circuit might have been deleted. Reopen the Circuit wizard and try again.

Error Message `EID-927: Failed to provision circuit manually.`

Recommended Action The selected link does not exist. The link might have been deleted. Reopen the Circuit wizard and create the circuit.

Error Message `EID-928: A span is already added for the selected link.`

Recommended Action A span has been added for the current hop. If you want to add a new span, remove the existing span and add the new one.

Error Message `EID-929: Select a span in the current hop.`

Recommended Action Select a span in the current hop.

Error Message `EID-930: No available` *`object`* `found for the selected link.`

Recommended Action All of the objects are in use for the selected link.

Error Message `EID-931: Failed to provision the circuit.`

Recommended Action The underlying circuit is not in the correct state. The circuit must be in a Creating or Active state. Reopen the Circuit wizard and try again.

Error Message `EID-932: Failed to route the circuit.`

Recommended Action The server is not ready. Wait several minutes; then, reopen the Circuit wizard and try again.

Error Message `EID-933: VLAN creation failed.`

Recommended Action Enter a unique VLAN name and a unique VLAN ID that is greater than 1 and less than the MAX_VLAN_ID value.

Error Message `EID-934: Failed to add drops.`

Recommended Action The underlying circuit might have been deleted. Reopen the Circuit wizard and try again.

Error Message `EID-935: Failed to set the circuit end points for editing.`

Recommended Action Source or destination end points are already in use. Reopen the Circuit wizard and try again.

Error Message `EID-936: Failed to retrieve the connection information.`

Recommended Action Verify that there is at least one link between the selected nodes.

Error Message `EID-937: Failed to retrieve the nodes in the working and protect paths.`

Recommended Action Verify that the nodes are in service in the Domain Explorer.

Error Message `EID-938: Failed to retrieve the links in the working path.`

Recommended Action Verify that there are links in the working path and that the nodes are in service.

Error Message `EID-939: Failed to retrieve trace data from the server.`

Recommended Action Contact the system administrator.

Error Message `EID-940: Invalid circuit attributes. Select a circuit with valid attributes.`

Recommended Action Select a circuit with a valid source and destination and an active state.

Error Message `EID-941: Cannot launch the trace report because the source and destination are the same.`

Recommended Action The trace report shows both the primary and the secondary routes that are taken by the circuit. Because the source and destination are the same, there is no route.

Error Message `EID-942: A delete job is already in progress on the selected circuit(s). Wait until the job completes.`

Recommended Action You cannot delete this circuit because the delete request has been submitted on this circuit already.

Error Message `EID-943: Circuit deletion failed.`

Recommended Action Prime Optical reports this error message if any associated cross-connections from the NEs could not be deleted. Prime Optical places the circuit in an Incomplete state. Try to delete this circuit again or take the appropriate action described by the failure event.

Error Message `EID-944: Delete drop failed.`

Recommended Action Click the **Refresh Data** tool to refresh the list of existing drops. Wait for the circuit to change to the ACTIVE or DROP_PENDING state and try again. Alternatively, the node might be down or initializing. Wait for the node to come up or finish its initialization and try again.

Error Message `EID-945: There are no adjacent nodes for the selected node.`

Recommended Action Verify that there is at least one link from the selected node to the other nodes.

Error Message `EID-946: There are no available links between the selected nodes.`

Recommended Action Verify that there is at least one link between the selected nodes.

Error Message `EID-947: Editing the SNCP attributes was not successful. There might be a higher-priority request.`

Recommended Action Contact your system administrator.

Error Message `EID-948: Change the circuit name and retry.`

Recommended Action Enter a unique circuit name.

Error Message `EID-949: The number of circuits must be greater than or equal to 1. Enter a valid number and retry.`

Recommended Action Enter a value that is greater than or equal to 1.

Error Message `EID-950: Failed to upgrade the selected circuit(s).`

Recommended Action Select another circuit. Only circuits that are in an upgradable state can be upgraded. Wait for the source node to be discovered.

Error Message `EID-951: Cannot upgrade the selected circuit because it is not in an upgradeable state.`

Recommended Action Select another circuit that is in an upgradeable state.

Error Message `EID-952: Failed to delete stitched nodes.`

Recommended Action Circuit is not complete or not in an active state. Wait for each node involved in the circuit to be discovered.

Error Message `EID-953: Failed to add nodes.`

Recommended Action Circuit is not complete or not in an active state. Wait for each node involved in the circuit to be discovered.

Error Message `EID-954: Failed to retrieve the circuit provisioner.`

Recommended Action The server service is not ready. Wait several minutes and try again.

Error Message `EID-955: Failed to retrieve the possible Ethernet nodes.`

Recommended Action Wait for each node involved in the circuit to be discovered.

Error Message `EID-956: Selected nodes are not in the same network partition.`

Recommended Action You cannot add or delete VLANs from the Manage VLAN dialog box if the selected NEs are moved to a different network partition. Relaunch the Manage VLAN dialog box and try again.

Error Message `EID-957: Cannot launch the VLAN table.`

Recommended Action Contact your system administrator.

Error Message `EID-958: Failed to change the circuit name.`

Recommended Action Check if the Prime Optical server is up and running. The Prime Optical server service might not be available for some time. Try again. You should also verify that the circuit name is unique.

Error Message `EID-959: Failed to change the circuit description.`

Recommended Action Check if the Prime Optical server is up and running. Try again when the server is available.

Error Message `EID-960: Failed to change the circuit state.`

Recommended Action Check if the Prime Optical server is up and running. Try again when the server is available.

Error Message `EID-961: A circuit with the same name already exists. Enter a unique circuit name.`

Recommended Action Enter a unique circuit name.

Error Message `EID-962: There are no active NEs available.`

Recommended Action Launch the Circuit table only on NEs available for circuit creation.

Error Message `EID-963: Circuit cannot be traced. Circuit status must be Active or Roll Pending.`

Recommended Action Launch a circuit trace for Discovered, Discovered_TL1, or Roll Pending circuits only.

Error Message `EID-964: The requested search criteria did not return any data.`

Recommended Action Modify the search criteria.

Error Message `EID-965: Inconsistent VLANs detected. Cannot edit circuit attributes.`

Recommended Action Delete the existing circuit and create a new circuit.

Error Message `EID-966: An error occurred while checking VLAN applicability.`

Recommended Action Check the Ethernet card mode and try to create the circuit again.

Error Message `EID-967: Failed to change the customer ID.`

Recommended Action Verify that the Prime Optical server is up and running.

Error Message `EID-968: Failed to change the service ID.`

Recommended Action Verify that the Prime Optical server is up and running.

Error Message `EID-969: The source NE for this circuit is not in the user domain.`

Recommended Action Verify that the source NE is in the user domain.

Error Message `EID-970: VLAN deletion failed.`

Recommended Action To delete the VLAN from the network partition, all NEs in the partition must be reachable. Verify that all NEs in the partition are in service and reachable; then, try deleting the VLAN again.

Error Message `EID-971: When 'Ignore All Circuit Names' is not selected, at least one circuit name must be added to the Selected Names list.`

Recommended Action Add at least one circuit name to the Selected Names list.

Error Message `EID-972: When 'Ignore All Customer IDs' is not selected, at least one customer ID must be added to the Selected Names list.`

Recommended Action Add at least one customer ID to the Selected Names list.

Error Message `EID-973: When 'Ignore All Service IDs' is not selected, at least one service ID must be added to the Selected Names list.`

Recommended Action Add at least one service ID to the Selected Names list.

Error Message `EID-974: VLAN manager was not created.`

Recommended Action Contact your system administrator.

Error Message `EID-975: Cannot remove all objects from` *`location`*`.`

Recommended Action Select at least one VLAN for the circuit.

Error Message `EID-976: There are no NEs selected or the selected NEs are not in service.`

Recommended Action Select valid NEs.

Error Message `EID-977: An error occurred while retrieving the NE data provider.`

Recommended Action Contact your system administrator.

Error Message `EID-978: Failed to trace the following VLANs:` *`VLANs`*`.`

Recommended Action Contact your system administrator.

Error Message `EID-979: An error occurred while creating the selection context for the Trace VLAN table.`

Recommended Action Try the operation again.

Error Message `EID-980: An error occurred while launching the Trace VLAN table.`

Recommended Action Contact your system administrator.

Error Message `EID-981: Failed to change the circuit parameters.`

Recommended Action Contact your system administrator.

Error Message `EID-982: Failed to retrieve the monitor source points.`

Recommended Action Contact your system administrator.

Error Message `EID-983: Cannot create monitor circuits on a port grouping circuit.`

Recommended Action No action.

Error Message `EID-984: An error occurred while retrieving the circuit drop points.`

Recommended Action Contact your system administrator.

Error Message `EID-985: An error occurred while retrieving the circuit drop nodes.`

Recommended Action Contact your system administrator.

Error Message `EID-986: Cannot create drops on the circuit. There are no available drops.`

Recommended Action No action.

Error Message `EID-987: There are no available Ethernet nodes to add.`

Recommended Action No action.

Error Message `EID-988: Cannot create monitor circuits on this termination point.`

Recommended Action No action.

Error Message `EID-989: Access violation. Verify that you have user privileges to perform this operation on this circuit.`

Recommended Action Check your user ID access permissions. If you need help doing this, contact the system administrator.

Error Message `EID-990: Circuit Size is a mandatory field. If the circuit size could not be selected, check the user privileges and verify that the circuit sizes are assigned.`

Recommended Action Verify that your user ID has permissions to create circuits with the sizes available on the selected NEs. If you need help to check your user permissions, contact the system administrator.

Error Message `EID-991: VLAN Name is a mandatory field. Enter a valid VLAN name that contains 1 or more characters and retry.`

Recommended Action Enter a valid VLAN name.

Error Message `EID-992: Failed to modify the MTU size for the SPR interface.`

Recommended Action This is an informational message. Wait for some time; then, try to modify the MTU size.

Error Message `EID-993: Request timed out. The operation is running in the background. Please check after some time for the updated attributes.`

Recommended Action Wait for some time; then, check again to see the updated attributes.

Error Message `EID-993: An error occurred while parsing the XML file. Provide a correct XML file to launch the wizard.`

Recommended Action Specify a valid XML file; then, relaunch the wizard.

Error Message `EID-996: Cannot launch the wizard. You must first specify an XML and log file.`

Recommended Action Specify a valid XML and log file; then, relaunch the wizard.

Error Message `EID-997: Cannot launch the wizard. You must first specify an XML file.`

Recommended Action Specify a valid XML file; then, relaunch the wizard.

Error Message `EID-998: Cannot launch the wizard. You must first specify a log file.`

Recommended Action Specify a valid log file; then, relaunch the wizard.

Error Message `EID-1001: Failed to retrieve circuit service provider object.`

Recommended Action Verify that the Prime Optical server and the database are up and running.

Error Message `EID-1002: Failed to retrieve NE system ID.`

Recommended Action The NEs are not present in the system. Make the NE active and try again.

Error Message `EID-1003: Both old and new MAC addresses are mandatory.`

Recommended Action Enter both values.

Error Message `EID-1004: Failed to retrieve circuit manager object.`

Recommended Action Verify that the Prime Optical server is up and running.

Error Message `EID-1006: An invalid L2 topology with the same name already exists. Do you want to delete the invalid topology? Click Cancel to change the L2 topology name.`

Recommended Action Delete the invalid topology, or click **Cancel** and change the L2 topology name to a unique name.

Error Message `EID-1007: Select an L2 topology to view cards in the topology.`

Recommended Action Select an L2 topology.

Error Message `EID-1008: Failed to modify the PoS ports state.`

Recommended Action Retry the operation.

Error Message `EID-1009: The sum of bandwidth values for SP Management, Committed Rate, AVVID Control and Best Effort cannot exceed 99%.`

Recommended Action Enter combined bandwidth values that do not exceed 99%.

Error Message `EID-1010: An error occurred while applying the base card configuration. Check whether the barebone configuration is present in ML cards.`

Recommended Action Verify that the ML-series card contains a barebone configuration file.

Error Message `EID-1011: Failed to retrieve network manager object.`

Recommended Action Verify that the Prime Optical server is up and running.

Error Message `EID-1012: Failed to retrieve path trace mode.`

Recommended Action Verify that the Prime Optical server is up and running. Check the NE connectivity.

Error Message `EID-1013: Failed to retrieve transmit text.`

Recommended Action Verify that the Prime Optical server is up and running. Check the NE connectivity.

Error Message `EID-1014: Failed to retrieve expected text.`

Recommended Action Verify that the Prime Optical server is up and running. Check the NE connectivity.

Error Message `EID-1015: Failed to retrieve received text.`

Recommended Action Verify that the Prime Optical server is up and running. Check the NE connectivity. Verify that the provisioned card is present in the slot.

Error Message `EID-1016: Failed to retrieve transmit text.`

Recommended Action Verify that the Prime Optical server is up and running. Check the NE connectivity.

Error Message `EID-1017: Failed to retrieve expected text.`

Recommended Action Verify that the Prime Optical server is up and running. Check the NE connectivity.

Error Message `EID-1018: Failed to retrieve path trace mode.`

Recommended Action Verify that the Prime Optical server is up and running. Check the NE connectivity.

Error Message `EID-1019: There are no circuits selected for J1 path trace. Select a circuit.`

Recommended Action Select an active STS (for SONET) or active LOP/HOP/VCT (for SDH).

Error Message `EID-1020: Select only one circuit from the table.`

Recommended Action Select only one active STS (for SONET) or active LOP/HOP/VCT (for SDH).

Error Message `EID-1021: Failed to retrieve the record from the database.`

Recommended Action Verify that Prime Optical server and database is up and running.

Error Message `EID-1022: Circuit is not active.`

Recommended Action Select an active STS (for SONET) or active LOP/HOP/VCT (for SDH).

Error Message `EID-1065: Error creating ring Provisioner: Could get data for the selected ring.`

Recommended Action Check the connectivity for all NEs in the BLSR. Mark the NEs in the ring as Out of Service and In Service.

Error Message `EID-1079: Failed to retrieve endpoints.`

Recommended Action Verify that the NE supports the selected circuit type and size.

Error Message `EID-1115: Failed to delete the selected SVLAN(s).`

Recommended Action Verify that the selected SVLANs are valid circuit entries and have not already been deleted. Then, verify that the SVLAN nodes are reachable and in service. Refresh the SVLAN table and try again.

Error Message `EID-1116: Failed to modify the selected SVLAN.`

Recommended Action Verify that the selected SVLAN is a valid circuit entry and has not been deleted.

Error Message `EID-1117: Failed to delete the SVLAN drop: drop-name.`

Recommended Action Verify that the selected drop has not already been deleted. Verify that the SVLAN circuit state is Discovered. Verify that the SVLAN nodes are reachable and in service. Refresh the SVLAN table and try again.

Error Message `EID-1118: Failed to retrieve SVLAN information.`

Recommended Action Verify that the SVLAN nodes are reachable and in service. Refresh the SVLAN table and try again.

Error Message `EID-1130: Access violation. You do not have the required user privileges to create this circuit.`

Recommended Action You do not have the required permissions to create this type of circuit. This is an informational message; no action is required.

Error Message `EID-1200: An error occurred while setting the values. See the log file for more information.`

Recommended Action Use the log file to identify the error that occurred, and make the necessary changes.

Error Message EID-1201: Failed to modify the port parameters related to the drop ports of the Layer 2 service. Use the "Modify Ports" dialog to change the parameters if necessary.

Recommended Action This is an informational message; no action is required.

Error Message EID-1202: The modify port parameters request timed out. The operation is running in the background.

Recommended Action No action required.

Error Message EID-1203: Failed to modify the port parameters related to the drop port of the Layer 2 service. Use the "Modify Ports" dialog to change the parameters if necessary.

Recommended Action Use the Modify Ports dialog box to change port parameters.

Error Message EDI-1204: Not all drops might be deleted as the request got timed out. The process is however continuing in the background. Please verify the drops deleted after sometime.

Recommended Action Wait for some time; then, check again to verify that all drops have been deleted.

Error Message EID-1205: Request timed out. The operation is running in the background. Please check after sometime for the updated attributes.

Recommended Action Wait for some time; then, check again to see the updated attributes.

Error Message EID-1206: Request timed out. The operations can not be executed completely.

Recommended Action Ensure that the NE is connected and reachable (pingable) and try again after a few minutes.

Error Message EID-1210: You cannot create a server trail link between the selected NEs.

Recommended Action Select a different NE as the source or destination for the server trail.

Error Message EID-1213: The TL1 Tunnel password does not match the confirmation password. Retype the password.

Recommended Action Retype the confirmation password.

Error Message `EID-1214: The alarm profile file is corrupt. Use a new file.`

Recommended Action You cannot upload a corrupt alarm profile management file to the NE. Choose a profile that is not corrupt.

Error Message `EID-1220: Database error: Cannot modify the NE SNMP version.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-1221: Database error: Cannot modify the NE SNMPv3 required user.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-1222: Database error: Cannot modify the NE SNMPv3 trap user.`

Recommended Action A database error occurred during this operation. Verify that the Prime Optical database is up and running properly. Restart the Prime Optical client and retry.

Error Message `EID-1223: The GNE TID cannot be empty. Either uncheck the Enable check box or enter a valid GNE TID.`

Recommended Action Uncheck the Enable check box or enter a valid GNE TID.

Error Message `EID-1234: The PM Clear operation is not supported on ML-series and Ethernet-series cards.`

Recommended Action Choose cards other than ML-series or Ethernet-series cards for the PM Clear operation.

Error Message `EID-1235: The PM Clear operation is not supported on ML-series and Ethernet-series cards but is supported on other cards.`

Recommended Action Choose cards other than ML-series or Ethernet-series cards for the PM Clear operation.

Error Message `EID-1236: The PM Clear operation failed.`

Recommended Action Retry the operation, using cards other than ML-series or Ethernet-series cards.

Error Message `EID-1600: Cannot provision the Layer 2 service.`

Recommended Action The operation is not supported on NE releases earlier than release 5.0. Remove those drops from the VLAN creation.

Error Message `EID-4045: Exception: The alarm profile is incompatible with the selected node.`

Recommended Action Select a different alarm profile, one that is compatible with the selected NE type.

Error Message `EID-5039: The CTM GateWay/CORBA service cannot be started because the notification service listening port is in use. Change the notification service port and restart the service, or try again after some time.`

Recommended Action Change the notification service port to a different port number. Alternatively, wait for some time and then try starting the Prime Optical GateWay/CORBA service.

Error Message `EID-5040: The CTM GateWay/CORBA service cannot be started because the notification service failed to start.`

Recommended Action Wait for a few minutes; then, retry.

Error Message `EID-6055: IOS communication session is null; cannot proceed.`

Recommended Action Wait for a few minutes; then, retry.

Error Message `EID-6059: ML card resync failure.`

Recommended Action Verify that the barebone configuration has been uploaded on the ML-series card. Reset the card. Verify that the SNMP trap destination has been set for the server on the NE.

Error Message `EID-6082: Cannot provision the port because bandwidth is not available.`

Recommended Action This error message is returned when an already provisioned port has consumed the entire available bandwidth for the group. Try provisioning the port in another group.

Error Message `EID-6292: The alarm type name cannot exceed 20 characters.`

Recommended Action Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).

Error Message `EID-6293: The alarm type name cannot be blank. Enter a unique alarm type name.`

Recommended Action Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).

Error Message `EID-6294: The alarm type name contains invalid characters. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).`

Recommended Action Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).

Error Message `EID-6296: You cannot add more than 50 alarm types.`

Recommended Action You have exceeded the maximum number of alarm types. You must delete an existing alarm type before adding a new one.

Error Message `EID-6298: The alarm type name that you entered already exists. Enter a unique alarm type name.`

Recommended Action Enter a unique alarm type name that contains 20 characters or fewer. Only the following characters are valid: 0-9, A-Z, a-z, and hyphen (-).

Error Message `EID-7033: Select the users to send the message to.`

Recommended Action In the Notify Users dialog box > Message Targets field, select recipients for your message. This list includes the default SuperUser, SysAdmin, NetworkAdmin, Provisioner, and Operator profiles, as well as any custom user profile that has been generated. You can select custom and multiple profiles by using the **Shift** and **Control** keys while clicking the profile, or click the **All CTM Users** radio button to send your message to all users, regardless of user type.

Error Message `Photonic Path Trace is in progress.`

Recommended Action Wait until the current Photonic Path Trace ends.

Error Message `An Inactive or Roll Pending circuit state is preventing Photonic Path Trace from starting. If Inactive, restore to Active. If Roll Pending, commit the roll operation.`

Recommended Action If the status of the circuit is Roll Pending, commit the roll operation. If the circuit is not active, check the service and restore its state to Active.

Error Message `Splitter-protected circuits are not supported.`

There is no workaround. The Photonic Path Trace feature is not supported for splitter-protected circuits.

Error Message `Regenerated circuits are not supported.`

There is no workaround. The Photonic Path Trace feature is not supported for circuits belonging to a regeneration group.

Error Message `The Source NE list is unavailable. Verify that the service on the circuit is active and that the state of all NEs is In Service.`

Recommended Action Check the service and the network elements involved in the circuit. The status of the service must be Active and the state of all the network elements must be In Service.

Error Message `The Destination NE list is unavailable. Verify that the service on the circuit is active and that the state of all NEs is In Service.`

Recommended Action Check the service and the network elements involved in the circuit. The status of the service must be Active and the state of all the network elements must be In Service.

Error Message `The source circuit node is unavailable. Verify that it is not damaged.`

There is no workaround. The circuit could be damaged.

Error Message `The destination circuit node is unavailable. Verify that it is not damaged.`

There is no workaround. The circuit could be damaged.

Error Message `No such entity exists.`

There is no workaround.

Error Message `No such interface.`

There is no workaround.

Error Message `An I/O error occurred.`

There is no workaround.

Error Message `No Photonic Path Trace is available for this circuit. Verify that the circuit is not damaged.`

There is no workaround. The circuit could be damaged.

Error Message `No reverse Photonic Path Trace is available for this circuit. Verify that the circuit is not damaged.`

There is no workaround. The circuit could be damaged.

Error Message `Photonic Path Trace could not be completed from the source to the destination. Restart Photonic Path Trace; if the problem persists, check the NE connections.`

Recommended Action Start Photonic Path Trace again. If the error persists, check the stability of connections with the network elements.

Error Message `Photonic Path Trace could not be completed from the destination to the source. Restart Photonic Path Trace; if the problem persists, check the NE connections.`

Recommended Action Start Photonic Path Trace again. If the error persists, check the stability of connections with the network elements.

F.2 Prime Optical Server Error Messages

Prime Optical server error messages appear in the Error Log and have the following syntax:

Date time: *filename(line-number)*: *module-severity-error-ID*: *error-message*

Example:

```
01/01/05 09:56:01 PM: cliroutines.c(80): CONFIG-DEBUG-1201: Unknown_ETHERNET_PORT 0
```

The following error messages are categorized by severity (critical, major, minor, and debug) and are listed in ascending numeric order within each category.

Note Because error messages are grouped in number ranges, they are not listed in exact numeric order.

The following subsections contain information about the various levels of server error messages:

- F.2.1 Critical Server Error Messages, page F-98
- F.2.2 Major Server Error Messages, page F-107
- F.2.3 Minor Server Error Messages, page F-129
- F.2.4 Debug Server Error Messages, page F-147

F.2.1 Critical Server Error Messages

Error Message `EID-601: Failed to open trap listener socket.`

Recommended Action UDP socket 162 should not be taken by another program. If another program is using UDP socket 162, stop that program. Also, verify that the Prime Optical server is running as root.

Error Message `EID-1023: Failed to retrieve circuit manager.`

Recommended Action Contact the system administrator.

Error Message `EID-1024: Failed to retrieve circuit data. Check circuit status. Contact the system administrator if the problem persists.`

Recommended Action Verify that the circuit has been discovered. Contact the system administrator if the problem persists.

Error Message `EID-1025: Could not get access to one of the circuit nodes. Verify that you have user privileges for all circuit nodes. Contact the administrator if the problem persists.`

Recommended Action Verify that you have user privileges for all the nodes in the circuit. If the problem persists, contact your system administrator.

Error Message `EID-1026: Roll creation request failed.`

Recommended Action Try again. Contact system administrator for more information.

Error Message `EID-1027: Error: Cannot proceed with roll creation.`

Recommended Action Close the wizard and try again.

Error Message `EID-1028: An error occurred while setting the roll to point. Try again.`

Recommended Action Perform the operation again.

Error Message `EID-1029: Roll to point is not fully specified. Choose available points.`

Recommended Action Choose available points.

Error Message `EID-1030: Select the circuit termination point.`

Recommended Action Select the circuit termination point.

Error Message `EID-1031: The selected roll path is invalid.`

Recommended Action Choose a valid circuit termination point as the roll path.

Error Message `EID-1032: Failed to complete the roll.`

Recommended Action Contact your system administrator.

Error Message `EID-1033: Failed to delete the roll.`

Recommended Action Contact your system administrator.

Error Message `EID-1034: Failed to cancel the roll.`

Recommended Action Contact your system administrator.

Error Message `EID-1035: Failed to finish the roll.`

Recommended Action Contact your system administrator.

Error Message `EID-1036: Failed to retrieve VAP spans.`

Recommended Action Contact your system administrator.

Error Message `EID-1037: Failed to retrieve VT options.`

Recommended Action Contact your system administrator.

Error Message `EID-1038: Failed to set low-order options.`

Recommended Action Contact your system administrator.

Error Message `EID-1039: Failed to set VAP destination.`

Recommended Action Contact your system administrator.

Error Message `EID-1040: An error occurred while setting the nodes.`

Recommended Action Contact your system administrator.

Error Message `EID-1041: Invalid span selection.`

Recommended Action Select a different route.

Error Message `EID-1042: Failed to retrieve circuit attributes from the database.`

Recommended Action Try again later. If the problem persists, contact the system administrator.

Error Message `EID-1043: There are no links available for circuit creation.`

Recommended Action Select node groups that have links between them. Circuits cannot be created between nodes that are not connected by links.

Error Message `EID-1044: VT tunnel links cannot be used for STS/VT tunnel circuit types.`

Recommended Action Select other link types from the wizard map and continue.

Error Message `EID-1045: There are no spans available for this link.`

Recommended Action This link does not have enough bandwidth for the current circuit size. Select another route for the current circuit or delete some circuits going through the selected link. If you need help to do this, contact your system administrator.

Error Message `EID-1046: Select an adjacent node first.`

Recommended Action Select an adjacent node.

Error Message `EID-1047: Select a node first.`

Recommended Action Select a node.

Error Message `EID-1048: The link is down. Select another link.`

Recommended Action Select another link.

Error Message `EID-1049: Cannot select this node. Only source nodes and nodes attached to the included spans are selectable.`

Recommended Action In the map view, select a node that is attached to an already included span.

Error Message `EID-1050: This port is already assigned. The east and west ports must be different.`

Recommended Action Choose another port.

Error Message `EID-1051: You cannot create a BLSR with these attributes. This means that all nodes and spans in your network have been excluded. Click the "Excluded nodes" button to see a list of nodes and why they cannot be included in the BLSR you are creating.`

Recommended Action To correct this error:

Step 1 Click **OK** in the warning dialog box. The Working Span Selection dialog box appears with an empty map.

Step 2 Click **Excluded Nodes**. The Excluded Nodes dialog box appears. It lists all the nodes excluded from the ring creation and the reasons for excluding them.

Step 3 Correct the problem and perform the operation again.

Step 4 If the problem persists, contact the system administrator.

Error Message `EID-1052: An error occurred while adding the span.`

Recommended Action Click the **Details** button to view the reason why the span was not added. If reason is "not sufficient," contact your system administrator.

Error Message `EID-1053: An error occurred while removing the span.`

Recommended Action The Details button shows the reason for not removing the span. Review the reasons. If the problem persists, contact Cisco technical support.

Error Message `EID-1054: An error occurred while reversing the span.`

Recommended Action The Details button shows the reason for not reversing the span. Review the reasons. If the problem persists, contact Cisco technical support.

Error Message `EID-1055: An error occurred while setting the protect ports.`

Recommended Action Click the **Details** button to view the reason for the failure. Correct the error and retry or contact your system administrator.

Error Message `EID-1056: An error occurred while retrieving the working spans for map update.`

Recommended Action The ring model might not exist in the server. Close the table; then, relaunch it and try to upgrade again.

Error Message `EID-1057: An error occurred while provisioning.`

Recommended Action Click the **Details** button to view the reason why provisioning failed. Correct the problem and retry. If the problem persists, contact your system administrator.

Error Message `EID-1058: An error occurred while upgrading.`

Recommended Action Click the **Details** button to view the reason why the update failed. Correct the problem and retry. If the problem persists, contact your system administrator.

Error Message `EID-1059: An error occurred while editing.`

Recommended Action Click the **Details** button to view the reason why the edit failed. Correct the problem and retry. If the problem persists, contact your system administrator.

Error Message `EID-1060: An error occurred while deleting.`

Recommended Action Click the **Details** button to view the reason why the deletion failed. For more information, contact Cisco technical support.

Error Message `EID-1061: An error occurred while creating the ring provisioner.`

Recommended Action Mark the NEs in the ring as Out of Service and In Service again.

Error Message `EID-1062: An error occurred while retrieving the protect port details.`

Recommended Action Click the **Details** button to view the reason for failure. For more information, contact Cisco technical support.

Error Message `EID-1063: Cannot have a four-fiber ring on` *`location`*`.`

Recommended Action The current topology does not support 4-fiber rings. Click the **Details** button to view reasons why the 4-fiber ring is not supported. Contact your system administrator.

Error Message `EID-1064: An error occurred while submitting the switch command job to the server.`

Recommended Action Try again later.

Error Message `EID-1065: Cannot set reversion to INCONSISTENT.`

Recommended Action Change the selection.

Error Message `EID-1066: The Start Ring ID value must be less than or equal to the End Ring ID value.`

Recommended Action Enter a start ring ID that is less than or equal to the end ring ID.

Error Message `EID-1067: The Start Ring ID value cannot be empty.'`

Recommended Action Enter a start ring ID.

Error Message `EID-1068: The End Ring ID value cannot be empty.`

Recommended Action Enter an end ring ID.

Error Message `EID-1069: The ring ID cannot be empty.`

Recommended Action Enter a value in the Ring ID field.

Error Message `EID-1070: Member numbers must be unique and must be in the range 1 to 256.`

Recommended Action Enter a unique number from 1 to 256.

Error Message `EID-1071: The member circuit name cannot end with \"ROLL**\" and the name length must be less than 48.`

Recommended Action Enter a name that contains fewer than 48 characters and does not end with \ROLL**\.

Error Message `EID-1072: You must select a span for each member. No span selected for member #.`

Recommended Action Select a span for the member.

Error Message `EID-1074: The time slot is already allocated for another member of this VCAT. Please select a different time slot.`

Recommended Action Change the values you entered in the Time Slot Restriction field, in the Member Preferences table, so the numbers are not identical.

Error Message `EID-1701: Cannot allocate memory for: value.`

Recommended Action The CTMServer.cfg file has been corrupted. Reinstall the Prime Optical server.

Error Message `EID-1704: Error connecting to the database.`

Recommended Action The CTMServer.cfg file has been corrupted. Reinstall the Prime Optical server.

Error Message `EID-1715: Failed to get memory for SNMP packet.`

Recommended Action Restart the Prime Optical server. If the problem persists, add memory to the workstation.

Error Message `EID-1717: Failed to bind SNMP socket.`

Recommended Action There is a conflict for the UDP socket. Stop the conflicting UNIX process or reboot the Prime Optical server.

Error Message `EID-1722: Failed to open SNMP port.`

Recommended Action There is a conflict for the UDP socket. Stop the conflicting UNIX process or reboot the Prime Optical server.

Error Message `EID-1725: Failed to open a disk file filename errno=error-number-from-file /usr/include/sys/errno.h.`

Recommended Action Prime Optical could not open SpoolFile in the CTMSHOME directory. Check for file permissions and verify that the Prime Optical server is running with SuperUser privileges. The file system containing SpoolFile must be installed on a local file system.

Error Message `EID-1726: Line line-number: Syntax error: string.`

Recommended Action This error relates to a process resource or syntax error on a line number. You should tune the resource or correct the syntax error.

Error Message `EID-1734: Service service-name failed to initialize.`

Recommended Action Look for previous error messages from the service that failed to determine the cause and fix for the problem. Verify that the Oracle database is running and that there are enough free resources (memory, sockets, and so on) on the server workstation.

Error Message `EID-1736: Failed to initialize UDP socket pool.`

Recommended Action There were not enough sockets available for the server to start. Check the /etc/system file on the server workstation for the following lines:

```
set rlim_fd_max=XXX
set rlim_fd_cur=YYY
```

The value of *XXX* should be greater than or equal to 4096. The value of *YYY* should be greater than or equal to 2048. Adjust the value; then, restart the server workstation.

Error Message `EID-2002: Bad category value in JMOCO event.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2003: JMOCO event is null.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2025: Cannot initialize the NE Service. Trying to stop the service.`

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with the output from the getinfo script.

Error Message `EID-2026: Exception string occurred while initializing the NE Service. Trying to stop the service.`

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with the output from the getinfo script.

Error Message `EID-3101: init: Exception value occurred while initializing trap service. The snmpTrapDispatcher or snmpTrapHandler could not be started.`

Recommended Action The SNMP Trap Service could not start worker threads. Restart the Prime Optical server.

Error Message `EID-3105: createSnmpTrapHandler: Snmp Exception`

Recommended Action This message might indicate a conflict in binding to the trap listener port. Remove any other UNIX process that is using this port.

Error Message `EID-3106: createSnmpTrapHandler: Exception` *`string`*`.`

Recommended Action Report the exception string to Cisco technical support.

Error Message `EID-3107: createSnmpTrapHandler: run Exception` *`string`*`.`

Recommended Action Report the exception string to Cisco technical support.

Error Message `EID-3110: Exception:` *`string`* `occurred while creating Snmp trap queue.`

Recommended Action This is a fatal error with the Prime Optical initialization. Restart the Prime Optical server.

Error Message `EID-3111: Main exception:` *`string`* `occurred while creating Snmp Trap Service.`

Recommended Action This is a fatal error with the Prime Optical initialization. Restart the Prime Optical server.

Error Message `EID-3112: Run failed deque/publish trap exception: Cannot send a message to the JMS server; - nested throwable: (java.net.SocketException: Broken pipe)`

Recommended Action This error occurs when the SNMP Trap Service fails to publish messages to the JMS bus. The problem is caused by a stale or dead JBOSS (JMS) process. To fix the problem, enter the command **/usr/ucb/ps -auxww | grep -i org.jboss.Main**, which gives you the ID of the JBOSS process. Then, kill the process and restart the SNMP Trap Service. Alternatively, enter the command **opticalctl stop**, then **opticalctl start**.

Error Message `EID-4033: LCI trap forwarder not available for ONS 1530x.`

Recommended Action Restart the NE service for the ONS 15305 NE.

Error Message `EID-4235: Exception: No node exists with NEDB ID` *`string`*`.`

Recommended Action Contact Cisco technical support.

Error Message `EID-4237: Exception: Network Manager creating links from DB rows generated an exception.`

Recommended Action Contact Cisco technical support.

Error Message `EID-6050: Exception. This method is not implemented for this network element.`

Recommended Action Contact Cisco technical support.

Error Message `EID-6051: Exception occurred while retrieving NE information.`

Recommended Action Contact Cisco technical support.

F.2.2 Major Server Error Messages

Error Message `EID-202: Error destroying thread.`

Recommended Action The CTMServer.cfg file has been corrupted. Reinstall the Prime Optical server.

Error Message `EID-203: Invalid thread ID.`

Recommended Action If the Prime Optical server starts, ignore this internal error. If the server does not start, increase the memory or swap space on the server workstation. If the problem persists, contact Cisco technical support.

Error Message `EID-204: The ML Series Card to NE Connection username is a mandatory field. Specify a username.`

Recommended Action Enter a username for ML card-to-NE connections.

Error Message `EID-206: Error scheduling work.`

Recommended Action If the Prime Optical server starts, ignore this internal error. If the server does not start, increase the memory or swap space on the server workstation. If the problem persists, contact Cisco technical support.

Error Message `EID-208: Work queue/work was destroyed.`

Recommended Action If the Prime Optical server starts, ignore this internal error. If the server does not start, increase the memory or swap space on the server workstation. If the problem persists, contact Cisco technical support.

Error Message `EID-209: Worker thread is exiting.`

Recommended Action If you receive this error during normal operation, restart the server. This error is normal during shutdown.

Error Message `EID-212: Error waiting on a semaphore.`

Recommended Action If the Prime Optical server starts, ignore this internal error. If the server does not start, increase the memory or swap space on the server workstation.

Error Message `EID-218: Memory corruption: bad header.`

Recommended Action Restart the Prime Optical server.

Error Message `EID-219: Memory corruption: bad footer.`

Recommended Action Restart the Prime Optical server.

Error Message `EID-226: Error creating socket.`

Recommended Action If the Prime Optical server starts, ignore this internal socket-related error. If the server does not start, check the /etc/system file on the server workstation for the following lines:

```
set rlim_fd_max=XXX
set rlim_fd_cur=YYY
```

The value of *XXX* should be greater than or equal to 4096. The value of *YYY* should be greater than or equal to 2048. The value of rlim_fd_max should be greater than the value of rlim_fd_cur. Adjust the values; then, restart the server workstation.

Error Message `EID-227: Error in socket bind.`

Recommended Action If the Prime Optical server starts, ignore this internal socket-related error. If the server does not start, check the /etc/system file on the server workstation for the following lines:

```
set rlim_fd_max=XXX
set rlim_fd_cur=YYY
```

The value of *XXX* should be greater than or equal to 4096. The value of *YYY* should be greater than or equal to 2048. Adjust the value; then, restart the server workstation.

Error Message `EID-228: Error in socket listen.`

Recommended Action This is an internal error. If the Prime Optical server is not operating normally, restart the server.

Error Message `EID-229: Invalid socket.`

Recommended Action This is an internal error; no action is required.

Error Message `EID-232: Error establishing connection.`

Recommended Action The CTMServer.cfg file has been corrupted. Reinstall the Prime Optical server.

Error Message `EID-237: Timer thread exiting.`

Recommended Action If the timer thread exits, the software and configuration upload/download will not work properly. Restart the server.

Error Message `EID-238: Unable to schedule timer work.`

Recommended Action This is an internal error; no action is required.

Error Message `EID-313: Length of request is more than expected.`

Recommended Action This is an internal protocol error. The Prime Optical client will display the appropriate message.

Error Message `EID-314: CTM server port not specified in configuration file.`

Recommended Action This is an internal protocol error. The Prime Optical client will display the appropriate message.

Error Message `EID-321: Unable to set up database entry for NE #`*`NE-ID`*`.`

Recommended Action This is an internal protocol error. The Prime Optical client will display the appropriate message.

Error Message `EID-325: Error encoding arguments.`

Recommended Action This is an internal protocol error. The Prime Optical client will display the appropriate message.

Error Message `EID-326: Error disabling the user login for` *`username`*`.`

Recommended Action This is an internal protocol error. The Prime Optical client will display the appropriate message.

Error Message `EID-327: Maximum number of client connections exceeded for` *`IP-address`*`:`*`socket-number`*`.`

Recommended Action This is an internal protocol error. The Prime Optical client will display the appropriate message.

Error Message `EID-425: The EMS server may require a restart.`

Recommended Action Restart the server. If the error persists, capture a LAN trace from the Prime Optical server to help debug the problem.

Error Message `EID-606: Active alarm recovery looping for NE ID.`

Recommended Action The Prime Optical server cannot recover the active or standing alarms on the NE because of a loop in the SNMP agent on the NE. Restart the NE.

Error Message `EID-809: Circuit creation failed between endpoints.`

Recommended Action Create circuits using CTC or the Prime Optical Create Circuit wizard.

Error Message `EID-810: RPR got created partially because creation of some member circuit failed.`

Recommended Action Create the member circuits using the L2 topology point-to-point Create Circuit wizard or CTC.

Error Message `EID-819: Selected topology is undergoing Resync. Please wait until the L2 Topology Resync is completed.`

Recommended Action Wait until the topology resynchronization is completed.

Error Message `EID-820: Some of the selected L2 topologies is undergoing Resync. Please wait until the L2 Topology Resync is completed. Please click details to see the list of L2 topologies undergoing resync.`

Recommended Action Wait until all the selected topologies complete the resynchronization or select the topologies that have completed resynchronization and then perform the operation.

Error Message `EID-821: Select a row and then click on Create L2 service button.`

Recommended Action Select a row in the topology table before clicking the Create L2 Service button.

Error Message `EID-1101: Database-error-string.`

Recommended Action The database error string describes the error in detail. If the Prime Optical server fails to come up, check the Oracle username and password. For more information, refer to the Oracle documentation.

Error Message `EID-1301: Error-string.`

Recommended Action This is a generic internal error used for debugging purposes.

Error Message `EID-1302: System error: error-string.`

Recommended Action This is a generic internal error used for debugging purposes.

Error Message `EID-1401: The OSI daemon osiamxd is not present.`

Recommended Action The CTMServer.cfg file has been corrupted. The Open System Interconnection (OSI) daemon osiamxd is missing. Reinstall the Prime Optical server.

Error Message `EID-1721: Failed to connect to a socket.`

Recommended Action The CTMServer.cfg file has been corrupted. Reinstall the Prime Optical server.

Error Message `EID-1723: Invalid write errno = error-number-from-file /usr/include/sys/errno.h, size_to_write = size, wrote number bytes.`

Recommended Action This is an internal socket error. Data to the OSS overflowed, but the error will be corrected automatically.

Error Message `EID-1724: Invalid read errno = error-number-from-file /usr/include/sys/errno.h, size_to_read = size.`

Recommended Action This is an internal socket error. Check network connectivity.

Error Message `EID-1727: Cannot allocate memory.`

Recommended Action Increase the available memory or swap space on the server workstation and restart the application.

Error Message `EID-1728: Cannot find table element.`

Recommended Action This is an internal CLI parser error; no action is required.

Error Message `EID-1729: Entry already present in the table.`

Recommended Action This is an internal CLI parser error; no action is required.

Error Message `EID-1730: Invalid type in cfg_find_or_add.`

Recommended Action This is an internal CLI parser error; no action is required.

Error Message `EID-2008: Exception string occurred while notifying main.`

Recommended Action The internal TCP/IP communication channel has gone down. The Prime Optical server will restart the service automatically.

Error Message `EID-2014: Exception: string.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2015: Null NetElement for NE: NE-ID.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2016: Null NodeModel for NE: NE-ID.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2017: Exception: string for NE ID while string.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2018: Null pointer: exception-string for NE: NE-ID.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2019: Operation failed: exception-string for NE: NE-ID.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2021: Inventory collection was not completed for NE: NE-ID.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2027: VlanSetManager is null.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2028: NetCircuitWatchDog is null.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2029: TopologyClientImpl is null.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2030: EventDispatcher received is null.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2031: CerentCMService is null.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2032: Exception *string* occurred while reading NE *NE-ID* from the NE_Info_Table.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2033: Exception *string* occurred while reading GNE *GNE-ID* from the GNE_Table.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2034: Cannot find matching GNE in the GNE_Table. The database might be inconsistent.

Recommended Action Check the GNE information; then, restart the Prime Optical server.

Error Message EID-2041: Network is null.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2042: Circuit main thread has been interrupted.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2043: *Exception-string* occurred while initializing the circuit database tables.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2044: *Exception-string* occurred while deleting from Circuit Table.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2045: *Exception-string* occurred while deleting from Circuit Destination Table.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2046: *Exception-string* occurred while deleting from Circuit Span Table.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2047: *Exception-string* occurred while deleting from Circuit VLAN Table.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2048: *Exception-string* occurred while adding to Circuit Table.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2049: *Exception-string* occurred while adding to Circuit Destination Table.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2050: *Exception-string* occurred while adding to Circuit Span Table.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2051: *Exception-string* occurred while adding to Circuit VLAN Table.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2056: *Exception-string* occurred while sending circuit update event.

Recommended Action The internal TCP/IP communication channel has gone down. Restart the Prime Optical server.

Error Message EID-2057: Cannot instantiate Circuit Manager. Network instance is null.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2058: Cannot instantiate Circuit Manager. VLAN set manager is null.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2059: Cannot add discovered NE. Hostelem is null.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2060: Cannot add discovered NE. Error occurred while converting the IP address to a long value.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2061: Cannot add discovered node. NE information for GNE is null.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2062: *Exception-string* occurred while adding discovered NE.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2063: Null database row returned while adding a discovered NE.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2064: Null NE ID returned while adding a discovered NE.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2065: *Exception-string* occurred while getting tree node string for parent.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2066: *Exception-string* occurred while adding discovered NE to the area tree table.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2067: Error occurred while adding discovered NE to the database.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2068: *Exception-string* occurred while initializing discovered NE.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2069: *Exception-string* occurred while updating NE IP address.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2070: *Exception-string* occurred while initializing discovered NE that exists in the database.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2074: Invalid instance in topology update.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2077: Cannot add discovered NE to the database. JMOCO session is null.

Recommended Action The internal TCP/IP communication channel has gone down. The Prime Optical server will restart the service automatically.

Error Message EID-2081: Exception: *string* occurred while retrieving network links from the database.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2082: Exception: *string* occurred while reading snmp-trap-queue-size parameter value from the CTMServer.cfg file.

Recommended Action Check the CTMServer.cfg file for possible corruption. If the problem persists, contact Cisco technical support with this error message.

Error Message EID-2083: Exception: *value* occurred while reading snmp-trap-drop-size parameter value from the CTMServer.cfg file.

Recommended Action Check the CTMServer.cfg file for possible corruption. If the problem persists, contact Cisco technical support with this error message.

Error Message EID-2084: Exception: *string* occurred while reading snmp-trap-forwarding-port parameter value from the CTMServer.cfg file.

Recommended Action Check the CTMServer.cfg file for possible corruption. If the problem persists, contact Cisco technical support with this error message.

Error Message EID-2086: Exception: *value* occurred while reading the ons15454-callback-iiop-listen-port parameter value from the CTMServer.cfg file.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2087: Exception: *value* occurred while configuring the CORBA listener port for callbacks from ONS 15327 or ONS 15454 NEs.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2104: *Exception-string* occurred while adding discovered NE with IP address *IP-address*.

Recommended Action Exception needs to be analyzed. Contact Cisco technical support.

Error Message EID-2105: Adding operation for discovered NE with IP address *IP-address* not completed.

Recommended Action Exception needs to be analyzed. Contact Cisco technical support.

Error Message EID-2200: Software download operation failed on NE ID.

Recommended Action Retry the download operation. The cause of the software download operation failure is unknown.

Error Message `EID-2201: Software download operation failed on NE ID because it is not supported by the running agent version.`

Recommended Action The current TL1 agent version does not support the software download. The user cannot download a new agent software version through Prime Optical. Use the following procedure to correct the error:

Step 1 Open an FTP connection between the TFTP boot server and the NE.

Step 2 Enter the STDBY directory of the NE.

Step 3 From the TFTP server directory containing the catalog.txt file, manually transfer the catalog.txt file and all files listed in the catalog.txt file.

Error Message `EID-2202: Software download operation failed on NE ID because of a Flash read/write problem.`

Recommended Action The agent version transfer from the master Control and Monitoring Processor (CMP) to the slave CMP has failed. Use the following procedure to correct the error:

Step 1 Check the configuration of the master and slave CMPs.

Step 2 Check the status of the network between the master CMP and the slave CMP and verify that the CMP slaves are reachable.

Error Message `EID-2203: Software download operation failed on NE ID because of a problem during transfer from the TFTP server to the Master CMP.`

Recommended Action Transfer from the TFTP boot server to the master CMP has failed. Use the following procedure to correct the error:

Step 1 Verify that the TFTP boot server is running.

Step 2 Verify that the TFTP server address is correct.

Step 3 Check the status of the network between the TFTP server and the master CMP.

Step 4 Verify that the path name that lists where the catalog.txt file is located is correct.

Step 5 Verify that all files listed in the catalog.txt file are present in the same directory that contains the catalog.txt file.

Error Message `EID-2204: Software download operation failed on NE ID because the standby agent version is running.`

Recommended Action The standby agent version is running. A download operation is allowed only when the active agent version is running. There are two options to correct the error:

- Reset the NE to run the active agent version; then, overwrite the standby agent version by using the download operation.
- Swap the active and standby agent versions through the commit operation; then, overwrite the new standby agent version by using the download operation.

Error Message `EID-2205: Software revert operation failed on NE ID.`

Recommended Action The cause of the software revert operation failure is unknown. Retry the revert operation.

Error Message `EID-2206: Software revert operation failed on an NE ID because it is not supported by the running agent version.`

Recommended Action The current TL1 agent version does not support the revert operation. You cannot run the standby agent version through Prime Optical. Use the following procedure to correct the error:

Step 1 Connect to the NE through a Telnet connection.

Step 2 Swap the files contained in the STDBY directory and ACTIVE directory.

Step 3 Reset the NE.

Note The effect of this operation is different from that of a revert operation. In this operation, swapping the files of the STDBY and ACTIVE directories causes each subsequent NE reset operation to execute the software that was previously contained in the STDBY directory, which is now contained in the ACTIVE directory. In the revert operation, the default agent version is not changed.

Error Message `EID-2207: Software revert operation failed on NE ID because the standby agent version is corrupted.`

Recommended Action The standby agent version is corrupted. Use the following procedure to correct the error:

Step 1 Execute a new download operation to replace the current standby agent version with the valid one.

Step 2 Execute the revert operation again; then, verify that the new downloaded version works correctly.

Error Message `EID-2208: Software commit operation failed on NE ID.`

Recommended Action The reason for the failure of the software commit operation is unknown. Retry the commit operation.

Error Message `EID-2209: Software commit operation failed on NE ID because it is not supported by the running agent version.`

Recommended Action The current TL1 Agent version does not support the commit operation. The user cannot make the active agent version the current standby agent version in Prime Optical. Use the following procedure to correct the error:

Step 1 Connect to the NE through a Telnet connection.

Step 2 Swap the files contained in the STDBY directory and ACTIVE directory.

Step 3 Reset the NE.

Error Message `EID-2210: Software commit operation failed on NE ID because the standby agent version is corrupted.`

Recommended Action The standby agent version is corrupted. Use the following procedure to correct the error:

Step 1 Execute a new download operation to replace the current standby agent version with the valid one.

Step 2 Execute a revert operation and verify that the new downloaded version works correctly.

Step 3 Execute the commit operation again.

Error Message `EID-2211: Exception during NE ID reset.`

Recommended Action Reset the NE again.

Error Message `EID-2212: Software download operation failed because of invalid path parameter.`

Recommended Action Verify that the path name (representing the path on the TFTP server where the catalog.txt file is located) has the correct format.

Error Message `EID-2213: NE User Management failed - Limit of ten TL1 user profiles definition has been reached on the NE ID.`

Recommended Action There are already ten TL1 users configured on the NE. Use the following procedure to correct the error:

Step 1 Open the NE User Access Administration table.

Step 2 Delete one TL1 user.

Step 3 Retry the previous failed operation.

Error Message `EID-2214: NE User Management failed - Selected user doesn't exist on NE ID.`

Recommended Action No action.

Error Message `EID-2217: NE User Management failed - Duplicated username for NE ID.`

Recommended Action Retry the operation and verify that the username is not already present in the NE User Access Administration table.

Error Message `EID-2218: NE User Management failed - Super user cannot be modified or deleted on NE ID.`

Recommended Action You tried to delete or modify a SuperUser that had an active connection open. Use the following procedure to correct the error:

Step 1 Open the NE Active Users table and disconnect the SuperUser connection.

Step 2 Retry the operation.

Note You cannot delete a SuperUser.

Error Message `EID-2219: Performance Monitoring Task (date and time) not completed because of Agent busy on NE ID.`

Recommended Action This error occurs when the agent on the NE is busy. Verify that the agent on the NE is not overloaded.

Error Message `EID-2220: Performance Monitoring Task failed TL1 login to NE ID.`

Recommended Action Verify that the login information is correct. If the problem persists, contact Cisco technical support.

Error Message `EID-2221: Performance Monitoring task failed to connect to NE ID.`

Recommended Action Verify that the login information is correct. If the problem persists, contact Cisco technical support.

Error Message `EID-3015: Cannot start collector.`

Recommended Action Open the Control Panel. Expand **Prime Optical** and **PM Service**. Stop and restart the PM service. If the problem persists, contact the Prime Optical administrator.

Error Message `EID-3016: Cannot register for events.`

Recommended Action Open the Control Panel. Expand **Prime Optical** and **PM Service**. Stop and restart the PM service. If the problem persists, contact the Prime Optical administrator.

Error Message `EID-3017: Cannot open tables.`

Recommended Action Open the Control Panel. Expand **Prime Optical** and **PM Service**. Stop and restart the PM service. If the problem persists, contact the Prime Optical administrator.

Error Message `EID-3018: Cannot add new Cisco ONS 15454 value.`

Recommended Action Delete the NE from Prime Optical. Add the NE again; then, enable PM after the NE is reachable. If the problem persists, contact the Prime Optical administrator.

Error Message `EID-3019: Cannot retrieve information for new NE value.`

Recommended Action Delete the NE from Prime Optical. Add the NE again; then, enable PM after the NE is reachable. If the problem persists, contact the Prime Optical administrator.

Error Message `EID-3020: Cannot add new Cisco ONS 15454. Database is null value.`

Recommended Action Open the Control Panel. Expand **Prime Optical** and **PM Service**. Stop and restart the PM service. If the problem persists, contact the Prime Optical administrator.

Error Message `EID-3021: Cannot collect PM information from value. Value Retries failed (HTTP error: string).`

Recommended Action Wait for the next PM cycle. If the problem persists, open the CTMServer.cfg file and change the pm-wait-period value from 10000 to 30000. If the problem still persists, contact the Prime Optical administrator.

Error Message `EID-3022: Exception raised while retrieving InventoryTable from CTC.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3023: Error in getting InventoryTable from CTC. XML received is null.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3024: Error in parsing ETM XML.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3025: Error in parsing ETM XML.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3026: Exception raised while retrieving time from CTC.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3027: Error in getting time from CTC. XML received is null.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3028: Error in parsing time XML.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3029: Exception raised while retrieving NE tick rate from CTC.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3030: Error in getting tick rate. XML received is null.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3031: Error in parsing tick rate XML.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3032: Exception raised while retrieving NE time zone from CTC.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3033: Error in getting time zone. XML received is null.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3034: Error in parsing time zone XML.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3035: Exception raised while retrieving NE date from CTC.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3036: Error in getting date. XML received is null.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3037: Error in parsing date XML.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3038: Exception raised while retrieving InventoryTable from CTC.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3039: Error in getting InventoryTable from CTC. XML received is null.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3104: Exception: value occurred while reading ne-service-thread-pool-size parameter value from the CTMServer.cfg file.`

Recommended Action Check the CTMServer.cfg file for possible corruption. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-3108: Exception: value occurred while reading snmp-trap-port parameter value from the CTMServer.cfg file.`

Recommended Action Check the CTMServer.cfg file for possible corruption. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-3109: Exception: value occurred while reading snmp-trap-queue-size parameter value from the CTMServer.cfg file.`

Recommended Action Check the CTMServer.cfg file for possible corruption. If the problem persists, contact Cisco technical support with this error message. Or, reinstall the Prime Optical server.

Error Message `EID-4001: Exception: string occurred while connecting the CORBA object to the Object Request Broker (ORB).`

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-4002: Exception: string occurred while creating the ConfigManager Interoperable Object Reference (IOR).`

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-4003: Error in creating the ConfigManager IOR file.`

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-4004: Exception: string occurred while writing the IOR to the file.`

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-4005: Exception: string occurred while waiting for a CORBA client connection.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4006: Error in creating the SessionManager.`

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-4007: Exception: string occurred while creating the NodeManager for NE-ID.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-4008: Exception: *string* occurred while connecting the NodeManager for *NE-ID* to ORB.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-4018: Exception: *string* while registering for the internal CTM events with the main server.

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message EID-4020: Exception: *string* while configuring the Internet Inter Orb Protocol (iiop) listen port in CORBA ORB.

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message EID-4023: Exception: *string* while reading the list of logged users using JMOCO.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-4026: Exception: *string* while disconnecting the NodeManager for *NE-ID* to ORB.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-4027: Exception: *string* ConfigManager Init. Failed.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-4233: Failed to get available termination points.

Recommended Action Try again later. If the problem persists, contact Cisco technical support.

Error Message EID-4034: Could not add forwarding from IP *IP-address-1* to IP *IP-address-2*, port *port-number*. Exception: *string*.

Recommended Action Close all Cisco Edge Craft (CEC) sessions that are currently open. Retry opening CEC. If the error persists, restart the NE service for the ONS 15305 NE.

Error Message `EID-4239: Exception: NetworkManager.setPathTrace APIs raised exception.`

Recommended Action Try again later. If the problem persists, contact Cisco technical support.

Error Message `EID-4241: Exception: NetworkManager.getPathTrace APIs raised exception.`

Recommended Action Try again later. If the problem persists, contact Cisco technical support.

Error Message `EID-4242: Exception: Unable to delete manual link. Link ID is` *`string`*.

Recommended Action Review the reason for failure stated in the error message. Try again later. If the problem persists, contact Cisco technical support.

Error Message `EID-4301: 15454/15454SDH/15327/15600 equipment provisioning operation failed for NE` *`string`*. `Reason:` *`NE-ID`*.

Recommended Action View the reason for the failure. Correct the error by retrying the provision operation, or contact your system administrator.

Error Message `EID-4400: Error while constructing outgoing XML to CTC.`

Recommended Action Internal errors. No action is required. If you are having operational problems, contact Cisco technical support with this audit message.

Error Message `EID-4401: Error while parsing incoming XML from CTC.`

Recommended Action Internal errors. No action is required. If you are having operational problems, contact Cisco technical support with this audit message.

Error Message `EID-5000: Exception:` *`string`* `occurred while initializing ServiceManager.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-5001: Exception:` *`string`* `occurred while connecting the CORBA object to the ORB.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-5002: Exception: string occurred while creating the ServiceManager IOR.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-5003: Error in creating the ServiceManager IOR file.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-5006: Exception: string occurred while initializing CORBA.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-5007: Exception: string occurred while getting POA reference.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-5013: Exception: string occurred while notifying main.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-5031: Exception: string occurred while launching service process.`

Recommended Action Verify that the server has adequate RAM and swap space as listed in the *Cisco Prime Optical 9.6.3 Installation Guide*. Do not run unapproved software on the server.

Error Message `EID-5041: Exception: string occurred while trying to connect to Service Manager.`

Recommended Action Run the **opticalctl status** command to see what Prime Optical server processes are running. Restart the Prime Optical server using the **opticalctl start** command.

Error Message `EID-5042: Exception: string occurred while trying to disconnect from Service Manager.`

Recommended Action Run the **opticalctl status** command to see what Prime Optical server processes are running. Restart the Prime Optical server using the **opticalctl start** command.

Error Message `EID-6055: ML series card provisioning operation failed for NE: string - slot: NE_ID Reason: string.`

Recommended Action Check the ML-series card setting (Telnet information) and if the problem persists, contact Cisco technical support.

Error Message `EID-7002: Cannot retrieve wavelength values.`

Recommended Action Force a Refresh from NE operation on both ends of the link.

Error Message `EID-7032: Exception: string occurred when rolling back the transaction.`

Recommended Action Clean up the data cards that are involved in the topology and retry the operation.

Error Message `EID-7068: Topology should be in Sync Not Ready state to enable an L2 service on it.`

Recommended Action You cannot enable an L2 service on an L2 topology that is not in Sync Not Ready state. Select a different L2 topology. Alternatively, wait for the current topology state to change to Sync Not Ready; then, enable the L2 service on it.

F.2.3 Minor Server Error Messages

Error Message `EID-411: Invalid return of UDP sockets.`

Recommended Action This is an internal error; no action is required.

Error Message `EID-412: No free UDP sockets in pool.`

Recommended Action This is an internal error. Restart Prime Optical if the application is not communicating with any NEs.

Error Message `EID-413: Invalid SNMP type in packet.`

Recommended Action This is an internal error. Restart Prime Optical if the application is not communicating with any NEs.

Error Message `EID-414: Failed to open SNMP session.`

Recommended Action This is an internal error. Restart Prime Optical if the application is not communicating with any NEs.

Error Message `EID-416: Error in SNMP packet: error-string.`

Recommended Action This is an internal SNMP protocol error; no action is required.

Error Message `EID-417: Mangled SNMP response packet.`

Recommended Action This is an internal SNMP protocol error; no action is required.

Error Message `EID-418: Cannot connect to the server. The session timed out.`

Recommended Action The session timed out because the login to the RADIUS server failed. Try logging in again.

Error Message `EID-423: The EMS failed to recover missed alarms from NE ID.`

Recommended Action Prime Optical could not recover all alarms from the NE. Data might be missing from the Alarm Log due to connectivity problems or corrupt packets. In the Domain Explorer window, choose **Fault > Alarm Browser** to view the current alarms.

Error Message `EID-501: Incorrect parse of PM bulk string header for PM-data-type from NE ID.`

Recommended Action This is an internal parsing error. If the error persists, capture a LAN trace from the Prime Optical server to help debug the problem.

Error Message `EID-502: Unknown type number in PM bulk variable for PM-data-type from NE ID.`

Recommended Action This is an internal parsing error. If the error persists, capture a LAN trace from the Prime Optical server to help debug the problem.

Error Message `EID-503: Incorrect parse of PM bulk string for PM-data-type from NE ID.`

Recommended Action This is an internal parsing error. If the error persists, capture a LAN trace from the Prime Optical server to help debug the problem.

Error Message `EID-603: Incorrect trap recvfrom with errno = value.`

Recommended Action This is an internal processing error. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-604: Failed to parse SNMP trap definition file filename.`

Recommended Action The traps.lst file in the bin directory where the Prime Optical server was installed is corrupted. Delete the traps.lst file and restart the application.

Error Message `EID-605: Failed to recover alarm sequence #number to #number for NE ID.`

Recommended Action Prime Optical could not recover all alarms from the NE. There might be events missing in the Alarm Log due to connectivity problems or corrupt packets. However, the Alarm Browser will reflect the correct alarm information. In the Domain Explorer window, choose **Fault > Alarm Browser** to view the current alarms.

Error Message `EID-1402: The OSI daemon lockfile value is missing.`

Recommended Action This is an internal processing error. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-1403: The OSI daemon lockfile does not contain the PID.`

Recommended Action This is an internal processing error. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-1404: The ping to the OSI daemon failed.`

Recommended Action This is an internal processing error. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-1405: Failed to start the OPS daemon for logging.`

Recommended Action This is an internal processing error. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-1501: Maximum number of Telnet sessions has been reached.`

Recommended Action This is an internal processing error. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-1502: No more threads available for Telnet sessions.`

Recommended Action This is an internal processing error. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-1707: TL1 request exceeds maximum length: value.`

Recommended Action This is an internal processing error. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-1718: Invalid SNMP recvfrom with errno = value.`

Recommended Action This is an internal processing error. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-1719: Invalid SNMP sendto with errno = value.`

Recommended Action This is an internal processing error. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-1720: SNMP trap received from unknown NE ID.`

Recommended Action SNMP traps are being received from an NE that is not configured on the Prime Optical server. Check the configured IP addresses for all NEs by viewing the configuration files (startup-config). The IP addresses should match the IP address of the interface used in the "snmp-server trap-source IF" CLI in the NE configuration.

Error Message `EID-2001: Bad event JMOCO PDU value.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2004: Exception string occurred while notifying listeners.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2005: Bad severity value in JMOCO event.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2006: Event is not an instance of known VWEvents.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2007: Event is not an instance of EMSEvent.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2009: Null object is passed in.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-2010: Invalid object type is passed in.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2011: Null module type for slot *number*.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2012: JDAQ external exception: *string*.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2013: JDAQ internal exception: *string*.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2020: Invalid argument value: *string*, NE: *NE-ID*.

Recommended Action This is an internal processing error. If the problem persists, contact Cisco technical support with this error message.

Error Message EID-2021: Inventory collection was not completed for NE *NE-ID*.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2022: Exception *string* occurred while reading the corba-request-timeout parameter value from the CTMServer.cfg file.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2023: Exception *string* occurred while setting the corba-request-timeout parameter value for the ORB.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2024: Exception *string* occurred while reading the ne-service-thread-pool-size parameter value from the CTMServer.cfg file.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2029: Exception: *string* for NE: *exception-string* while *exception-string*.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2035: GNE next hop IP address *value* does not match the NE IP address *value* for NEDBAccessID *value*. The GNE_Table or NE_INFO_Table information might be inconsistent in the database.

Recommended Action Check the GNE next hop IP addresses; then, restart the Prime Optical server.

Error Message EID-2036: Exception *string* for NE *ID* occurred while polling for the discovered node.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2037: Unsupported model type or null version string for *NE-ID*.

Recommended Action Check the software version of the NE listed in the error message. You might need to upgrade Prime Optical.

Error Message EID-2038: No entry found in the version table for *NE-ID*.

Recommended Action Check the software version of the NE listed in the error message. You might need to upgrade Prime Optical.

Error Message EID-2039: Exception *string* occurred while finding time offset for *NE-ID*.

Recommended Action Check the software version of the NE listed in the error message. You might need to upgrade Prime Optical.

Error Message EID-2040: Cannot find time or time zone information for *NE-ID*.

Recommended Action Check the system time and time zone settings. You might have to adjust the settings.

Error Message EID-2052: Invalid object passed to Circuit Module work.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2053: Exception *string* occurred while adding circuit.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2054: Exception *string* occurred while deleting circuit.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2055: Exception *string* occurred while updating circuit.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2071: Exception *string* occurred while invoking addNetLink.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2072: CORBA exception *string* occurred while retrieving topology information.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2073: Exception *string* occurred while retrieving topology information.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2075: Exception *string* occurred while retrieving NE information.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2076: Null NE information.

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message EID-2082: Exception: *value* occurred while reading snmp-trap-queue-size parameter value from the CTMServer.cfg file.

Recommended Action Check the CTMServer.cfg file for possible corruption. If the problem persists, contact Cisco technical support with this error message.

Error Message EID-2084: Exception: *value* occurred while reading snmp-trap-forwarding-port parameter value from the CTMServer.cfg file.

Recommended Action Check the CTMServer.cfg file for possible corruption. If the problem persists, contact Cisco technical support with this error message.

Error Message EID-2089: InitialPoll to NE: *string* is failed, maybe username and password are wrong or *string*.

Recommended Action Verify that the NE is up and that the software loaded on the NE is supported. Wait for two or three polling cycles. If the problem persists, mark the NE as Out of Service and then In Service again.

Error Message EID-2090: Connection with NE: *string* is lost because *string*.

Recommended Action This problem can occur if the NE is reset or if the NE is not reachable on the network. Wait for two or three polling cycles. If the problem persists, mark the NE as Out of Service and then In Service again.

Error Message EID-2091: HTTP request failed to get software version from node *string* and reason is *string*.

Recommended Action Obtain the NE software version with a web browser using the URL http://*IP-address-of-NE*/getSwVersion. If the connection times out, the web server on the NE might be down. Contact technical support for the NE.

Error Message EID-2106: ObjId from CSM is not an instance of CsmObjId on NE: *NE-ID*.

Recommended Action This is an internal error; no action is required.

Error Message EID-2107: Invalid attribute value *value* in on NE: *NE-ID*.

Recommended Action There is a mismatch between the retrieved and expected automatic protection switching (APS) attributes; no action is required.

Error Message EID-2108: Put the new protocol map in cache on NE: *NE-ID*.

Recommended Action This is an internal message; no action is required.

Error Message EID-2154: CTC supplemental exception occurred: Creating thread is *string*, CTC node ID is *string*.

Recommended Action This error message is for informational purposes only; no action is required.

Error Message `EID-2156: Failed event/alarm resync for M-series card on slot slot-number.`

Recommended Action Mark the NE as Out of Service and In Service again. If the problem persists, contact Cisco technical support. You can also view alarms and events on the card by launching CTC on the NE.

Error Message `EID-2157: Failed to initialize session with M-series card on slot slot-number.`

Recommended Action Mark the NE as Out of Service and In Service again. If the problem persists, contact Cisco technical support.

Error Message `EID-2158: Successfully initialized session with M-series card on slot slot-number.`

Recommended Action This message is for informational purposes only; no action is required.

Error Message `EID-3001: Cannot start collection for string.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3002: Nothing was found value.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3003: Ignoring TCA.`

Recommended Action A threshold crossing alert (TCA) is being ignored. If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3004: Incorrect IP address passed in IPADDR_CHANGED Event value.`

Recommended Action Check the newly changed IP address and modify it if you entered the wrong information.

Error Message `EID-3005: Cannot write DS-1 PM for value.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3006: Cannot write DS-3 PM for value.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3007: Cannot write SONET PM for value.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3008: Cannot write STS PM for value.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3009: Cannot write VT PM for value.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3010: Cannot collect PM information from string. Data format error. Received data = string.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3011: Cannot read PM information from value.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3013: Cannot collect PM information from value. HTTP Error: value.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3014: Cannot collect PM. Writer creation failed.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-3047: PM Comm Session is null for NE-name.`

Recommended Action Verify that the NE has available connections. Check the PM data values with the local craft application.

Error Message `EID-3048: Robust PM collection not supported for NE-name.`

Recommended Action Check the PM data values with the local craft application.

Error Message `EID-3049: Exception during PM collection for NE-name: exception-string.`

Recommended Action Verify that the NE has available connections. Check the PM data values with the local craft application.

Error Message `EID-3050: Cannot write PM data for NE-name: exception-string.`

Recommended Action Verify that the database is operating correctly. Check the PM data values with the local craft application.

Error Message `EID-3051: Cannot write PM data for NE-name, data collected was blank.`

Recommended Action Check the PM data values with the local craft application.

Error Message `EID-3052: Partial replies not valid, PM collection failed for NE-name.`

Recommended Action Check the PM data values with the local craft application.

Error Message `EID-3100: args == null.`

Recommended Action This message is used for system logging only; no action is required.

Error Message `EID-3102: Initialized service:`

Recommended Action This message is used for system logging only and is normal at initialization; no action is required.

Error Message `EID-3103: Stopped service.`

Recommended Action This message is for system logging only and is normal when the system is stopped; no action is required.

Error Message `EID-4009: NEInfo is null.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4010: Invalid input parameter for the operation.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4011: The Configuration resync operation cannot be completed because of the non-working operational state of the network element.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4012: The Configuration resync is already in progress for this network element. Try after some time.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4013: Failed to authenticate the CTM user for performing this operation.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4014: This Interface Data Language (IDL) operation is not supported by the network element.`

Recommended Action Ignore this internal error message.

Error Message `EID-4015: Exception: string while reading configuration resync frequency from the CTMServer.cfg file. Using the default resync frequency.`

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-4016: Exception: string while reading configuration poll frequency from the CTMServer.cfg file. Using the default poll frequency.`

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-4017: Exception: string while reading configuration thread pool size from the CTMServer.cfg file. Using the default poll frequency.`

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message `EID-4019: Exception: string while reading the iiop-listen-port from the CTMServer.cfg file. Using the default port.`

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message EID-4021: Exception: *string* while reading configuration request queue size from the CTMServer.cfg file. Using the default request queue size.

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message EID-4022: CTM server is busy syncing the configuration information for this network element. Retry after some time.

Recommended Action This error message is used for internal protocols between the Prime Optical client and server. The client will display the appropriate error message.

Error Message EID-4024: Exception: *string* received from the model layer.

Recommended Action This error message is used for internal protocols between the Prime Optical client and server. The client will display the appropriate error message.

Error Message EID-4025: Exception: *string* while sending event about this change to other clients.

Recommended Action Restart the Prime Optical server. If the problem persists, contact Cisco technical support with this error message.

Error Message EID-4035: Could not remove forwarding from IP *IP-address-1* to IP *IP-address-2*, port *port-number*. Exception: *string*.

Recommended Action If the error persists, restart the NE Service for the ONS 15305 NE.

Error Message EID-4201: Failed to auto back up memory for *NE-name*: *value*.

Recommended Action Manually back up the configuration.

Error Message EID-4202: Failed to back up memory for *NE-name*: *value*.

Recommended Action Retry this operation later. If the problem persists, reboot the NE and retry.

Error Message EID-4203: Failed to restore memory for *NE-name*: *value*.

Recommended Action If you specify a source directory that is the same as the default destination for memory restore or software download, you will receive EID-4203 because the source file size becomes zero.

To retrieve the file, navigate to the appropriate path and restore the file *x* from *x*.old.

Error Message `EID-4204: Failed to download software for NE-name: value.`

Recommended Action If you specify a source directory that is the same as the default destination for memory restore or software download, you will receive EID-4204 because the source file size becomes zero.

To retrieve the file, navigate to the appropriate path and restore the file *x* from *x*.old.

Error Message `EID-4205: Failed to {activate | revert} for NE-name: Detailed-error-message.`

Recommended Action Follow the instructions given in the detailed error message.

Error Message `EID-4206: Exception: The node is not managed by the NEService.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4207: Exception: The node is not available.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4208: Exception: Chassis is null for the node.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4209: Exception: No terminations available for the given link size.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4210: Exception: NetworkManager raises exception.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4211: Exception: NetworkManager fails to modify Database Link Table.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4212: Exception: CreateLinkWithName called with null name.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4213: Exception: Failed to add link in database.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4214: Exception: Failed to get link in database.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4215: Exception: Failed to modify link in database.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4216: Exception: No link exists with Link ID string.`

Recommended Action The links have not yet uploaded to the database. Wait several minutes; then, try again. If the problem persists, check the link connectivity.

Error Message `EID-4217: Exception: Failed to get info. for link ID string from NCP.`

Recommended Action The links have not yet uploaded to the network. Wait several minutes; then, try again. If the problem persists, check the link connectivity.

Error Message `EID-4218: Exception: Accessing/Updating Database during processing of Auto. Discovered links failed.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4219: Exception: NetworkManager.getExpectedPathTrace raised exception.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4220: Exception: NetworkManager.getPossibleLinkSizes raises exception.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4223: Exception: Failed to get info. for link ID string from Database.`

Recommended Action The links have not yet uploaded to the database. Wait several minutes; then, try again. If the problem persists, check the link connectivity.

Error Message `EID-4224: Exception: deleteLink() Cannot Delete an Auto. Discovered Link. Link ID is string.`

Explanation If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4225: Exception: getNetLinks() DBException Raised while getting Network Links from DB.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4226: Exception: getNetLinksForNode() DBException Raised while getting Network Links from DB for Node Id.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4227: Exception: getDbLinksBetweenSrcAndDest() DBException Raised while getting Network Links from DB.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4228: Exception: deleteLink() DBException raised while executing deleteRow() for Link ID string.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4229: Exception: deleteLink() Invalid Link ID string.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4232: The termination point string is not available.`

Recommended Action Select a different termination point.

Error Message `EID-4236: Exception: NetworkManager.getPathTrace APIs raised exception. J1 Path Trace is not supported for this card.`

Recommended Action No action is required.

Error Message `EID-4238: Exception: NetworkManager.getPathTrace APIs raised exception. J1 Path Trace is supported only for XTC(DS1).`

Recommended Action No action is required.

Error Message `EID-4500: Exception: Invalid model type for this operation.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4501: Exception: Backup/Restore internal exception.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-4502: Error: string cannot be cancelled since they are waiting in the running list to be executed.`

Recommended Action Wait until the job or task completes, or restart the Prime Optical server.

Error Message `EID-4503: Error: Unable to read database table: string.`

Recommended Action Restart the Prime Optical server and retry.

Error Message `EID-4504: Error: Unable to process NE purge event for NEDBID: string.`

Recommended Action No action is required.

Error Message `EID-4506: Failed to configure node for string: string.`

Recommended Action Review the reason for the error and try again.

Error Message `EID-5011: Cannot register to listen for events.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-5012: Exception: string while processing CORBA requests.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-5022: Exception: string occurred while trying to get managed NE list.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-5023: Exception: string occurred while trying to get service ID.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-5024: Exception: string occurred while trying to purge NE.`

Recommended Action If you are having operational problems, contact Cisco technical support with this error message. Otherwise, ignore this error message; no action is required.

Error Message `EID-5025: The CTM Service is currently connected to Service Manager.`

Recommended Action Wait until the AUD-5004 message is displayed; then, click the **Activate** button again.

Error Message `EID-5026: The CTM Service is not connected to Service Manager.`

Recommended Action Wait until the AUD-5003 message is displayed; then, click the **Deactivate** button again.

Error Message `EID-5030: Exception: string occurred while performing DB operations.`

Recommended Action Check the database (DB) configurations. Verify that you can connect to the database and perform a structured query language (SQL) query.

Error Message `EID-6052: Exception: source and destination termination points are not valid. Cannot create Managed-Unmanaged link.`

Recommended Action Review the reason for failure stated in the error message.

Error Message `EID-6053: Link cannot be created due to presence of conflicting links.`

Recommended Action Review the reason for failure stated in the error message.

Error Message `EID-6054: Link not valid between the specified end points in the specified layer.`

Recommended Action Review the reason for failure stated in the error message.

Error Message EID-7000: Source PTP is supporting wavelength *string* while sink PTP is supporting *NE-ID*: The wavelengths don't match.

Recommended Action Select PTPs that support the same wavelength.

Error Message EID-7001: DWDM links can only be created between transponders/muxponders and DWDM cards.

Recommended Action Select PTPs such that an end of the link is on a transponder or muxponder and the other end is on a DWDM card.

Error Message EID-7031: Exception: *string* occurred when registering with VLAN Manager.

Recommended Action Retry the operation with a different VLAN number.

F.2.4 Debug Server Error Messages

Error Message EID-4028: *String* communication state: *NE-ID*; *string* = NESysID, *NE-ID* = NE connection state.

Recommended Action Try to restore the connection to the NE.

Note Detailed actions are NE-dependent.

Error Message EID-4029: *String* operational state: *NE-ID*; *string* = NESysID, *NE-ID* = NE operational state.

Recommended Action Set the NE state to In Service.

Error Message EID-4030: The NE resync operation cannot be completed because of the non-working operational state of the network element.

Recommended Action NE is already in synchronization state. Try again later.

Error Message EID-4031: The NE resync is already in progress for this network element. Try after some time.

Recommended Action NE is already in synchronization state. Try again later.

Error Message EID-4032: Invalid initial poll status.

Recommended Action Initial poll of the NE is in progress. Try again later.

Error Message `Photonic Path Trace is supported on OCHNC and OCHTrail circuits only.`

There is no workaround. Photonic Path Trace is available only for OCHNC and OCHTrail circuits.

F.3 Prime Optical Server Audit Messages

Prime Optical server audit messages appear in the Audit Log and include the following information:

- Date and time
- Module
- Filename
- Line number
- Audit ID
- Audit message text

Note Server audit messages are informational only and do not require any action, unless noted.

Audit Message `AUD-101: CTM user username logged in from location.`

Audit Message `AUD-102: CTM user username logged out from location.`

Audit Message `AUD-105: Job# number succeeded for NE: NE-name.`

Audit Message `AUD-106: Job# number failed for NE: NE-name with the error: error-message.`

Recommended Action The job can fail to start if the NE is unavailable or if the configured SNMP community string does not have write privileges. Verify that the NE is available and that the community string has write privileges.

Audit Message `AUD-107: Failed to recover changed configuration from NE: NE-name. Error: error-message.`

Recommended Action This error might occur if there are network problems or if the Flash device on the NE is busy. The Prime Optical server automatically tries to recover the changed configuration information. No action is required.

Audit Message `AUD-108: Job# number cancelled for NE: NE-name.`

Audit Message `AUD-109: Job# number started for NE: NE-name.`

Audit Message `AUD-110: Job# number failed to start for NE: NE-name.`

Recommended Action The job can fail to start if the NE is unavailable or if the configured SNMP community string does not have write privileges. Verify that the NE is available and that the community string has write privileges.

Audit Message AUD-111: Failed to recover changed configuration from NE: *NE-name*.

Recommended Action This error might occur if there are network problems or if the Flash device on the NE is busy. The Prime Optical server automatically tries to recover the changed configuration information. No action is required.

Audit Message AUD-112: Security violation for CTM user *username* from *IP-address*.

Audit Message AUD-113: CTM user *username-type-of-profile-change*.

Audit Message AUD-114: Topology changed: *type-of-topology-change-from-Domain-Explorer*.

Audit Message AUD-115: State for *NE-ID* changed from *state* to *state*.

Note Examples of possible states are In Service, In Service–Initializing, In-Service Synch Configuration, In Maintenance, Out of Service, Preprovisioned, and Under Maintenance.

Audit Message AUD-116: State for port *number* of *NE-ID* changed from *state* to *state*.

Audit Message AUD-117: GNE for *NE-ID* changed from *old-GNE-name* to *new-GNE-name*.

Audit Message AUD-118: CTM server started.

Audit Message AUD-119: CTM server stopped.

Audit Message AUD-120: The NE configured as *NE-ID* is actually *NE-ID*.

Audit Message AUD-121: Administrative task *number* deleted.

Audit Message AUD-122: The CTM service *service* has been stopped.

Audit Message AUD-123: The CTM service *service* has been started.

Audit Message AUD-124: CTM subnet *subnet*.

Audit Message AUD-125: Alarm acknowledged for NE: *NE-name*, index: *index*.

Audit Message AUD-126: Job# *number* is created for NE: *NE-name*.

Audit Message AUD-127: Time offset (*value* sec) is too big on NE: *NE-name*, will use CTMS time.

Audit Message AUD-128: Alarm acknowledged for NE *name* alarm ID *number*.

Audit Message AUD-129: Service *service-name* is started.

Audit Message AUD-130: Service *service-name* is shut down.

Audit Message AUD-131: NE *name* moved to In Service from *present-state*.

Audit Message AUD-132: NE *name* moved to Out of Service from *present-state*.

Audit Message AUD-133: NE *name* moved to Preprovisioned from *present-state*.

Audit Message AUD-134: NE *name* moved to In Maintenance from *present-state*.

Audit Message AUD-135: NE *name* Port *port-number* state changed to In Service.

Audit Message AUD-136: NE *name* Port *port-number* state changed to Out of Service.

Audit Message AUD-137: NE *name* Port *port-number* state changed to Preprovisioned.

Audit Message AUD-138: NE *name* Port *port-number* state changed to In Maintenance.

Audit Message AUD-139: NE *name* property changed - New Sys ID *value*.

Audit Message AUD-140: NE *name* property changed - New IP address *value*.

Audit Message AUD-141: NE *name* property changed - New NSAP address *value*.

Audit Message AUD-142: NE *name* property changed - New description *value*.

Audit Message AUD-143: NE *name* property changed - New community string *value*.

Audit Message AUD-144: NE *name* property changed - New CLLI code *value*.

Audit Message AUD-145: NE *name* property changed - New NE type *value*.

Audit Message AUD-146: NE *name* property changed - New model index *value*.

Audit Message AUD-147: NE *name* property changed - New subnet ID *value*.

Audit Message AUD-148: NE *name* property changed - New system title *value*.

Audit Message AUD-150: NE *name* property changed - New user label *value*.

Audit Message AUD-151: NE *name* property changed - New vendor name *value*.

Audit Message AUD-152: NE *name* property changed - New version *value*.

Audit Message AUD-153: NE *name* property changed - New GNE *value*.

Audit Message AUD-154: NE *name* property changed - Config Mode *number*.

Audit Message AUD-155: NE *name* property changed - Family Seed Old *value* New *value*.

Audit Message AUD-156: NE *name* property changed - PM collection is *value*.

Audit Message AUD-157: Subnet *value* title changed.

Audit Message AUD-158: Subnet *value* type changed.

Audit Message AUD-159: Subnet *value* topology changed.

Audit Message AUD-160: Subnet *value* GNE changed.

Audit Message AUD-161: Subnet *value* name changed.

Audit Message AUD-162: Subnet *value* user label changed.

Audit Message AUD-163: Topology changed - Group *value* added.

Audit Message AUD-164: Topology changed - Group *value* deleted.

Audit Message AUD-165: Topology changed - NE *NE-ID* added.

Audit Message AUD-166: Topology changed - NE *NE-ID* deleted.

Audit Message AUD-167: Topology changed - GNE *NE-ID* added.

Audit Message AUD-168: Topology changed - GNE *NE-ID* deleted.

Audit Message AUD-169: Topology changed - Subnet *subnetwork-ID* added.

Audit Message AUD-170: Topology changed - Subnet *subnetwork-ID* deleted.

Audit Message AUD-171: Topology changed - Node *NE-ID* added.

Audit Message AUD-172: Topology changed - Node *NE-ID* deleted.

Audit Message AUD-173: Topology changed - Node *NE-ID* modified.

Audit Message AUD-174: CTM user *username* logged in.

Audit Message AUD-175: CTM user *username* logged out.

Audit Message AUD-176: CTM user *username* security violations.

Audit Message AUD-177: CTM user *username* profile changed - User added.

Audit Message AUD-178: CTM user *username* profile changed - User deleted.

Audit Message AUD-179: CTM user *username* profile changed - User modified.

Audit Message AUD-180: CTM user *username* profile changed - Domain name changed.

Audit Message AUD-181: CTM user *username* profile changed - Node assignment changed.

Audit Message AUD-182: CTM user *username* profile changed - Domain description changed.

Audit Message AUD-184: Failed login threshold exceeded for user *username*.

Audit Message AUD-185: Password aged out for user *username*.

Audit Message AUD-186: TransportManager user *username* forced to log out from *IP-address*.

Audit Message AUD-187: TransportManager service *service-name* logged in from *username*.

Audit Message AUD-188: TransportManager service *service-name* logged out from *username*.

Audit Message AUD-189: TransportManager service *service-name* logged out unexpectedly from *username*.

Recommended Action Check the Service Monitor to see whether the server automatically started a new instance of this service. If a new instance does not start within five minutes, start it manually from the Control Panel window.

Audit Message AUD-190: TransportManager service *service-name* failed to contact server for 10 minutes. Stopping the service.

Audit Message AUD-191: CTM Authentication towards NE *value* via TL1 failed. Value: NE name.

Audit Message AUD-192: OSS with Profile Name *value1*, IP Address *value2* is successful. Value1: Profile name. Value2: IP Address.

Audit Message AUD-193: OSS with Profile Name value1, IP Address value2 is failed. Value1: Profile name. Value2: IP Address.

Audit Message AUD-194: OSS with Profile Name value1 is value2. Value1: Profile name. Value2: IP Address.

Audit Message AUD-195: The property value is changed. Value: Property name.

Audit Message AUD-196: NE (*value*) Property changed - Audit Trail Collection is Enabled/Disabled. Value: NE name.

Audit Message AUD-201: (TL1) started.

Audit Message AUD-202: (TL1) began shutdown.

Audit Message AUD-203: (TL1) completed shutdown.

Audit Message AUD-204: Accepted a secure port open request to IP address *IP-address*, port *number*.

Audit Message AUD-205: Accepted a user port open request to IP address *IP-address*, port *number*.

Audit Message AUD-206: User *username* logged in from IP address *IP-address*, port *number*.

Audit Message AUD-207: Rejected a user login from IP address *IP-address*, port *number*.

Audit Message AUD-208: User *username* logged out from IP address *IP-address*, port *number*.

Audit Message AUD-209: NE *ID* reported.

Audit Message AUD-210: Job cancelled.

Audit Message AUD-211: Task cancelled.

Audit Message AUD-212: Task modified.

Audit Message AUD-2000: Transport Manager successfully contacted NE: *name*.

Audit Message AUD-2001: Transport Manager was unable to contact: *name*.

Recommended Action Check network connectivity. Log into the Prime Optical client with SuperUser privileges and choose **Administration > Error Log**. Use the Error Log to debug the problem.

Audit Message AUD-2002: New node discovered and added to the database: Node IP: *IP-address* Node ID: *ID*.

Audit Message AUD-2004: NE model: *SysObjectId* not supported for NE: *IP-address*.

Explanation The NE model is not supported. This occurs when a non-ONS 15540 NE is added as an ONS 15540, or when a non-ONS 15540 NE is automatically discovered through the topology neighbors configured on the device.

Recommended Action Mark the device as Out of Service so that resources are not wasted on collecting information from unsupported NEs.

Audit Message AUD-2005: New system ID: *system-ID* of NE: *IP-address* conflicts with the system ID of an existing NE.

Explanation The new system ID configured on the NE is not unique. An existing NE already has this ID, which was configured on the device side.

Recommended Action On the device side, change the hostname of the misconfigured NE to a unique hostname.

Audit Message AUD-2006: NE's IP address: *IP-address* has been reassigned to a different NE. *Identifiers-of-the-two-NEs*.

Explanation The IP address of an existing NE was assigned to another NE. This can occur if you take an existing NE offline and assign its IP address to another NE.

Recommended Action Delete the offline NE from Prime Optical; then, add the other NE to Prime Optical.

Audit Message AUD-2011: NE Discovery State changed from *state* to *state*.

Audit Message AUD-2013: Time change event has occurred on NE: *NE-name*

Audit Message AUD-2014: Time zone change event has occurred on NE: *NE-name*

Audit Message AUD-2031: A communication error occurred on NE *NE-name*. The database might be out of sync, and resynchronization might be required.

Audit Message AUD-2032: A communication error occurred during the health poll on NE *NE-name*. The database might be out of sync, and resynchronization might be required.

Audit Message AUD-2033: An authentication failure occurred on NE *NE-name*.

Audit Message AUD-2034: A connection failure occurred on NE *NE-name*.

Audit Message AUD-2035: One or more events might be lost, and the database might be out of sync.

Audit Message AUD-2036: A runtime error occurred.

Audit Message AUD-2037: The NE will reboot in several seconds. Closing the connection.

Audit Message AUD-2038: The connection with the NE has been closed.

Audit Message AUD-2039: The database for NE *NE-name* is in sync. Resynchronization is not required.

Audit Message AUD-2040: The database for NE *NE-name* is out sync. Resynchronization is required.

Audit Message AUD-2041: The NE with IP address *IP-address* is already managed by CTM with a different NE ID (*ID*) and IP address (*IP-address*). Delete one of the NEs from the Domain Explorer.

Audit Message AUD-2042: Failed to complete robust fault synchronization on NE *NE-name*.

Audit Message AUD-2200: Active IP set to the primary IP.

Audit Message AUD-2201: Active IP set to the secondary IP.

Audit Message AUD-2202: Software download operation succeeded.

Audit Message AUD-2203: Software revert operation succeeded.

Audit Message AUD-2204: Software commit operation succeeded.

Audit Message AUD-2205: Software download operation failed.

Audit Message AUD-2206: Software download operation failed because it is not supported by the running agent version.

Audit Message AUD-2207: Software download operation failed because of a Flash reading/writing problem.

Audit Message AUD-2208: Software download operation failed because of a problem during transfer from the TFTP server to the master CMP.

Audit Message AUD-2209: Software download operation failed because of the standby agent version running.

Audit Message AUD-2210: Software revert operation failed.

Audit Message AUD-2211: Software revert operation failed because it is not supported by the running agent version.

Audit Message AUD-2212: Software revert operation failed because the current standby agent version is corrupted.

Audit Message AUD-2213: Software commit operation failed.

Audit Message AUD-2214: Software commit operation failed because it is not supported by the running agent version.

Audit Message AUD-2215: Software commit operation failed because the current standby agent version is corrupted.

Audit Message AUD-2216: Software download operation failed because of invalid path parameter.

Audit Message AUD-2217: Transport Manager failed TL1 login to NE ID.

Audit Message AUD-3051: Config state: Collector#: *value* Writer#: *value* DS1 Collection: *value* DS3 Collection: *value* Sonet Collection: *value* Sts Collection: *value* Vt Collection: *value* Store Non Zero Only: *value*.

Audit Message AUD-3052: Ignoring PM collection for *NE-name* for interval *time-stamp*.

Audit Message AUD-3053: Time-out error while obtaining PM data for *NE-name* for interval *time-stamp*.

Audit Message AUD-3054: PM collection failed for *string*. HTTP server too busy. (HTTP error: *string*.)

Audit Message AUD-3055: Processing NE time offset for *string*. Offset value too large *value*. So new offset value is 0.

Audit Message AUD-3056: Processing NE time offset for *string*. New offset value is *value*.

Audit Message AUD-3057: Data format error while obtaining PM data for *string* for interval *string*.

Audit Message AUD-3060: PM Comm Session is null for *NE-name*.

Audit Message AUD-3061: Robust PM collection not supported for *NE-name*.

Audit Message AUD-3062: Exception during PM collection for *NE-name*.

Audit Message AUD-3063: Cannot write PM data for *NE-name*.

Audit Message AUD-3064: Cannot write PM data for *NE-name*, data collected was blank.

Audit Message AUD-3065: Partial replies not valid, PM collection failed for *NE-name*.

Audit Message AUD-4101: Create Link operation succeeded for link *description*.

Recommended Action Informational message. No action is required.

Audit Message AUD-4102: Delete Link operation succeeded for link *description*.

Recommended Action Informational message. No action is required.

Audit Message AUD-4104: Create Link operation failed for link *description*.

Recommended Action Verify that you followed the steps in 3.6.5 Creating Links.

Audit Message AUD-4105: Delete Link operation failed for link *description*.

Recommended Action Verify that you followed the steps in 3.6.5 Creating Links.

Audit Message AUD-4110: Provisioning of {class map | policy map | table map}: {*class-map-name* | *policy-map-name* | *table-map-name*} on *NE-ID* succeeded.

Audit Message AUD-4111: Provisioning of {class map | policy map | table map}: {*class-map-name* | *policy-map-name* | *table-map-name*} on *NE-ID* failed.

Audit Message AUD-4201: Auto Backup Job Status has: {Succeeded | Failed}.

Recommended Action This message informs you of the status of the automatic daily backup for each NE. No action is required.

Audit Message AUD-4205: {Activate | Revert} Command Status has: {Succeeded | Failed}.

Recommended Action If the command status is Failed, check the Error Log for EID-4205 for a detailed explanation of the failure.

Audit Message AUD-4302: Cannot launch the NE Explorer because data retrieval from the NE has failed. You can force the data retrieval by marking the NE Out Of Service and In Service.

Audit Message AUD-5000: During circuit creation.

Recommended Action Informational message during circuit creation. No action is required.

Audit Message AUD-5001: The CTM Service *service-name* is being started.

Recommended Action The service is being launched, but might not have started up completely. Do not perform a Stop operation on this service again until you see the AUD-5003 message.

Audit Message AUD-5002: The CTM Service *service-name* is being stopped.

Recommended Action The service is being stopped, but might not have shut down completely. Do not perform a Start operation on this service again until you see the AUD-5004 message.

Audit Message AUD-5003: The CTM Service *service-name* has connected to Service Manager.

Recommended Action The service has started. You can perform a Stop operation.

Audit Message AUD-5004: The CTM Service *service-name* has disconnected from Service Manager.

Recommended Action The service has shut down. You can perform a Start operation.

Audit Message AUD-5005: The CTM Service *value* has unexpectedly disconnected from Service Manager. Value: Name of service.

Audit Message AUD-5006: The CTM Service *value1* has failed to contact Service Manager for *value2* minutes. Stopping the service. *Value1*: Name of service. *Value2*: Number of minutes.

Audit Message AUD-5011: NE *name* has been added.

Audit Message AUD-5012: NE *name* has been deleted.

Audit Message AUD-5013: NE *name* has been undeleted.

Audit Message AUD-5014: NE *name* purge procedure in progress.

Audit Message AUD-5015: NE *name* has been successfully purged.

Audit Message AUD-5016: NE *name* purge procedure has failed.

Audit Message AUD-5017: NE *name* has been discovered.

Audit Message AUD-5018: NE name has changed its Subnetwork ID from *old-subnet-name* to *new-subnet-name*.

Recommended Action If the automatic grouping of subnetworks option is enabled in Prime Optical, NEs that are part of a subnetwork may change subnetworks if a link connecting them to rest of the subnetwork goes down or if a link that connects the NEs to those of another subnetwork comes up. You can disable the automatic grouping of subnetworks through the Control Panel; see 3.5.6 Automatically Grouping NEs in Subnetworks, page 3-23.

Audit Message AUD-7000: Subnetwork Mode Automatic - Started regrouping of managed NEs in subnetwork.

Recommended Action Informational message. No action is required.

Audit Message AUD-7001: Subnetwork Mode Automatic - Completed regrouping of managed NEs in subnetwork.

Recommended Action Informational message. No action is required.

Audit Message AUD-7500: Starting discovery session *x*.

Audit Message AUD-7501: Starting discovery on NE Service *x* for session *y*.

Audit Message AUD-7502: The discovery request failed for NE Service *x*. This causes a partial failure of the discovery session *y*.

Audit Message AUD-7503: The discovery request for NE Service *x*, session *y* completed successfully.

Audit Message AUD-7504: The discovery request for NE Service *x*, session *y* was cancelled (expired timeout).

Audit Message AUD-7505: Detected an unexpected stop of the NE Service *x*. This causes a partial failure of the discovery session *y*.

Audit Message AUD-7506: The discovery request *x* completed successfully.

Audit Message AUD-7507: The discovery request *x* completed with partial success.

Audit Message AUD-7508: The discovery request *x* was cancelled. The timeout has expired.

Audit Message AUD-11000: Provisioning - Set attribute on module *module-name*. Parameters: *parameter-numbers*, *parameter*.cfg, *parameter* - successful.

Troubleshooting

This appendix offers troubleshooting steps to help solve high-level problems while using Cisco Prime Optical or Cisco Prime Optical GateWay. Refer to the troubleshooting procedures in this appendix before contacting the Cisco Technical Assistance Center (TAC) at http://www.cisco.com/tac.

This appendix includes the following troubleshooting information:

- G.1 Overview, page G-1
- G.2 Prime Optical Troubleshooting Tools, page G-2
- G.3 Installation Problems, page G-3
- G.4 Prime Optical Database Problems, page G-5
- G.5 Server Problems, page G-6
- G.6 Client Connectivity Problems, page G-18
- G.7 Client Operational Problems, page G-20
- G.8 Client Debug Messages, page G-42
- G.9 Prime Optical GateWay/CORBA Problems, page G-43

G.1 Overview

Troubleshooting involves:

1. Identifying the source of the problem—Which devices, links, interfaces, hosts, or applications have the problem?
2. Locating the problem on the network—On what VLAN, subnet, or segment is the problem occurring?
3. Comparing current network performance against an established baseline—Is the performance better or worse?
4. Finding out when the problem started—When did you first see the problem? Is it recurring?
5. Determining the extent of the problem—How widespread is the problem? Is it getting worse?

This appendix assumes that the server is installed under the default /opt/CiscoTransportManagerServer directory and the client is installed under the default /opt/CiscoTransportManagerClient directory (Solaris) or C:\Cisco\TransportManagerClient directory (Windows). If a directory other than the default installation directory is specified, replace the default path with the installed path.

G.2 Prime Optical Troubleshooting Tools

You can use all of the following tools to troubleshoot your system:

- Error and Audit Logs—Most NE communication problems that occur when adding a new NE to the Prime Optical domain can be diagnosed by looking at the Error and Audit Logs. See 8.5.1 Viewing the Audit Log, page 8-73 and 9.6.1 Viewing the Error Log, page 9-32.
- EMS alarms—Using the Dashboard, launch the Alarm Browser window to display only the EMS alarms. See 1.5.1 Dashboard, page 1-9.
- Self Monitor table—Launch the Self Monitor table to view server resource historical data. See 10.3.12 Using the Self Monitor Table, page 10-15.
- Debug options—Use this tool only when recommended by the Cisco TAC. See 9.6.4 Setting Debug Options, page 9-36. In some cases, you may need to run the Prime Optical client in debug mode. To run the Prime Optical client in debug mode, close the existing session and execute one of the following commands:
  - In Windows, enter:

    `\Cisco\TransportManagerClient8_5\ctm-`*`config`*`-debug.exe`

  - In Solaris, enter:

    `/opt/CiscoTransportManagerClient/ctmcdebug-start -`*`config`*

  where *config* is the network size (small, medium, large, or highend).
- Getinfo.sh script—Provides UNIX and Prime Optical configuration information. The following is an example of how to execute the getinfo.sh script:

  ```
  #cd /opt/Cis*r/bin
  #./getinfo.sh
  ```

  The getinfo.sh script generates two files, logtext.tar.Z and techinfo.txt.Z. These files are created under the /opt/CiscoTransportManagerServer directory. If one of these files is not created, run the getinfo.sh script in debug mode to see where the script is failing. The following is an example of how to run the script in debug mode:

  ```
  #cd /opt/Cis*r/bin
  #sh -x ./getinfo.sh
  ```

  If the script fails because of the following error: “Permission denied while running rsh,” it means that the server is not configured to perform the **rsh** command without authentication. Remote users are required to enter a password after issuing the **rsh** command.
- System parameter information—Output of commands such as **prstat** and **top** provides system parameter information that can be used to troubleshoot performance issues.

Caution Avoid changing the system parameters. Changing parameters such as the system timing results in substantial difference in poll and current times, which leads to server crashes.

- Prime Optical server log files—See 9.6.1 Viewing the Error Log, page 9-32 for a list of server logs.

  In general, there are two sets of log files for each Prime Optical service: service log and service error log. The service log is generated when you select trace error level in the Control Panel services. The service error log is generated when Prime Optical detects an exception with minor or higher severity.

The ctmop.log file is used to determine whether the server was stopped by the user or whether it shut down abnormally. If the server shuts down abnormally, check the core_pmon.log file to see if any of the critical services went down. Services that are considered critical are Oracle, SMService, OSAgent, and GateWay/CORBA.

Prime Optical server log files are located in the /opt/CiscoTransportManagerServer/log directory.

In the Process Monitoring tab of the Recovery Properties pane of the Control Panel, if a process is not running and is marked as critical, an alarm is generated and Prime Optical shuts down. The core_pmon.log contains the reason for the shutdown, while ctmop.log contains the opticalctl abort command entry. Oracle, OSAgent, and SMService are mandatory critical processes while Prime Optical GateWay/CORBA is not considered a mandatory critical process.

- Performance parameters—Prime Optical periodically monitors vital performance parameters and raises EMS alarms when they cross a predefined threshold value. See 9.4.4 Setting Up and Viewing Alarm Configuration Parameters, page 9-18 for a list of performance parameters. All performance data that is collected at each poll cycle is listed in the Self Monitor table. You can export the data from the Self Monitor table to a spreadsheet to produce graphics and identify trends.
- UNIX commands:
  - netstat—Shows the state of all sockets, all routing table entries, and all physical and logical interfaces.
  - snoop—Captures and inspects network packets.
  - /usr/platform/sun4u/sbin/prtdiag—Displays system diagnostic information, including the number of CPUs and the RAM.
  - vmstat—Reports virtual memory statistics.

G.3 Installation Problems

When the Prime Optical installation runs in debug mode, useful information is dumped to the console. Complete the following steps to run the Prime Optical server installation in debug mode:

Step 1 Enter the following command in the shell where you launch the installation:

```
setenv LAX_DEBUG true
```

Step 2 Enter the following command to start the Prime Optical server installation:

```
setup.sh -dev
```

G.3.1 Prime Optical Installation Fails Before the Database Is Created

If the Prime Optical installation fails before the database is created, do the following before reinstalling:

- Use the **ps -ef | grep setup** command to verify that the previous installation is not running. The installation script is setup.sh. If the installation process is still running even after you exit InstallAnywhere, terminate the installation with the **kill -9** *pid* command, where *pid* is the process identifier that is returned by the **ps -ef | grep setup** command.

- Verify that the /tmp directory is not full. During the Prime Optical installation, the /tmp directory is used to store a temporary copy of the installation scripts and the JRE used for installation. Use the **df -k** command to check if there is enough space on the other file systems (for example, in the /opt directory).
- Make sure that you follow the installation procedures explicitly. Even minor steps, such as creating the /tftpboot directory, must be completed. If you deviate from the documented installation procedures, you will encounter problems during installation.
- If you are not installing Prime Optical from the CD—for example, you are installing Prime Optical from your hard drive—make sure that all of the required scripts and files are available and have the correct ownership and permissions.

Note It is not recommended that you install Prime Optical from CD files copied to your hard drive.

You can use the /temp/dbinit.log for debugging when a new Prime Optical installation fails.

G.3.2 Prime Optical Installer Hangs or Quits

Check the disk space in the root and user installation directories. Also, check the disk space in the /tmp and /temp directories. If disk space is not a problem, check for available RAM.

G.3.3 Default Group Name Does Not Appear During New Installation

Verify the following when the default group name (root/other) does not appear in the Group Info panel during a new installation, or, if supplied, an “Invalid Groupname” error message appears.

- The /tmp folder is created in the correct directory.
- The installation scripts are executable. If not, use the **chmod a+r*** and **chmod a+x*** commands.

G.3.4 Insufficient RAM when Specifying the Destination Directory

Use the **prtconf** command to check your RAM and validate it against the specifications listed in the *Cisco Prime Optical 9.6.3 Installation Guide*.

G.3.5 SQL Errors

If you encounter SQL errors, check the log or err files in the /temp or /tmp directories and do one of the following:

- Check whether the /opt/Cisco*Server/cfg/CTMServer.cfg file exists.
- Make sure that the database password is correct. Use the password to connect to Oracle.

SQL problems occur when there is no connection to Oracle or there are Oracle command syntax violations in SQL.

G.3.6 Uninstaller Quits While Uninstalling the Prime Optical Server

While uninstalling the Prime Optical server, the uninstallation process might quit with the following error

message: “CTM server is running.” Use the **opticalctl status** command to check whether the Prime Optical server is running. If it is running, use the **opticalctl stop** command to stop the server and relaunch the uninstaller.

G.3.7 Things to Keep in Mind when Installing or Uninstalling Prime Optical

- After the main installation phase in the GUI, wait for several minutes while certain files and scripts are copied to the installation directory. Before proceeding, wait for the message “Please reboot your system.”
- Stop the Prime Optical server before starting the migration process.
- Stop the Prime Optical server before uninstalling it.
- The upgrade network size configuration is allowed only in medium-to-large, medium-to-high end, and large-to-high end configurations.
- The Prime Optical GateWay/CORBA option is disabled during migration. It will be reinstalled if it was previously installed.
- Use the /opt/Cisco*Server/UninstallerData/installvariables.properties file to make sure that all of your specifications during the preinstallation process are correct.
- All installation files are available in the /tmp or /temp directories.

G.4 Prime Optical Database Problems

G.4.1 PM Data, Audit Log Data, and Error Log Data Are Not Collected Correctly—CTM R7.0 and Earlier

Collect the following information:

- Error logs in the /opt/CiscoTransportManagerServer/logs directory
- Prime Optical database size

The following cases indicate that the problem is related to the partitioning of the database tables:

- The size of the Prime Optical database is medium, large, or high end.
- The log files contain ORA-01440 errors.

If the problem is related to the Audit Log or Error Log, collect the output of the following query:

```
select partition_name from user_segments where segment_name='ERROR_LOG_TABLE'
```

If PM data is not collected correctly, collect the output of the following query:

```
select partition_name from user_segments where segment_name=PM-table
```

An example of the last line of the query result is P01012007. This means that the latest partition was added on January 1, 2007. You have to manually add the partitions if the date when you performed the query is not January 1, 2007.

G.4.2 Database Crashes

If the database crashes, obtain a copy of all of the log files from the /oracle/admin/CTM/bdump and /oracle/admin/CTM/udump directories. The .trc file located in the udump directory contains the session status logs. The alert_CTM.log file located in the bdump directory contains the issues related to the different database processes and gives the process description with a time stamp.

G.4.3 Database Troubleshooting Tools

G.4.3.1 Checkdbinfo.sh Script

To debug Oracle performance issues, use the checkdbinfo.sh script located in the /opt/CiscoTransportManagerServer/bin directory. The /oracle/dbcheck.log file contains the output of the script.

G.4.3.2 Toad

Run a procedure using Toad and you can check the values of the procedure variables.

G.4.3.3 Prime Optical Database Functions

The displayphyloc and displayip functions that are defined in the Prime Optical database can be used to view data in a readable format. For example, the following query displays the list of installed nodes and the related IP address in readable format:

```
SELECT nesysid, display(neipaddr) FROM ne_info_table
```

See Chapter 3 of the *Cisco Prime Optical 9.6.3 Database Schema* for more information.

G.4.3.4 Tnsping Utility

For remote databases, performance issues might cause process timeouts. Use the tnsping utility to confirm that process timeouts occur.

G.5 Server Problems

This section describes troubleshooting procedures for Prime Optical server-related problems.

Note Log in as the root user on the Solaris workstation where the Prime Optical server is installed to perform any operations on the Solaris workstation.

G.5.1 Conditions that Affect Prime Optical Server Performance

The "System Requirements" chapter in the *Cisco Prime Optical 9.6.3 Installation Guide* lists server, CPU, CPU speed, disk space, and RAM requirements for different types of Prime Optical installations. These requirements are derived from guidelines based on scalability simulation testing.

Actual Prime Optical server performance varies for each customer and is affected by:

- The total number of NEs actively managed by Prime Optical
- The number of NE-related services (including northbound services) running on the server
- The rate of circuit provisioning and the methods used for provisioning
- The rate of network growth (for example, adding 50 NEs to Prime Optical at once)
- The rate of configuration change updates received from the NEs
- The number of circuits provisioned with no signals that generate threshold crossing alerts (TCAs)
- The number of unacknowledged alarms in the Prime Optical database
- The rate of alarm bursts received from the NEs
- The actual number of circuits provisioned in the Prime Optical database

The following conditions might indicate that your Prime Optical installation is near or at capacity:

- Your daily CPU utilization is consistently above 80%
- You experience loss of connectivity (LOC) to 1% to 5% of nodes at random
- Your RAM usage is 100% or your system swaps frequently
- You receive many configuration updates from the NEs
- Your system experiences high Java garbage collection time

Note The Java garbage collection time is determined by engineering after analyzing your CPU utilization data.

If you are experiencing any of these conditions, contact your account representative, who can engage Cisco's Advanced Services team to audit your Prime Optical server and recommend a higher-capacity server and resources.

G.5.2 Prime Optical Server Does Not Respond

Step 1 Log in as the root user on the Solaris workstation where the Prime Optical server is installed.

Step 2 Enter the following command to view the status of the Prime Optical server processes:

```
opticalctl status
```

If you do not have root user privileges but you belong to the UNIX group that can use sudo functionality to run commands as nonroot, enter the following command:

```
sudo opticalctl status
```

If there is a line containing /CTMServer, the Prime Optical server is running.

If there is no line containing /CTMServer, the Prime Optical server is not running. Proceed to Step 3.

Note You can also check the ctmop.log file in /opt/CiscoTransportManagerServer/log to determine whether the server was stopped by another user or if it stopped abnormally. If it stopped abnormally, proceed to Step 3.

Step 3 Run the **getinfo.sh** Prime Optical server tool and send the data to the Cisco TAC for analysis.

If you do not have root user privileges but you belong to the UNIX group that can use sudo functionality to run commands as nonroot, enter the following command:

```
sudo getinfo.sh
```

Step 4 Start the Prime Optical server by using the opticalctl start script in the /opt/CiscoTransportManagerServer/bin directory.

a. Log in as the root user.

b. Change the directory to /opt/CiscoTransportManagerServer/bin and enter the following command:

```
opticalctl start
```

If you do not have root user privileges but you belong to the UNIX group that can use sudo functionality to run commands as nonroot, enter the following command:

```
sudo opticalctl start
```

If the preceding procedure does not solve the problem, complete the following steps:

Step 1 Verify whether the /opt/CiscoTransportManagerServer/cfg/CTMServer.cfg file is corrupt. The file should contain the db-config-mode = auto parameter in the [database] section. If the entry is missing, the Prime Optical server configuration file is corrupt. Reinstall the Prime Optical server.

Step 2 Verify whether the first entry in the /var/opt/oracle/oratab file looks similar to CTM8_5:/oracle/product/10.2.0:Y. If this entry is missing, the Oracle database might not be installed. The Oracle database is a prerequisite for installing the Prime Optical server.

Step 3 To improve system performance, regenerate the database statistics, either before or after a significant system workload. See 4.2.12 Regenerating Statistics in the Database, page 4-27. Internal Oracle statistics allow Oracle to work efficiently, especially during data query operations. If you experience Prime Optical system performance degradation during normal database activities, the database might be using stale statistics.

G.5.3 Cannot Connect to the Prime Optical Server

Step 1 Ping the server's IP address from the client PC or workstation.

Step 2 If the ping fails, resolve the IP connectivity problem and try again.

Step 3 Telnet to the server and log in as the root user.

Step 4 Enter the following command to verify that Prime Optical is running:

```
opticalctl status
```

If you do not have root user privileges but you belong to the UNIX group that can use sudo functionality to run commands as nonroot, enter the following command:

```
sudo opticalctl status
```

Step 5 The server should have at least the following processes running:

```
root 520 12.0 0.02855219536 Dec_19 14:18 CTM Server
root 489 0.0 0.117384 Dec_19 0:00 CTM Server
root 749 0.6 5.7255104112848 Dec_19 346:27 SnmpTrapService
root 541 0.1 5.8284232115256 Dec_19 15:02 SMService
root 507 0.0 0.2 5512 3496 ? Dec 19 Apache Web Server
```

Step 6 If you see fewer than four processes running, enter the following command to stop the server manually:

```
opticalctl stop
```

Step 7 If you changed the server IP address, verify that the configuration files have been updated.

Step 8 Verify that the Oracle database is accepting connections:

a. Enter the following command to log in as the Oracle user:

```
su - oracle
```

b. Enter the following command to open an SQL*Plus session:

```
omu-u60-3% sqlplus ctmanager/ctm123!
```

Step 9 Reboot the server if you receive another error message and the SQL prompt does not appear. Wait for the server to boot up and try to run the client. The SQL prompt indicates that the Oracle database is running and accepting connections.

Step 10 Enter the following commands to restart Prime Optical manually:

```
SQL> exit
omu-u60-3% exit
omu-u60-3% logout
opticalctl start
```

If you do not have root user privileges but you belong to the UNIX group that can use sudo functionality to run commands as nonroot, enter the following command:

```
sudo opticalctl start
```

Step 11 Wait for 5 minutes and run the client.

G.5.4 How Do I Restart the Prime Optical Server when the Network Contains Many NEs?

If your network contains a high number of NEs, it often takes a long time for all of the NEs to synchronize after a Prime Optical server restart. To avoid this NE synchronization delay, complete the following steps:

Step 1 In the Domain Explorer, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, expand the **NE Service** node and click any NE with a green arrow (which indicates that there are services running).

Step 3 In the Status tab, click the **Deactivate** button to deactivate the NE service. This ensures that when the Prime Optical server is restarted, no service consumes too much CPU and the NE resynchronization goes smoothly.

Step 4 For CTC-based NEs, expand the NE Service node and click **CTC-Based SDH NEs** or **CTC-Based SONET NEs**. In the Status tab, click the **Deactivate** button to deactivate the network service.

Step 5 Expand the **PM Service** node and click any NE with a green arrow. In the Status tab, click the **Deactivate** button to deactivate the PM service.

Step 6 Enter the **opticalctl status** command. The command output should not show any active NE or PM services. The output should look similar to the following sample:

```
Prime Optical Processes for Cisco Prime Optical Server Version: 9.2 Build: 831
-------------------------------------------------------------------------------------
USER   PID    %CPU   %MEM               START         TIME   PROCESS
-------------------------------------------------------------------------------------
root   14023  0.0    0.117360           11:00:13      0:00   CTM Server
root   14101  0.0    0.82607214968      11:00:18      0:01   CTM Server
root   14351  0.2    5.7263488113176    11:01:31      1:05   SnmpTrapService
root   14123  0.0    4.728914494384     11:00:20      0:57   SMService
-------------------------------------------------------------------------------------
```

Step 7 Enter the **opticalctl stop** command.

Step 8 After the **opticalctl stop** command is complete, re-enter the **opticalctl status** command to verify that there are no Prime Optical processes running. The output should look similar to the following sample:

```
Prime Optical Processes for Cisco Prime Optical Server Version: 9.2 Build: 831
-------------------------------------------------------------------------------------
USER   PID    %CPU   %MEM               START         TIME   PROCESS
-------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------
```

Step 9 If any process is still running, identify the process ID and enter the following command to stop it:

kill -9 *process-ID*

Step 10 After all processes have been stopped, enter the **opticalctl start** command at the command prompt. This command starts the Prime Optical server but not the NE or PM services.

Step 11 Activate the NE service instances individually after most of the NEs in a partition have started synchronizing. That is, wait until the NE service instance displays an hourglass icon in the Control Panel tree before you activate the next NE service instance. To do this, expand the **NE Service** node; then, expand the appropriate NE node and in the NE Service Instance properties pane, click the **Start Service Instance** button.

Step 12 For CTC-based NEs, activate the network service instances individually after most of the NEs in a partition have started synchronizing. To do this, expand the **NE Service** node; then, expand the **CTC-Based SDH NEs** or **CTC-Based SONET NEs** node. In the Network Service Instance properties pane, click the **Start Service Instance** button.

Step 13 Activate the PM service instances. To do this, expand the **PM Service** node; then, expand the appropriate NE node and in the PM Service Instance properties pane, click the **Start Service Instance** button.

G.5.5 NE Connection State Is Listed as Unavailable

If the connection state of an NE is listed as Unavailable in the Domain Explorer window, a connectivity or configuration problem exists. Wait 5 to 10 minutes after adding the NE to the Prime Optical domain; then, complete the following steps:

Step 1 To see the NE IP address, select the NE in the Domain Explorer window. The Address tab of the Network Element Properties pane lists the IP address of the selected NE.

Step 2 From the Prime Optical server, enter the following command to verify connectivity between the Prime Optical server and the NE:

```
ping IP-address
```

Step 3 If the ping fails, a physical or configuration problem exists in the data communications network (DCN).

a. If connectivity existed earlier:

- If there were no configuration changes made to any routers in the DCN or to the Prime Optical server, the problem is a physical problem.
- If the configuration was changed, the change might have introduced problems. Verify the changed configuration.

b. If connectivity was never established:

- Verify that there are no problems on the physical level.
- Verify the DCN configuration.

Step 4 If the ping succeeds, verify that the NE software version is listed in the Supported NE table (Administration > Supported NE Table).

Step 5 For ONS 15530 and ONS 15540 NEs, SNMP read and write community strings must be set up correctly on each NE. The running configuration on each NE should contain entries similar to the following example:

```
snmp-server community public RO
snmp-server community private RW
```

The community strings configured on the server should match the strings configured on the NE. For information on configuring community strings in Prime Optical for ONS 1550x NEs, see 3.5.1.4 Prerequisites for Adding ONS 15530 and ONS 15540 NEs, page 3-10.

G.5.6 Launching Tables Results in Database Errors

If the Oracle database or Oracle listener that Prime Optical is using is down, launching tables will generate database errors. To troubleshoot table launching errors:

Step 1 Log in as the Oracle user and enter the following command:

```
sqlplus ctmanager/ctm123!
```

If the login succeeds, an SQL> prompt appears, which indicates that the Oracle database has been installed and the database server is up and running. If the login fails, either the Oracle database has not been installed or the database server is not running.

Step 2 To start the Oracle database, log into the Solaris workstation as the Oracle software user and enter the following command at the shell prompt:

```
dbstart
```

Step 3 Enter the following command at the shell prompt to start the Oracle listener:

```
lsnrctl start
```

If there are still problems with starting the Oracle database or the Oracle listener, refer to the Oracle documentation or contact Oracle support.

G.5.7 SNMP Traps Are Not Forwarded from NEs

SNMP traps might not be forwarded, either because the trap port is already in use, or because the NE is not configured correctly.

G.5.8 Trap Port Is Unavailable

The Prime Optical server requires exclusive access to the SNMP trap port to receive SNMP traps from the NE.

Step 1 Enter the following command to verify that the standard SNMP trap port (port 162) is not in use by another application running on the same Solaris workstation:

```
netstat -a | grep 162
```

If the following line is present, the SNMP trap port is in use by another application:

```
*.162 Idle
```

Step 2 If the trap port is in use by another application, stop the other application.

G.5.9 Problems with ONS 15530 and ONS 15540 Configuration

ONS 15530 and ONS 15540 NEs must be configured correctly to send traps to the server.

Step 1 The running configuration on the NE should contain entries similar to the following example:

```
snmp-server enable traps snmp authentication warmstart
snmp-server enable traps bgp
snmp-server enable traps oscp
snmp-server enable traps config
snmp-server enable traps entity
snmp-server enable traps fru-ctrl
snmp-server enable traps topology throttle-interval 60
snmp-server enable traps optical monitor min-severity not-alarmed
snmp-server enable traps rf
snmp-server enable traps aps
snmp-server enable traps patch
snmp-server enable traps cdl all
```

```
snmp-server enable traps alarms
snmp-server enable traps threshold min-severity degrade

snmp-server host 172.20.126.214 version 2c public snmp bgp oscp
config entity fru-ctrl topology optical rf aps patch cdl alarms threshold
```

In this example, the host 172.20.126.214 receives the specified traps from the NE.

Step 2 You can also run the following commands on the server and device:

a. As the root user, enter the following command on the server:

```
# snoop udp port 162
```

b. On the device, enter the following command to generate a configuration change:

```
wr mem
```

If the device is configured correctly, the **snoop** command reports a configuration change trap.

G.5.10 Performance Monitoring Data Is Not Displayed

Step 1 Use the Domain Explorer > Network Element Properties pane to verify whether PM collection is disabled for the selected NE.

Step 2 Choose **Administration > Control Panel** and expand **PM Service**. Select the NE type to verify whether the service status is Active or Not Active.

Step 3 Choose **Administration > Audit Log** to verify whether PM was ignored for the selected NE.

Step 4 Choose **Administration > Control Panel** and click **PM Service**. Look at the PM Data Storage field. Choose **Optimized** to save only nonzero values in the database. Choosing Optimized requires less space than saving all values, including zero values. If you choose Normal in the PM Data Storage field, the database saves all PM values, including zero values.

Note The Optimized PM data storage feature is available only for CTC-based and ONS 155xx NEs.

Step 5 Choose **Administration > Error Log** to verify whether there are any critical, major, or minor errors against the PM service.

Step 6 Verify that the NE is reachable during the duration that PM data is collected. If the NE is not reachable, there is an entry in the Audit Log table (**Administration > Audit Log**).

G.5.11 CTC-Based NE Is Not Discovered

Step 1 Verify that the NE is up and running.

Step 2 Verify that the NE IP address and default route are configured correctly.

Step 3 To verify that the NE is running the correct version of system software, open a CTC session to the NE and check the NE software version.

Step 4 Verify that the NE that acts as the gateway NE (GNE) (through which this node is discovered) is added to Prime Optical and is available.

Step 5 Open CTC from the GNE and verify that CTC can discover the NE.

G.5.12 CTC-Based NE Is Not Reachable

Step 1 Verify that the NE is up and running.

Step 2 Verify that the NE IP address and default route are correctly configured.

Step 3 Wait for five poll cycles while Prime Optical re-establishes connectivity with the NE.

Step 4 To test IP connectivity to the NE from the Prime Optical server, enter the following command from the Solaris workstation where Prime Optical is running:

```
ping NE-IP-address
```

Step 5 To verify that the NE is running the version of system software supported by Prime Optical, open a CTC session to the NE and check the NE software version.

Step 6 Verify that the username and password that Prime Optical uses to reach the NE exist on the NE.

G.5.13 ONS 1530x Communication Problems

Step 1 Make sure that there are no other ONS 1530x NEs with the same name.

Step 2 Test the IP connectivity from the server to the NE.

Step 3 Telnet to the NE from the Prime Optical server. If you are prompted for a password, the NE is running.

Step 4 Connect to the NE using Cisco Edge Craft to verify that SNMP is enabled.

Note Only users connecting from servers that are listed in the SNMP Community table are allowed to log into the NE.

Step 5 Verify that the NE you are trying to connect to is running a software version supported by Prime Optical.

Step 6 Check whether the product name is one of the following:

- ONS 15305
- AXXEDGE

If the product name does not match any of the recognized names, enter the **change-system-name** command.

Step 7 For ONS 15305 CTC R3.x NEs, note the following possible connectivity issues and limitations:

- The username and password that Prime Optical uses to reach the ONS 15305 CTC must exist on the NE.
- ONS 15305 CTC NEs support up to two simultaneous client connections, as follows. Other configurations are not supported and might cause connectivity problems:

  - One Prime Optical plus one CTC connection
  - Two Prime Optical connections
  - Two CTC connections
- CTC cannot be launched on the same workstation where the Prime Optical server is running and managing ONS 15305 CTC NEs, or connectivity problems might occur.
- ONS 15305 CTC NEs do not support the ONS 15454 SDH proxy server implementation. If ONS 15305 CTC NEs are connected to ONS 15454 SDH NEs through optical links, enabling the proxy server on ONS 15454 NEs (and then the GNE/ENE configuration) causes connectivity problems on the ONS 15305 CTC NEs. Verify that proxy server is not enabled on any ONS 15454 SDH NEs that are optically connected to ONS 15305 CTC NEs.

G.5.14 ONS 15540 or ONS 15530 Is Not Reachable

Step 1 Enter the following command on the server to verify IP connectivity between the server and the NE:

```
ping NE-IP-address
```

Step 2 If the NE is reachable through IP, verify that the correct read community string is configured on the server.

- On the server, choose **Administration > ONS 155XX > ONS 155XX SNMP Settings Table** to view the community strings set in Prime Optical.
- On the NE, enter the following command to view the read community string set on the NE:

  ```
  show run | begin SNMP
  ```

- In the running configuration, the community strings are shown in entries similar to the following:

  ```
  snmp-server community public RO
  snmp-server community private RW
  ```

  In this example, the read string is *public*, and the read/write string is *private*.

Step 3 If IP connectivity and community strings are verified and the device is still unavailable, check the Error Log for any errors reported by ONS 155xx NE Service.

G.5.15 Changing the NE Operational State from the UNIX CLI

This procedure is useful when troubleshooting NE connectivity problems, alarm, or configuration synchronization issues and you do not have access to the Prime Optical client GUI.

Step 1 Use the vwdata.sh script to identify the NE database ID number.

Step 2 Run the UNIX CLI tool and connect to the server. The tool name is ctm and is located in the /opt/CiscoTransportManagerServer/bin directory.

Step 3 Use the command **set nestate** to change the NE operational state.

G.5.16 Circuits Are Not Displayed

If Prime Optical fails to display some circuits, or if the information displayed by CTC and Prime Optical differs, complete the following steps:

Step 1 Wait for 2 minutes while the Prime Optical server synchronizes with the NE. If the Circuit table is not in autorefresh mode, click the **Refresh Data** tool when the tool flashes.

Step 2 Verify that the Circuit table is opened from either the source or destination NE of the circuit to be viewed.

Step 3 Verify that the NEs that are part of the circuit (source, destination, or drop) are available in Prime Optical.

Step 4 Open another CTC session and compare the circuit information in the newly opened CTC session with the circuit information displayed by Prime Optical.

G.5.17 Circuit State for Monitor Circuits Reads "Duplicate ID"

Prime Optical generates a unique number that is appended to the circuit name to make the monitor circuit name unique. On rare occasions, Prime Optical might create two or more monitor circuits with the same name. The circuit state for these circuits reads "Duplicate ID." This is a known issue that has been tracked as DDTS number CSCdz87566.

When the circuit state reads "Duplicate ID," you cannot see the actual circuit state. In this case, you must change the duplicate name to a unique name, so that you can see the correct circuit state. Use the Modify Circuit wizard to enter a unique name for each monitor circuit.

G.5.18 NE Model Type Appears as Unknown

If an in-service NE is added to the Domain Explorer but the model type appears as unknown, the software version of the NE might not be prepopulated in the database. In other words, Prime Optical cannot match the NE with a recognizable version.

Use the NE Software table to add the NE software version string to the Prime Optical database. See 4.3.5 Viewing Software Versions and Restarting the NE with a New Software Image, page 4-37.

G.5.19 Cannot Copy the CTC Binary to the Prime Optical Server

If a CTC binary fails to copy to the Prime Optical server, the *Prime Optical-install-directory*/cms/ directory might be missing or write-protected. If the directory is missing, create a cms directory with write-access permissions. Otherwise, change the permissions of the existing cms directory to allow write access.

G.5.20 Memory Backup, Memory Autobackup, or Memory Restore Fails

Step 1 In the Domain Explorer window, choose **Administration > Job Monitor**. The Job Monitor table shows the status of the operation. If a job failure occurs, the reason is displayed in the Additional Information column.

Step 2 Return to the Domain Explorer window and choose **Administration > Audit Log**. The Audit Log table shows the status of the operation.

Step 3 Return to the Domain Explorer window and choose **Administration > Error Log**. The Error Log table shows information about the backup, memory restore, or download failure.

Note Sometimes, when a node is busy, a memory backup, memory autobackup, or memory restore job request may fail. In such a scenario, Prime Optical automatically creates a new, similar job and resends the request using the job retry functionality. The new job is triggered within the first 10 minutes of failure detection. Prime Optical attempts to resend the request a maximum of five times. You can monitor a rescheduled job in the Job Monitor table.

Step 4 See Appendix F, "Error Messages," for the correct action to take in response to the error.

G.5.21 Software Download, Software Commit, or Software Revert Fails

Step 1 In the Domain Explorer window, choose **Administration > Job Monitor**. The Job Monitor table shows the status of the operation. If a job failure occurs, the reason is displayed in the Additional Information column.

Step 2 Return to the Domain Explorer window and choose **Administration > Audit Log**. The Audit Log table shows the status of the operation.

Step 3 Return to the Domain Explorer window and choose **Administration > Error Log**. The Error Log table shows information about the autobackup, software commit, or revert failure.

Note Sometimes, when a node is busy, a software download, software commit, or software revert job request may fail. In such a scenario, Prime Optical automatically creates a new, similar job and resends the request using the job retry functionality. The new job is triggered within the first 10 minutes of failure detection. Prime Optical attempts to resend the request a maximum of five times. You can monitor a rescheduled job in the Job Monitor table.

Step 4 See Appendix F, "Error Messages," for the correct action to take in response to the error.

G.5.22 The getinfo.sh Script Fails

You might experience a problem where the getinfo.sh script fails with the following error:

```
Error: permission denied while running 'rsh.' Check the environment and make sure the root
is permitted to run .rsh on host IP-address.
```

This problem occurs because the getinfo.sh script does not run unless an entry is made in the /.rhosts file. This problem occurs even on a local server and database configuration. This is a known issue that has been tracked as DDTS number CSCin66495.

The solution is to add the hostname to the /.rhosts file. For example:

```
(omu-e450) #more /.rhosts
omu-e450 +
```

```
(omu-e450) #
```

G.6 Client Connectivity Problems

The Prime Optical client might not be able to connect to the Prime Optical server for various reasons. Complete the following procedures in the order listed until the problem is resolved.

G.6.1 Database Is Not Available

If the Prime Optical client cannot connect to the Prime Optical server, verify that the database is available.

Step 1 Log into the Prime Optical server as the Oracle user.

Step 2 Enter the following command to connect to the database:

```
sqlplus ctmanager/ctm123!
```

Step 3 If the error message "maximum processes exceeded" is received, the maximum number of database connections has been reached. Close several clients or ask the database administrator to increase the maximum number of processes for the database.

G.6.2 Database Timeout Occurs

Step 1 Reduce the scope of the query by selecting a group or an NE and not the entire domain before opening tables such as the Alarm Browser, Alarm Log, Audit Log, and PM tables.

Step 2 Increase the client database query timeout period by editing the ems-client.cfg file in the C:\Cisco\TransportManagerClient\config or /opt/CiscoTransportManagerClient/config directory.

Step 3 Add hardware resources to the Oracle database server.

Step 4 Ping the Oracle database server from the client to verify the response time. Increase the bandwidth if the round-trip response time is inadequate.

G.6.3 Are the Prime Optical Client and the Prime Optical Server Connected?

If the database is available, check connectivity between the client and the server.

Step 1 To see the Prime Optical server IP address, enter the following command on the Solaris workstation where the Prime Optical server is running:

```
ifconfig -a
```

The command output looks similar to the following example:

```
hme0:flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,MULTICAST>mtu 1500
inet 192.168.120.93 netmask ffffff00 broadcast 192.168.120.255
```

The IP address is the address following the *inet* field.

Step 2 To verify that the physical connection between the Prime Optical client and the Prime Optical server does not have problems, enter the following command from the Prime Optical client:

```
ping IP-address
```

where the IP address belongs to the Solaris workstation where the Prime Optical server is running.

Step 3 If the ping command fails, fix the physical connectivity; then, log into the Prime Optical client.

G.6.4 Cannot Log In as Provisioner or Operator

Step 1 Use the default username and password to log into the Prime Optical client:

Username: **SysAdmin**

Password: **Ctm123!**

Step 2 If the SysAdmin login succeeds but the provisioner or operator login fails, verify that the provisioner or operator exists and is not disabled. In the Domain Explorer window, choose **Administration > Users** to view a table of all configured Prime Optical users.

Step 3 If the provisioner or operator is not in the Cisco Prime Optical Users table, the user is not configured. Configure the provisioner or operator; then, log in as that user.

Step 4 If the provisioner or operator is in the Cisco Prime Optical Users table, select the row corresponding to that user and click the **Modify User Properties** tool to bring up the Modify User Properties wizard. Verify that the Login State field is set to Enabled. If the login state is disabled, enable it and log in as the provisioner or operator. The user might have been disabled after attempting to log in with an incorrect password.

Step 5 If the password is not correct, set a new password for the user and log in again.

G.6.5 Cannot Authenticate User Message Appears

If the "Cannot authenticate user" error message is received when logging into the Prime Optical client, the Prime Optical server might be initializing. Wait for 5 minutes while the Prime Optical server finishes initializing; then, try to log in again. Alternatively, check your username and password and enter them again. The username and password are case-sensitive.

G.6.6 Socket Over TL1 Issues

Prime Optical supports NEs that are connected in non-IP networks such as Open System Interconnection (OSI) networks. The Cisco NEs will be connected through non-Cisco gateway NEs (NGNEs) and Prime Optical opens a tunnel to connect to the NGNEs. Do the following in case of connectivity issues in a tunnel setup:

Step 1 Ping the NGNE. The NGNE must be connected to the IP network.

Step 2 Check if the NGNE requires login credentials to connect to the network. If it requires login credentials, its TID is listed in the GNE TID text box in the Domain Explorer NE Properties pane. The username and password of the NGNE are specified in the Domain Explorer NE Properties pane and Control Panel.

Step 3 Check that the NGNE encoding mode that is used to connect to the Cisco NEs is correct.

Step 4 (Optional) If you have a very large network (which can slow down the creation of tunnels), do the following to increase the default timeout value of 20 seconds:

a. In the Control Panel window, expand the **NE Service** and click **CTC-Based SONET NEs** or **CTC-Based SDH NEs** to open the NE Service pane.

b. In the Status tab, enter the new timeout value in the **TL1 Tunnel Connection Timeout** text box.

c. Click **Save**.

G.7 Client Operational Problems

This section describes troubleshooting procedures for Prime Optical client operational problems.

G.7.1 Model Index Is Unknown

If a new NE is added to the Prime Optical domain and marked as In Service, but the model index is unknown, complete the following steps:

Step 1 Verify that the IP address and other parameters are entered correctly.

Step 2 The Prime Optical server might not be able to establish connectivity to the GNE for the NE. Verify that the GNE for the NE is marked as In Service, and that the GNE is correctly populated in the Prime Optical domain.

Step 3 Verify that the GNE is DCC-connected to the NE.

Step 4 The Prime Optical server might not recognize the NE's software version. In the Domain Explorer tree, select the NE and choose **Fault > Test NE Connectivity**. If the NE is available, contact the Cisco TAC and verify that the version of the software on the NE is compatible with the Prime Optical server. Use the Supported NE table to provide the new NE software version that the Prime Optical server will recognize.

Step 5 The Prime Optical server might be configured to attempt communication with new NEs after a certain delay. To change the health poll frequency:

a. In the Domain Explorer window, choose **Administration > Control Panel** and click **NE Service**.

b. In the NE Poller tab, look at the NE Health Poll Interval field. The default is 240 seconds. If the value is too large, there might be a communication delay between Prime Optical and the NEs. Under normal conditions, the Prime Optical server attempts communication with new NEs for no more than twice the number of seconds specified in the NE Health Poll Interval field.

G.7.2 Cannot Delete an NE

If an NE cannot be deleted, verify that you logged in as a SuperUser or NetworkAdmin, and not as a Provisioner or Operator. Provisioners and Operators cannot delete NEs. If you logged in as a Provisioner or Operator, restart the Prime Optical client session and log in as a SuperUser.

G.7.3 CTC Fails to Start

If CTC cannot be started for a CTC-based NE, complete the following steps:

Step 1 If an error occurs while opening the NE Explorer but the CTC progress screen and login dialog boxes appear, the CTC username or password might be incorrect. Do the following:

a. Choose **Administration > Users**.

b. In the Cisco Prime Optical Users table, choose **Edit > View/Modify**. The Modify User Properties wizard opens.

c. Click **Next** to move to the CTC/Craft User Properties pane and change the CTC username and password to match those configured on the device. Click **Finish**.

Step 2 If the CTC progress screen idles for a long time before the login dialog box appears, there might be problems with network connectivity to the device.

a. From a DOS command window or a Solaris workstation, ping the device.

b. If no response is received, set up routes so that the device is available; then, restart CTC. If CTC does not start, the workstation might have resource constraints.

c. Close some open applications and try again.

d. Close some instances of CTC that are managing another group of CTC-based NEs and try again.

Step 3 If the GNE for the selected NE was not found, there might be a mismatch between the GNE specified for the device and the available GNEs. This means that the data in the database is corrupt. Contact the Cisco TAC for assistance.

G.7.4 Added a New Software Version to the Wrong NE

Step 1 In the Domain Explorer window, choose **Administration > Supported NE Table**.

Step 2 In the Supported NE table, select the incorrect entry and choose **Edit > Delete**.

Step 3 Click **OK** in the confirmation dialog box.

Step 4 Select the correct NE row from the Supported NE table.

Step 5 Add the correct software version.

Step 6 In the Domain Explorer > Network Element Properties pane, set the operational state of all NEs that are behaving erroneously to **Out of Service**.

Step 7 Click **Save**.

Step 8 In the Network Element Properties pane, set the operational state of all the NEs back to **In Service**.

Step 9 Click **Save**.

G.7.5 Cannot Delete a Subnetwork

If a subnetwork cannot be deleted from the Subnetwork Explorer, complete the following steps:

Step 1 Verify that the user logged in as a SuperUser—not as a Provisioner or an Operator. Provisioners and Operators cannot delete subnetworks. If the user logged in as a Provisioner or Operator, restart the Prime Optical client session and log in as a SuperUser.

Step 2 Verify that the target subnetwork does not contain NEs. Move all NEs to another subnetwork before deleting the empty target subnetwork.

G.7.6 Cannot Move an NE Between Subnetworks

When automatic grouping of NEs in subnetworks is enabled, you cannot move NEs between subnetworks. To move NEs from one subnetwork to another:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel.**

Step 2 In the Control Panel, click **UI Properties**.

Step 3 Under Subnetwork Grouping, uncheck the **Automatically Group NEs in Subnetworks** check box.

Step 4 Click **Save**.

G.7.7 NEs Change Subnetworks Rapidly

NEs that are part of a subnetwork might change subnetworks rapidly if the status of the link or of all links connecting subnetworks fluctuates rapidly; this can occur if automatic grouping of subnetworks is enabled in Prime Optical. Disabling the automatic grouping of subnetworks might prevent NEs from changing subnetworks when caused by links going up and down. To disable the automatic grouping of subnetworks:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel, click **UI Properties**.

Step 3 Under Subnetwork Grouping, uncheck the **Automatically Group NEs in Subnetworks** check box.

Step 4 Click **Save**.

G.7.8 Cannot Schedule Jobs

The Prime Optical client can schedule the following types of administrative tasks:

- Software download
- Memory backup
- Memory restore

Prime Optical maintains an Error Log and Audit Log to track potential problems. To view the Error Log or Audit Log:

Step 1 In the Domain Explorer window, choose **Administration > Audit Log** or **Error Log**.

Step 2 Look for errors related to software download, memory backup, or memory restore.

G.7.9 Prime Optical Does Not Receive Autonomous Alarms from ONS 1530x NEs

Prime Optical can collect alarms or receive autonomous notifications from an ONS 1530x NE. Alarm collection occurs when the NE is first discovered and does not rely on spontaneous events sent from the NE.

Step 1 Verify that the Prime Optical server is present in the SNMP Community table and that the trap is set to enable. If not, you can connect to the NE, but Prime Optical will not receive traps.

Step 2 If the Prime Optical server and the NEs are in different subnetworks, make sure that there is no firewall filtering SNMP packets between the subnetworks.

Step 3 Verify that Cisco Edge Craft is receiving autonomous alarms.

Step 4 Verify the following:

- SNMP traps reach the Prime Optical server machine.
- The command **snoop udp** and port 162 do not show the incoming traps.
- There are no network problems.

Step 5 Check whether the Prime Optical server is receiving traps.

Step 6 Check whether the ONS 1530x NE service is receiving SNMP traps.

G.7.10 Bandwidth-Intensive Operations Are Blocked

Bottlenecks in the DCN affect bandwidth-intensive operations, such as software download. Tune the timeout and retry values to match DCN performance. Log into the NE and enter the following commands:

- **ip tftp min-timeout**—Sets the minimum wait time, in seconds, before retrying the read/write request.

- **ip tftp max-timeout—**Sets the maximum wait time, in seconds, before retrying the read/write request.
- **ip tftp backoff-delay**—Sets the number of seconds to extend the wait time if the read/write request times out.
- **ip tftp write-retries**—Sets the maximum number of times to retry the TFTP read/write request before declaring a failure.

G.7.11 NE Displays Incorrect Configuration Management Data

Step 1 In the Domain Explorer window, choose **Administration > Service Monitor** and verify that the NE Service is running. If it is not running, start the NE Service.

Step 2 Test NE connectivity:

a. In the Domain Explorer tree, select the NE and choose **Fault > Test NE Connectivity**. The message "*NE-name* (*IP-address*) is available" is generated.

b. If the NE is unavailable, establish connectivity to the NE before retrieving configuration data.

G.7.12 Cannot Customize the Network Map

If an image file is not displayed while changing the Network Map background or while changing a node icon, complete the following steps:

Step 1 Choose another image file. The file might be corrupt.

Step 2 Check the size of the image file. The image file might be larger than 100 KB, which is too big to load. If the file is too big, use a smaller image file.

Step 3 Verify that the image file exists in the \images\mapbkgnds\shapefiles directory or the \images\mapicons directory. If the file is missing, it has been deleted. Reinstall the Prime Optical client.

Note The client is bundled primarily with shape files (*.shp) and only a few map background GIF files.

G.7.13 Prime Optical Client Machine Displays Incorrect Colors

When using a UNIX machine as the Prime Optical client host, the machine's display might show incorrect colors. This problem occurs when UNIX systems use a 256-color palette and the graphics require colors that are not available in the 256-color scheme. Although some UNIX systems can work around the missing colors, there are still some that have problems making adjustments. For these systems, the only solution is to disable any other graphical application (for example, Netscape) that is running and upgrade the system graphics capabilities to a 24-bit color display (for example, upgrade the video card or monitor).

G.7.14 Common Topology Problems

Note After marking NEs as Out of Service, wait until the circuits traversing over these NEs (and not involving any other NE) clear from the Prime Optical Circuit table before marking the NEs as In Service again.

G.7.14.1 Cannot Load the Barebone Configuration on ML Cards

To load a fresh barebone configuration on an ML card, complete the following steps:

Step 1 In the Domain Explorer tree, select the NE that contains an ML card and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the NE Explorer tree, select the ML card (or double-click the ML card that is shown in the Shelf View).

Step 3 In the Slot Properties pane, click the **Configuration** tab.

Step 4 Click the **File >> TCC** button, specify the configuration file to load, and click **OK**.

Step 5 Reset the card and wait for it to come up.

Step 6 After the card comes up, enter one of the following commands to telnet to it, depending on the node mode:

- If the node is configured in SSH mode, enter:

  ssh *NE-IP-address* **40***card-slot-number*

- If the node is not configured in SSH mode, enter:

  telnet *NE-IP-address* **20***card-slot-number*

Step 7 Enter the username and password to log into the ML card. The default values are:

- Username: CISCO15
- Password: CTM123+

Step 8 After logging in, enter the following command:

```
wr mem
```

G.7.14.2 Topology Goes into Incomplete State

A topology goes into Incomplete state when one or more Layer 1 circuits related to the topology are missing.

Step 1 Launch the Circuit table and check whether the circuits related to the topology are discovered.

Step 2 If one or more Layer 1 circuits are missing, use the Create Circuit wizard to recreate the circuits. Once the Layer 1 circuits are created and Prime Optical discovers them, the topology goes into Complete state.

Step 3 Check the Circuit table to verify whether the newly created Layer 1 circuits are discovered.

Step 4 If the topology still fails to go into Complete state, the topology discovery logic has failed. Complete the following substeps to restart the discovery process:

a. Mark the NE service related to the NE as Out of Service and then In Service.

b. Mark the NEs related to the topology as Out of Service and then In Service.

Step 5 If the problem persists, contact the Cisco TAC.

G.7.14.3 Topology Goes into L2ServiceNotReady State

A topology goes into L2ServiceNotReady state when there is a mismatch between data in the Prime Optical database and data on the ML-series cards.

Step 1 Launch the Circuit table and check whether all circuits related to the topology are discovered.

Step 2 Launch the Equipment Inventory table and check whether the NE inventory is collected correctly.

Step 3 Complete one of the following options:

- Launch the L2 Topology table and enable the L2 service. The Prime Optical database and ML-series cards synchronize. During the synchronization process, the topology goes into In Progress state, and then into Complete state.
- Do a forced resynchronization of the database by launching the NE Explorer for the NEs in the topology and refreshing the data from the NEs. This restarts the synchronization process. Once the NEs are up, the topology goes into Complete state.

Step 4 If the topology still fails to go into Complete state, try the following options to restart the topology discovery process:

- Telnet to the cards and check whether the configuration parameters are corrupt.
- Mark the NE service related to the NE as Out of Service and then In Service.
- Mark the NEs related to the topology as Out of Service and then In Service.
- Delete the topology, reload the barebone config file on the ML-series cards, and reset the cards. To make sure that the barebone config file is reloaded, telnet to the cards and enter the **write memory** command. Then, recreate the topology.

Step 5 Try one of the following options, depending on when the topology goes into L2ServiceNotReady state:

- If the topology goes into L2ServiceNotReady state immediately after topology creation, choose **Administration > Error Log** and search for the BaseCardConfigWork file. Check the message associated with that file. If the message says “Base Card Config Work Failed,” open the IosTransportModule.log server file and search from the bottom for the “INVALID” parameter. The command that failed is displayed with an INVALID error. Then, launch the CLI and check whether the card is configured correctly.
- If the topology goes into Complete state but then changes to L2ServiceNotReady after several minutes, choose **Administration > Error Log** and search for the BaseCardDetectWork file. If the message associated with that file says “BaseCardDetectWork failed,” check the DataService.log file (or the NE Service log for CTM R7.x or later) in the server and search from the bottom for the “BaseCardDetectWork” parameter. Several lines from the bottom, the file shows the exact reason from the base card detection failure.

Step 6 If the problem persists, contact the Cisco TAC with the relevant logs, as well as a configuration snapshot of the cards used in the topology.

G.7.14.4 Topology Goes into SyncFailed State

A topology can go into SyncFailed state for any of the following reasons:

- A preprovisioned card was used to create the topology. There are two ways to determine whether a card is preprovisioned:
  - Launch the NE Explorer and check whether the card is preprovisioned.
  - Telnet to the card to verify that it is present.
- The barebone configuration file is not present on all of the cards.
- You have not specified the correct Prime Optical-to-ML-series card login details. To verify the login details, launch the Prime Optical Control Panel and click **Security Properties**. Click the appropriate NE tab and verify the username and password for Prime Optical server connections to ML-series cards.
- The database and the ML-series card are not synchronized.

Step 1 Launch the Circuit table and check whether the circuits related to the topology are discovered.

Step 2 Launch the Equipment Inventory table and check whether the NE inventory is collected correctly.

Step 3 Wait for the next synchronization cycle. The database should synchronize and the topology should go into In Progress state. If the topology goes into L2ServiceNotReady state, see G.7.14.3 Topology Goes into L2ServiceNotReady State, page G-26.

Step 4 If the topology still fails to go into Complete state, try the following options:

- Telnet to the cards and check whether the configuration parameters are corrupt.
- Mark the NE service related to the NE as Out of Service and then In Service.
- Mark the NEs related to the topology as Out of Service and then In Service.
- Delete the topology, reload the barebone config file on the ML-series cards, and reset the cards. To make sure that the barebone config file is reloaded, telnet to the cards and enter the **write memory** command. Then, recreate the topology.

Step 5 If the problem persists, contact the Cisco TAC with the relevant logs, as well as a configuration snapshot of the cards used in the topology. Alternatively, telnet to the NEs and enter the **flmDeleteDb** command.

G.7.14.5 Topology Goes into Partially Complete State

A topology goes into Partially Complete state when all of the cards are not synchronized with the Prime Optical database.

This problem also occurs when the data service processes a CARD_CONFIG_DATA_FAILED event for any card in the topology. The topology remains in Partially Complete state until a CARD_CONFIG_DATA_FAILED event is received for the failed card. While the topology is in this state, base card configuration provisioning and detection are performed on other cards in the topology.

Step 1 Launch the Circuit table and check whether all circuits related to the topology are discovered.

Step 2 Launch the Equipment Inventory table and check whether the NE inventory is collected correctly.

Step 3 Wait for the next synchronization cycle. The database should synchronize and the topology should go into Complete state. If the topology goes into L2ServiceNotReady state, see G.7.14.3 Topology Goes into L2ServiceNotReady State, page G-26.

Step 4 If the topology still fails to go into Complete state, try the following options:

- Telnet to the cards and check whether the configuration parameters are corrupt.
- Mark the NE service related to the NE as Out of Service and then In Service.
- Mark the NEs related to the topology as Out of Service and then In Service.
- Launch the NE Explorer for the related NE, click the **Refresh** button, and refresh data from the NE.
- Delete the topology, reload the barebone config file on the cards, and reset the cards. To make sure that the barebone config file is reloaded, telnet to the cards and enter the **write memory** command. Then, recreate the topology.
- Check whether the IOS Users table contains all of the entries for all cards included in a ring.

Step 5 If the problem persists, contact the Cisco TAC with the relevant logs, as well as a configuration snapshot of the cards used in the topology. Alternatively, telnet to the NEs and enter the **flmDeleteDb** command.

G.7.14.6 Prime Optical Cannot Discover the Topology

Step 1 Try the following options to restart the topology discovery process:

- Launch the Circuit table and check whether all circuits related to the topology are discovered.
- Mark the NE service related to the NE as Out of Service and then In Service.
- Mark the NEs related to the topology as Out of Service and then In Service.

Step 2 If the topology is still not discovered, complete the following substeps to enable the trace level in the data service logs:

a. In the Domain Explorer window, choose **Administration > Control Panel**.

b. In the Control Panel window, click **Logging Properties** to open the Logging Properties pane.

c. Click the **General** tab.

d. In the Preferences area, select **Trace** from the Logging Level drop-down list.

e. Click **Save**.

Step 3 On the Prime Optical server, enter the following command to telnet to the local host. The port number depends on the port to which the NE belongs:

```
telnet localhost {9500 | 9501}
```

This starts the data log collection on the server. Check whether the data service logs are populating.

Step 4 Check the data service logs to determine whether or not the circuit addition events are being received correctly. You can do this by searching for the string CIRCUIT_ADDED. If the circuit addition events are not being received correctly, there is a problem with Layer 1 circuit provisioning. If the events are received correctly but the topology is not discovered, the circuit deletion logic failed and you must contact the Cisco TAC with the relevant logs.

G.7.14.7 Prime Optical Cannot Delete the Topology

Step 1 Launch the L2 Topology table and check whether the topology is in Deleting state. If the topology is not in Deleting state, there is a problem with the deletion logic in Prime Optical.

Step 2 Check the state of the related Layer 1 circuits. They should also be in Deleting state. If they are in Deleting state but are not eventually deleted, there is a problem related to Layer 1 circuit provisioning.

Step 3 If not all of the circuits are deleted and they are not in Deleting state, use CTC to delete the circuits.

Step 4 After the circuits are deleted, if the topology is still not deleted, complete the following substeps to enable the data service trace logs and check whether the circuit deletion events are received correctly:

a. In the Domain Explorer window, choose **Administration > Control Panel**.

b. In the Control Panel window, click **Logging Properties** to open the Logging Properties pane.

c. Click the **General** tab.

d. In the Preferences area, select **Trace** from the Logging Level drop-down list.

e. Click **Save**.

Step 5 On the Prime Optical server, telnet to the local host. This starts the data log collection on the server. Check whether the circuit deletion events are being received correctly. If they are not being received, there is a problem with the Layer 1 circuit provisioning. If they are being received, there is a problem with the topology deletion logic in Prime Optical. Delete the topology from the L2 Topology table.

Step 6 Open the ML Cards table for the topology. Check the Additional Info column for the reason for the failure.

Step 7 If the problem persists, contact the Cisco TAC with the relevant logs.

G.7.14.8 How Do I Check Whether All Cards in the Topology Are Synchronized?

Use any of the following options to check whether all cards participating in a topology are synchronized:

- In the Domain Explorer, choose **Administration > CTC-Based NEs > IOS Users Table** and check whether an entry for the user exists on the cards that will be used. If an entry exists, the card is synchronized with Prime Optical.
- Check the ONS1545_NE_Inventory_table for all of the NEs participating in the ring. The entry for the ML card should be present. This is the same as checking the Equipment Inventory table from the Prime Optical client and verifying whether all cards are In Service.

- Verify whether you can launch a CLI session on all of the cards:
  1. Open the NE Explorer for the NE.
  2. Select the card in the tree view.
  3. Click the **Configuration** tab.
  4. Click the **Launch CLI** button.
  5. In the Launch CLI dialog box, enter the username and password.

  If the CLI session does not launch, the card does not have the barebone configuration or there is a communication failure and Prime Optical cannot read the configuration.
- Verify whether all of the cards have synchronized correctly in the eqpt_info_table. Perform the following database query:

  ```
  Select * from eqpt_info_table where objectindex = 221
  ```

  If no rows are found, the card is not synchronized correctly. The card does not have the barebone configuration or there is a communication failure and Prime Optical cannot read the configuration.
- CTM R8.0 and later supports 802.17 RPR, which requires cards to be configured in 802.17 RPR mode. If you include a card in an 802.17 RPR that was used previously as a Cisco RPR, you must reload a fresh barebone configuration, perform a software reset on the card, and then create the topology.

G.7.15 Common VLAN Problems

G.7.15.1 VLAN Is Not Discovered

This problem occurs when the VLAN discovery process fails. Try the following options to restart the VLAN discovery process:

- Telnet to the cards and check whether the VLAN configuration parameters are corrupt.
- Mark the NE service related to the NE as Out of Service and then In Service.
- Mark the NEs related to the topology as Out of Service and then In Service.
- Launch the NE Explorer for the related NE, click the **Refresh** button, and refresh data from the NE.

G.7.15.2 VLAN Is Not Created

If Prime Optical cannot create a VLAN, try the following options:

- If the Prime Optical server is resynchronizing, an error message indicates a VLAN creation failure. Wait for some time before attempting to create the VLAN again.
- If you receive an error message that says you cannot create a bridge group, you might have entered invalid AV pair commands in the CLI. Check the IosTransportModule.log for invalid commands. Enable the Trace error level and check the server logs for exceptions.
- When creating an IP SLA, verify that the associated topology and managed VLAN are synchronized. IP SLA is supported only on NE releases 6.0, 7.0, 7.2, and 8.0. Verify that you are using a supported NE version.

If cards that belong to the topology are not listed in the Manage VLANs dialog box, complete the following steps:

Step 1 Log into the server and enter the following command:

```
cd /opt/CiscoTransportManagerServer/bin
```

Step 2 Run the prune_invalid_l2topo.sh script.

Step 3 Restart the NE service.

G.7.15.3 VLAN Is Not Deleted

If Prime Optical cannot delete a VLAN, try the following options:

- If the Prime Optical server is resynchronizing, an error message indicates a VLAN deletion failure. Wait for some time before attempting to delete the VLAN again.
- Check the IosTransportModule.log for exceptions or invalid commands. Enable the trace error level and check the server logs for exceptions.

G.7.16 PM Data Collection Fails

If PM data collection fails, use a browser to collect PM data directly from the NE. Enter one of the following URLs:

- For real-time PM data:
  - For 15-minute collection, use http://*NE-IP-address*>/pm/15min/1
  - For 1-day collection, use http://*NE-IP-address*>/pm/day/1
- For historical PM data:
  - For 15-minute collection, use http://*NE-IP-address*/pm/15min/*bucket#*
  - For 1-day collection, use http://*NE-IP-address*/pm/day/*bucket#*

  where *bucket#* = (current time - missed historical time) / 900000 + 1

G.7.17 Common L1 Circuit Provisioning Problems

The following levels of information are used to debug circuit problems:

- Prime Optical client level

  The debug level in the Debug Options window is set to Info by default. Set the debug level to Debug so you can save all the log information into a file that can be used to debug problems while launching circuit-related windows or wizards; for example, Circuit Creation wizard, BLSR Creation wizard, Modify Circuit dialog box, Circuit Trace window, and J1 path trace.
- Prime Optical client level with database interaction

  When you perform one of the following operations, the Prime Optical client builds an SQL query and uses the Java Data AcQuisition (JDAQ) system to extract data from the database:

  - Find circuit—After performing this operation, the resulting circuits do not meet the criteria or the circuits that meet the criteria are not displayed.
  - Launching circuit, link, BLSR, and rolls tables—There are issues with the data displayed in the Circuit table, Circuit Span table, Link table, VLAN table, Link Utilization table, Rolls table, and BLSR table.

  Enable the JDAQ data and JDAQ modules in the Debug Options window to resolve issues resulting from performing the above operations; then, verify that all the following are correct:

  - The SQL query that was constructed.
  - The parameter values.
  - The data set that results from the SQL query.

  Logs of the actual data displayed in the tables can be collected by exporting the table data to a text file. Having this data in the form of a text file can be useful when debugging circuit issues.

- Prime Optical client level with Prime Optical server interaction

  Almost all the circuit provisioning features involve interaction with the Prime Optical server. To debug the server-side code, collect the NE service logs from the Prime Optical server. The log files are located at /opt/CiscoTransportManagerServer/log. Identify the NE service for which the issue occurred and set the debug level of the NE Service logs in the Control Panel. If you encounter any of the following, collect the NE service logs from the Prime Optical server:

  - Issues when launching the Circuit Trace window; or, the circuit trace does not display the correct information.
  - Issues related to bridge and roll operations.
  - Issues when creating, modifying, or deleting BLSRs.
  - Issues when launching the J1 path trace; or, the J1 path trace does not display the correct information.
  - Issues when creating, modifying, or deleting circuits.

- Prime Optical level

  Ports are available for debugging. Port number 9410 and higher are allocated for debugging Prime Optical-level circuit information. Each NE service or network service has its own port number starting from port 9410. Unfortunately, there is no way to identify which port number is used by which NE service or network service. So while debugging, start with port 9410 and all managed NEs. If the listed NE is the one you need, continue debugging. Otherwise, try port 9411 and so on.

  The information that is displayed in the port is cached at the Prime Optical server and is useful when resolving issues such as the following:

  - Circuits in Prime Optical and CTC are not synchronized.
  - Deleted circuits are removed from CTC but not from Prime Optical.

  The following commands can be used for debugging:

  - Bye, Exit, Quit—Closes the socket.
  - Help—Prints messages.
  - History [#]—Prints the command history.
  - !<text>—Executes an item in your command history that matches <text>.
  - !!—Executes the last item in your command history.
  - AllmanagedNEs—Prints the details of all managed NEs.

  - Allcircuits—Prints the details for all circuits.
  - Logon *filename*—Logs all the information into a file.
  - Logoff—Stops logging all the information into a file.
  - Debugon—Enables the debug flag.
  - Debugoff—Disables the debug flag.
- NCP level

  Complete the following steps to determine the port number and debug circuit issues in the NCP level:

Step 1 Check the NE service log at /tmp/*Service name*.log and search for "Debug Telnetd: port is *port number*."

Step 2 Note the port number.

Note Each NE service has a different port number.

Step 3 Telnet to the localhost using the debug Telnet port and log in using *CISCO15* as the username for CTM R7.2 and earlier and *otbu+1* for CTM R8.0 and later.

Note Only one user can use the debug port at a time. If the Telnet command fails and the port closes immediately, check for other open sessions. If there is an open sessions that is not used, close the session immediately.

The debug port contains a lot of information regarding the various cached objects in the NCP. Depending on the faulty feature, you have to decide what logs are required. Use the **List** command to list all the objects available on a port. When debugging issues related to circuits, the following objects are useful:

- CircuitEnd
- Circuits
- NetCcatCircuit
- NetCircuit
- NetCircuitEnd
- NetCircuitManager
- NetCircuitNode
- NetCircuitSpan
- NetCircuitSplicer
- NetCircuitWatchDog
- Route and network objects—Used for debugging routing or link issues.
- Topology objects—Used for debugging link-related issues.
- BlsrRingManager—Used for debugging BLSR-related issues.
- Bnrpackage, rollmanager, and roll objects—Used for debugging bridge and roll-related issues.

G.7.17.1 Cannot Route Circuits

Step 1 Make sure that a bandwidth is available for the protected circuit.

Step 2 Enter the following commands to retrieve the dumps before and after the problem occurs:

```
> Net dump
> Topo dump
> Topo topo dump
> Network dump
> Circuits dump
> Splicetree dump
```

Step 3 In the Network Control Protocol (NCP) debug window, enter the following commands:

```
> net set
> nl set
> netlink set
> ncpp set
> preset route
> route set
```

Step 4 Create the circuit and dump all the circuit information into a file.

Step 5 Try manual routing on the circuit that you created and save all information in a file.

G.7.17.2 Circuit Creation Is Successful in CTC but Fails in Prime Optical

Step 1 Enable the debug logs using the remote debugger.

Step 2 In the Prime Optical Control Panel, set the debug level to Debug.

Step 3 Perform the steps listed in G.7.17.1 Cannot Route Circuits, page G-34 and collect the NE service logs.

G.7.17.3 Circuit Table Does Not Display the Correct Information

Step 1 Select the following debug options before opening the Circuit table:

- Circuit Management
- JDAQ
- JDAQ Data

Step 2 Dump all the log information into a file.

Step 3 Open the Circuit table.

Step 4 Export all data from the Circuit table to a file.

Step 5 Identify the remote debug ports of the NEs on which the problem occurs.

Step 6 Log into the debug port and collect the dumps of all managed circuits.

G.7.17.4 Circuits Show Up in Incomplete State, Circuits Are Not Discovered, and Circuit Information in Prime Optical Is Not Consistent with Circuit Information in CTC

Perform the following steps when you create a circuit on a set of NEs and the circuit shows as Incomplete in Prime Optical and in CTC, which is launched from Prime Optical. The circuit shows as Active if CTC is launched from a browser.

Step 1 In the NCP debug port window, enter the following commands:

```
>ncp set
>circuit dump
>splicetree dump
>node nmd hoconnections print
>node nmd loconnections print
>node nmd loedits print
```

Step 2 Telnet to the localhost using the debug Telnet port and log in using *CISCO15* as the username for CTM R7.2 and earlier and *otbu+1* for CTM R8.0 and later.

Step 3 Enter the following commands to create a debug log:

```
> log /tmp/debug.log
> ncpp set
```

Step 4 Create a circuit in Prime Optical and enter the following command to check the circuit name:

```
> circuit dump
```

Step 5 Enter the following command if you created an STS circuit:

```
> node nmd hoconnections print
```

Step 6 Enter the following command if you created a VT circuit:

```
> node nmd loconnections print
```

Note If an NE is moved from one network partition to another, the NCP debug port number changes from one NE service to another.

G.7.17.5 Missing Links

The following commands are useful when resolving a missing link problem:

Note Enter all commands in the NCP debug port window.

- TopologyX dump—Displays all the nodes and links in the topology. It also displays the current topology host. The X variable represents the topology identifier. Do not include the X variable if you want to display all topologies.
- Network dump—Displays all the nodes and links in the network. It also displays the topology to which the nodes and links belong.
- Network dumpwaitQ—Displays the nodes that have been added to the network but do not have valid node ID.

- NettopologyX dump—Displays all the links in the network topology along with the SPT. The SPT determines the nodes and links that a circuit can be routed to or routed through. The X variable represents the network topology identifier. Do not include the X variable if you want to display all the network topologies.
- Netelement_*xxx-xxx-xxx-xxx* dump—Displays the current state of the NE. The *xxx-xxx-xxx-xxx* variable represents the IP address in reverse order. Do not include the *xxx-xxx-xxx-xxx* variable to displays all NEs.
- Nldump—Displays the current state of the each net link.
- TopologyX dumpareas—(*For multiple OSPF areas only.*) Lists all the OSPF areas in the topology and indicates whether the OSPF area is actively monitored by a node.
- TopologyX dumpagents—(*For multiple OSPF areas only.*) Lists all the topology agents or topology hosts and the OSPF areas that they are responsible for.
- TopologyX dumpareatotopoagentmap—(*For multiple OSPF areas only.*) Lists all the topology agents or topology hosts that are responsible for maintaining the topology in an OSPF area.

G.7.17.6 Problems with Manual Links

Sometimes when manual link issues occur in Prime Optical, you have to create the same manual link in CTC before resolving the issue in Prime Optical. These links are called phantom links. Complete the following steps to create a phantom link:

Step 1 Create the phantom link in Prime Optical.

Step 2 Access the CTC Telnet port and run the **network dumpnls** command to dump all the links with termination points listed in hexadecimal form.

Step 3 Convert the hexidecimal numbers to decimal.

Step 4 In CTC, launch the debug window by holding down the Ctrl key and then the **Shift** key and press the **About** key.

Step 5 Enter the following command to create the phantom link between *ipaddress1* and *ipaddress2,* and between the termination points in decimal values:

```
network createPhantom ipadress1 decimal value1 ipadress2 decimal value2
```

G.7.17.7 Debugging Server Trail Links

When debugging server trail link issues, use the same procedure as debugging any other links. Only the size and provision type are different.

If you telnet to an NCP debug port, you can extract server trail link information by using the **network dump** command.

G.7.17.8 Debugging Bridge and Roll-Related Problems

When bridge and roll-related problems occur, Telnet to the NCP debug port and enter the **rolls dump** or **rollmanager set** command.

If there is a mismatch between the bridge and roll information in Prime Optical and CTC, complete the following steps:

Step 1 On the Prime Optical server, telnet to the local host.

Step 2 Log in using CISCO15 or otbu+1 as the username.

Step 3 Enter the following commands:

```
> log /tmp/debug.log
> ncpp set
```

Step 4 Create a new roll in Prime Optical.

Step 5 On the Prime Optical server, enter the following command to check for the new roll:

```
> rolls dump
```

Step 6 Enter the following command to check for the new roll on a circuit:

```
> circuits dump
```

Step 7 Enter the following command if you created an STS circuit roll:

```
> node nmd hoconnections print
```

Step 8 Enter the following command if you created a VT circuit roll:

```
> node nmd loconnections print
```

Step 9 Log off.

Note If NEs are moved from one network partition to another, the NCP debug port number changes from one NE service to another.

If there are any problems while creating a roll or performing any bridge and roll operations, complete the following steps:

Step 1 On the Prime Optical server, telnet to the local host.

Step 2 Log in using CISCO15 or otbu+1 as the username.

Step 3 Enter the following commands:

```
> log /tmp/debug.log
> ncpp set
> rolls set
> rollmanager set
> logoff
```

G.7.18 Common Equipment Provisioning Problems

You can perform equipment provisioning at the following levels:

- G.7.18.1 Node Level, page G-38
- G.7.18.2 Card Level, page G-38

G.7.18.1 Node Level

G.7.18.1.1 Cannot Create DCC Using OSI or OSI and IP (PPP)

If you cannot create a DCC after choosing to use the OSI or OSI and IP (PPP) Layer 3/Layer 2 configuration, go to the **NE Explorer > OSI tab > Routers-Setup** subtab and enable the router on which you want to create the DCC.

G.7.18.1.2 Cannot Modify DCC

If you cannot modify a DCC, check whether the same DCC is created in the SDCC and LDCC.

G.7.18.2 Card Level

The following are guidelines when configuring pluggable port modules (PPMs), loopback, and alarm profiles on the card level.

G.7.18.2.1 PPM Tab

You should provision PPMs before creating pluggable port rates. The following are guidelines when provisioning PPMs on specific cards:

- MRC-12 cards
  - You can provision up to twelve PPMs.
  - If the MRC-12 card is provisioned on slots 1 to 4 or slots 14 to 17, PPM1 is provisioned with only the OC48 rate.
  - If the MRC-12 card is provisioned on slots 5, 6, 12, or 13, you can provision PPM1, PPM4, PPM7, and PPM10 with the OC48 rate.
  - The total available bandwidth of the ports is OC48 when the card is provisioned on slots 1 to 4 or slots 14 to 17.
  - The total available bandwidth of the ports is OC192 when the card is provisioned on slots 5, 6, 12, or 13.
  - The total available bandwidth depends also on the XC card.
- MRC-2.5G-12 cards
  - You can provision up to twelve PPMs.
  - Only PPM1 allows provisioning of the STM16 rate. If PPM1 is provisioned with STM16, the other PPMs are unprovisionable.
  - The total bandwidth of the ports is STM16.
  - PPM1, PPM4, PPM7, and PPM10 only allow provisioning of STM4.
- MRC-2.5G-4 cards
  - You can provision up to four PPMs.
  - Only PPM1 allows provisioning of the OC48 rate. If PPM1 is provisioned with OC48, the other PPMs are unprovisionable.
  - The total bandwidth of the ports is OC48.
- STM64 XFP-based cards
  - You can only provision one PPM.

– The only allowed port rate is STM64.

G.7.18.2.2 Loopback Tab

In the Loopback tab of the NE Explorer, you cannot change the admin state from IS to OOS, DSBLD. You should first change the admin state to OOS, MT or IS, AINS and then OOS, DSBLD.

G.7.18.2.3 Alarm Behavior Tab

You can only create alarm profiles at the node level. The Alarm Behavior tab in the card level of the NE Explorer only allows you to apply existing alarm profiles to the card.

G.7.19 How Do I Collect Solaris Client Thread Dumps?

Step 1 Open a terminal session.

Step 2 Run the client with the ctmc.sh script located in the /opt/CiscoTransportManagerClient directory.

Step 3 Enter the following command to obtain the client Java process ID:

```
ps -aef|grep java
```

Step 4 Enter the following command, where *pid* is the client Java process ID:

```
kill -QUIT pid
```

G.7.20 How Do I Collect Windows Client Thread Dumps?

To collect thread dumps for CTM R5.0.2 and earlier, complete the following steps:

Step 1 Open a DOS window.

Step 2 Run the ctmc.bat file located in the C:\Cisco\TransportManagerClient directory.

Step 3 Generate the thread dump by holding down the **Ctrl** key and pressing the **Pause** (**Break**) key.

Step 4 Copy and paste the output to a text file.

To collect thread dumps for CTM R6.0 and later, complete the following steps:

Step 1 Open a DOS window.

Step 2 Depending on your network size, enter one of the following commands:

```
ctm-small-debug.exe
ctm-medium-debug.exe
ctm-large-debug.exe
ctm-highend-debug.exe
```

Step 3 Generate the thread dump by holding down the **Ctrl** key and pressing the **Pause** (**Break**) key.

Step 4 Copy and paste the output to a text file.

G.7.21 How Do I Collect Server Thread Dumps?

Thread dumps are helpful references when debugging the Prime Optical process. To collect thread dumps:

Step 1 Log into the server workstation as the root user.

Step 2 On the command line, enter the following command:

```
thread_dumper [\Group/Service\]
```

where:

- *Group* is the group name for which to collect thread dumps. It can be:
  - SM
  - SNMPTRAP
  - NE
  - PM
  - GW
- *Service* is the service name for which the thread dump is required. It can be:
  - SMService
  - SNMPTrapService
  - CORBAGWService
  - ONS15216NEService
  - ONS15305NEService
  - ONS15310NEService
  - ONS15327NEService
  - ONS15454NEService
  - ONS15454SDHNEService
  - ONS15530NEService
  - ONS15540NEService
  - ONS15600NEService
  - ONS15600SDHNEService
  - UnmanagedNEService
  - ONS15216PMService
  - ONS15305PMService
  - ONS15310PMService
  - ONS15327PMService
  - ONS15454PMService

- ONS15454SDHPMService
- ONS15530PMService
- ONS15540PMService
- ONS15600PMService
- ONS15600SDHPMService

G.7.22 How Do I Enable or Disable the Automatic Refresh Data Feature?

The automatic Refresh Data feature automatically refreshes all data being displayed by Prime Optical. When automatic refresh is enabled, you receive the following prompt:

```
Refresh Data action suggested. This action will result in closing all windows and might
take some time. Do you want to continue? {Yes | No}
```

In an unstable environment where NEs are synchronizing or changing operational states frequently, you might receive the preceding prompt continuously. To disable the prompt:

Step 1 In the Domain Explorer window, choose **Edit > User Preferences**. The User Preferences dialog box opens.

Step 2 Click the **Miscellaneous** tab.

Step 3 To disable the prompt, uncheck the **Enable Refresh Data Timer** check box. (To enable the prompt, leave the check box checked.)

Step 4 Click **OK**.

G.7.23 How Do I Replace the Alarm Interface Panel?

The Alarm Interface Panel (AIP) provides surge protection for CTC-based NEs. This panel has a nonvolatile memory chip that stores the unique node address known as the MAC address. The MAC address identifies the nodes that support circuits. It allows Prime Optical to determine circuit sources, destinations, and spans.

If an AIP fails, an alarm is generated and the LCD display on the fan-try assemblies of the NEs becomes blank. To perform an in-service replacement of the AIP, you must contact the Cisco TAC.

You can replace the AIP on an in-service system without affecting traffic by using the circuit repair feature. See 7.2.10 Repairing Circuits, page 7-144.

G.8 Client Debug Messages

On Windows, you can start the Prime Optical client with a console window that displays exceptions and client debug messages. You can use these messages to help troubleshoot any client problems.

Step 1 Depending on your network size, enter one of the following commands to start the client with a console window:

```
/bin/ctm-small-debug.exe
/bin/ctm-medium-debug.exe
/bin/ctm-large-debug.exe
/bin/ctm-highend-debug.exe
```

Step 2 When the Prime Optical client exits, the console window closes. If you want to capture and save the messages when the client exits, you must redirect the output to a file. In this case, the console will not be displayed. To save exceptions to a file, open one of the following files that corresponds to your network size:

- /bin/ctm-small-debug.lax
- /bin/ctm-medium-debug.lax
- /bin/ctm-large-debug.lax
- /bin/ctm-highend-debug.lax

Note It is strongly recommended that you save a copy of the original .lax file before modifying it.

Step 3 Using a text editor, open the appropriate .lax file and change the following lines by replacing "console" with a filename:

```
lax.stderr.redirect=console
lax.stdout.redirect=console
```

When specifying filenames, make sure to use escaped backslashes (such as c:\\myfolder\\client.log). For example, to save messages to the C:\myfolder\client.log file, change the lines to read:

```
lax.stderr.redirect=c:\\myfolder\\client.log
lax.stdout.redirect=c:\\myfolder\\client.log
```

Step 4 After modifying the .lax file, enter one of the following commands to launch the Prime Optical client, depending on your network size:

```
/bin/ctm-small-debug.exe
/bin/ctm-medium-debug.exe
/bin/ctm-large-debug.exe
/bin/ctm-highend-debug.exe
```

On Solaris, you can start the Prime Optical client with a console window that displays exceptions and client debug messages. You can use these messages to help troubleshoot any client problems.

Depending on your network size, enter one of the following commands to start the client with a console window:

```
ctmcdebug-start -small
ctmcdebug-start -medium
ctmcdebug-start -large
ctmcdebug-start -highend
```

G.9 Prime Optical GateWay/CORBA Problems

G.9.1 Prime Optical GateWay/CORBA Is Installed After Installing the Prime Optical Server

If the Prime Optical server is installed without the Prime Optical GateWay/CORBA option, and the Prime Optical GateWay/CORBA option is installed later, the Control Panel does not refresh automatically after the Prime Optical GateWay/CORBA installation to show that it has been installed.

This problem occurs because the Prime Optical GateWay/CORBA installation is handled by a script that notifies the database that the component has been installed, but does not notify the Prime Optical server.

To work around this problem, click the **Refresh Data** button in the Control Panel. It might take some time for the Control Panel to show that Prime Optical GateWay/CORBA is installed. You might need to close and reopen the Control Panel to see the change.

G.9.2 Testing Prime Optical GateWay/CORBA

Whenever you encounter Prime Optical GateWay/CORBA problems, complete the following to test Prime Optical GateWay/CORBA:

Step 1 In the Control Panel, make sure that the status of Prime Optical Gate/Way CORBA is Active and that the service action is set to Stop. See 12.2.2.2 Starting or Stopping Prime Optical GateWay/CORBA, page 12-12 and 12.2.2.3 Viewing the Prime Optical GateWay/CORBA Service Pane, page 12-13 for more information.

Step 2 Check that your profile has been created in the Prime Optical Gateway/CORBA Users table. Use that profile and the correct password to connect the OSS client to the Prime Optical server. See 12.2.2.4 Viewing the Prime Optical GateWay/CORBA Users Table, page 12-15 and 12.2.2.5 Adding a Prime Optical GateWay/CORBA User, page 12-16 for more information.

Step 3 If you are still encountering problems after performing steps 1 and 2, log into the server and collect the following logs:

- /tmp/CORBAGWService.log
- /tmo/0.log
- /tmp/jcorbagw/log.bak
- /opt/CiscoTransportManagerServer/log/ CORBAGWService-*.log
- /opt/CiscoTransportManagerServer/openfusion/domains/OpenFusion/localhost/NotificationService/log/NotificationService. log

Step 4 Complete the following steps to change the Prime Optical GateWay/CORBA notification service port to dynamic using the Prime Optical client:

a. In the Domain Explorer window, choose **Administration > Control Panel**.

b. Click **GateWay/CORBA Service** to open the GateWay/CORBA Service pane.

c. In the **Global** tab > **Status** area, click the **Stop** button to stop the service.

d. In the **GateWay/CORBA Configuration** area, set the Notification Service Listening Port Number to zero.

e. Save the changes.

Numbers

20MD-L-E 20-channel Mux/Demux–L band–Even channel

20MD-L-O 20-channel Mux/Demux–L band–Odd channel

24WD-LLR 24-channel Wavelength Demultiplexer–Low Loss–Red band

24WD-R 24-channel Wavelength Demultiplexer–Red band

32WD-IR 32-channel Wavelength Demultiplexer–Infrared band

3R retime, reshape, and regenerate

40MD-C-E 40-channel Mux/Demux–C band–Even channel

40MD-C-O 40-channel Mux/Demux–C band–Odd channel

8MD-C 8-channel Mux/Demux–C band

8WD-B 8-channel Wavelength Demultiplexer–Blue band

A

AC 1. alternating current

2. attachment circuit

ACL access control list

ACO alarm cutoff

ADA Add/Drop Amplifier

ADM 1. add/drop multiplexing

2. add/drop multiplexer

AH Authentication Header

AIC Alarm Interface Controller

AID access identifier

AIP Alarm Interface Panel

AIS alarm indication signal

AIS-L line alarm indication signal

AIS-P path alarm indication signal

AIU Alarm Interface Unit

ALS automatic laser shutdown

AMI alternate mark inversion

ANS automatic node setup

ANSI American National Standards Institute

API application program interface

APS automatic protection switching

ARP Address Resolution Protocol

AS application server

ASCII American Standard Code for Information Interchange

ASIC application-specific integrated circuit

ATM asynchronous transfer mode

AToM Any Transport over MPLS

AWG arrayed waveguide grating

B

B8ZS binary 8-zero substitution

BAT Battery Management

BBA Blue-band Booster Amplifier

BBE background block errors

BCS-ELH Band Combiner and Splitter–Extended Long Haul

BCS-LH Band Combiner and Splitter–Long Haul

BER bit error rate

BFD Bidirectional Forwarding Detection

BIOS basic input/output system

BIP bit interleaved parity

BITS building integrated timing supply

BLSR bidirectional line switch ring

BPV bipolar violation

BRI Basic Rate Interface

BW bandwidth

C

CBUS control bus

CCAT contiguous concatenation

CDE Common Desktop Environment

CDP Cisco Discovery Protocol

CHAP Challenge Handshake Authentication Protocol

CIR committed information rate

Cisco IOS Cisco Internetwork Operating System

CIT craft interface terminal

CLEI Common Language Equipment Identifier

CLEI codes are used by Telcordia licensees to uniquely identify telecommunications equipment in their networks. A CLEI code is a distinctive identifier for specific telecommunications equipment. The CLEI code conforms to a 10-character alphanumeric structure. These characters define an equipment configuration by specifying basic product type, features, source document, and associated drawings and versions. A CLEI code is unique to a specific piece of equipment and cannot be assigned to any other part. CLEI is a trademark of Telcordia Technologies, Inc.

CLI command-line interface

CLIP Client Layer Interface Port

CM configuration management

CMP Control and Monitoring Processor

CMP-W Control and Monitoring Processor

CMP-W-2E Control and Monitoring Processor–2 Ethernet

CO central office

CORBA Common Object Request Broker Architecture

CoS	class of service
CPBIT	C-bit parity bit
CPT	Carrier Packet Transport
CPU	central processing unit
CSMA/CD	carrier sense multiple access collision detect
CSU	channel service unit
CSV	comma-separated values
CTC	Cisco Transport Controller
CTM	Cisco Transport Manager
CTP	connection termination point
CV	coding violation
CV-L	line coding violation
CVLAN	carrier virtual LAN
CV-P	path coding violation
CV-S	section coding violation
CV-V	coding violation VT layer

D

dBm	decibels per milliwatt
DC	direct current
DCC	data communications channel
DCE	data circuit-terminating equipment
DCN	data communications network
DCS	Digital Crossconnect System
DCU	dispersion compensation unit
DDS	digital data service
DHCP	Dynamic Host Configuration Protocol
DLC	digital loop carrier

DMM Domain Manager Mode

DNS Domain Name System

DOS disk operating system

DoS Denial of Service

DRI dual-ring interconnect

DS1 digital service 1

DS-1 digital signal level 1

DS3-12 Digital Signal Level Three (12 ports)

DS3N-12 Digital Signal Level Three (N-12 ports)

DS3XM-6 Digital Signal Level 3 Trans Multiplexer (6 ports)

DSCP Differentiated Services Code Point

DSL digital subscriber line

DSP data service provisioning

DSU data service unit

DTE data terminal equipment

DTP Dynamic Trunking Protocol

DUS do not send

DWDM dense wavelength division multiplexing

E

ECM error correction mode

ECR error corrected rate

EDFA erbium-doped fiber amplifier

EEPROM Erasable Programmable Read-Only Memory

EFD event forwarding discriminator

EFM Ethernet first mile

EFP Ethernet Flow Point

ELH Extended Long Haul

EML	Element Management Layer
EMS	Element Management System
ENE	end network element
EOC	embedded operations channel
EOI-W	External Orderwire Interface
EoMPLS	Ethernet over MPLS
EP	extra pump
ES	errored second
ESF	Extended Superframe
ESP	Encapsulation Security Payload
ES-L	line errored second
ES-P	path errored second
ES-S	section errored second
ES-V	VT layer errored second
ETSI	European Telecommunications Standards Institute
EVC	Ethernet Virtual Circuit
EXZ	excessive zeros

F

FC-L	line failure count
FC-P	path failure count
FCS	frame check sequence
FDI	forward defect indication
FDL	Facility Data Link
FEAC	Far End Action Code
FEC	forward error correction
FEPM	far-end performance management
FM	fault management

FOG	Fan-Out-Group
FRU	field-replaceable unit
FT1	fractional T1
FTP	1. File Transfer Protocol 2. floating termination point

G

GBIC	Gigabit Interface Converter
Gb/s	gigabits per second
GFP	generic framing procedure
GHz	gigahertz
GMT	Greenwich Mean Time
GNE	gateway network element
GOS	grade of service
GUI	graphical user interface

H

HDLC	high-level data link control
HO	high order
HTTP	Hypertext Transfer Protocol

I

I/O	input/output
ID	identification
IDL	Interface Definition Language
IEEE	Institute of Electrical and Electronics Engineers
IFP	Internet Fax Protocol
IGMP	Internet Group Management Protocol

IKE	Internet Key Exchange
IIOP	Internet Inter-ORB Protocol
ILMI	Integrated Local Management Interface
IM	Information Model
IOC-W	Input/Output Card
IOF	interoffice facility
IP	Internet Protocol
IPPM	intermediate path performance monitoring
IRBA	Infrared-band Booster Amplifier
IRBA-10G	Infrared-band Booster Amplifier–10 Gb/s
IS	In Service

J

JMOCO	Java Management Object and Configuration Object
JRE	Java Runtime Environment
JVM	Java Virtual Machine

K

kb/s	kilobits per second
km	kilometer

L

L2	Layer 2
L2VPN	Layer 2 VPN
LACP	Link Aggregation Control Protocol
LAN	local-area network
LAP	low-order aggregation point
LAPB	Link Access Procedure, Balanced

LAPD	Link Access Procedure on the D channel
LAPS	linear automatic protection switching
LBC	laser bias current
LCAS	link capacity adjustment scheme
LCI	local craft interface
LCP	link control protocol
LCT	local craft terminal
LDP	label distribution protocol
LED	light-emitting diode
LEM	Line Extender Module
LEM-10G-Mxx	Line Extender Module–10 Gb/s–B1 Monitoring
LEM-10G-Nxx	Line Extender Module–10 Gb/s–Normal
LEM-10H-Mxx	Line Extender Module–10 Gb/s High Output Power–B1 Monitoring
LEM-622-Nxx	Line Extender Module–622 Mb/s–Normal
LEM-EM-Fxx	Line Extender Module–Externally Modulated–Forward Error Correction
LEM-EM-Mxx	Line Extender Module–Externally Modulated–B1 Monitoring
LEM-EM-Nxx	Line Extender Module–Externally Modulated–Normal
LESB	link error status block
LH	long haul
LHS	left-hand side
LIP	Loop Initialization Primitive
LKR	lockout request
LLC	Logical Link Control
LNE	LAN-connected network element
LO	low order
LOC	loss of communication
LOF	1. loss of function 2. loss of frame
LOH	line overhead

LOP loss of pointer

LOS loss of signal

LOSS-L line loss-of-signal second

LOT loss of traffic

LSM-W Line Service Modem

LSP Label Switched Path

LT-10G-Cxx Line Transponder–10 Gb/s–C band–channel xx

LT-10G-SCxx Line Transponder–10 Gb/s–Single slot–C band–channel xx

LT-10G-SLxx Line Transponder–10 Gb/s–Single slot–L band–channel xx

LT-25G-Cxx Line Transponder–2.5 Gb/s–C band–channel xx

LTE line-terminating equipment

M

mA milliampere

MAC Media Access Control

MAN metropolitan-area network

MB megabyte

Mb/s megabits per second

MCU Multichannel Unit

MEA Mismatch of Equipment alarm

Megaco *See* H.248

MIB Management Information Base

MIC Mechanical Interface Card

MPLS Multiprotocol Label Switching

MPLS-TP Multiprotocol Label Switching Transport Profile

MS multiplex section

MS-SPRing multiplex section shared protection ring

MTU maximum transmission unit

MUX multiplexer

MVR Multicast VLAN Registration

mW milliwatt

N

NAT Network Address Translation

NCB Network Controller Board

NCP Network Control Protocol

NE network element

NEID network element identifier

NNI network-to-network interface

nm nanometer

NMA Network Management and Analysis

NML Network Management Layer

NMS network management system

NOC network operations center

NP network partition

NPJC-Pdet negative pointer justification count, STS path detected

NPJC-Pgen negative pointer justification count, STS path generated

NSA nonservice-affecting

NSAP network service access point

NSC nonstandard facilities command

NSF nonstandard facilities

NSS nonstandard facilities setup

NTP Network Time Protocol

O

OAD-8-C Optical Add/Drop–8 channel–C band

OADM Optical Add/Drop Multiplexer

OADM-P4 Optical Add/Drop Multiplexer–Passive–4 channels

OADM-P4-B1 Optical Add/Drop Multiplexer–Passive–4 channels (01, 03, 05, 07)

OADM-P4-B2 Optical Add/Drop Multiplexer–Passive–4 channels (02, 04, 06, 08)

OADM-P4-R1 Optical Add/Drop Multiplexer–Passive–4 channels (09, 11, 13, 15)

OADM-P4-R3 Optical Add/Drop Multiplexer–Passive–4 channels (17, 19, 21, 23)

OA-ELH Optical Amplifier–Extended Long Haul

OAM&P operations, administration, management, and provisioning

OBA-C Optical Booster Amplifier–C band

OC-n SONET optical carrier, Level *n* (such as *n* = 3, 12, 48, 192)

OCH optical channel

OCHCC optical channel client connection

OCHNC optical channel network connection

OCP Optical Channel Protection

OECP-C Odd/Even Channel Processor–C band

OECP-L Odd/Even Channel Processor–L band

OEP-C Optical Extra Pump–C band

OLA optical line amplification

OMG Object Management Group

ONS Optical Networking System

OOB out-of-band

OOB-FEC out-of-band forward error correction

OOF out of frame

OOS Out of Service

OOS–AINS Out of Service–Auto In Service

OOS–MT Out of Service–Maintenance

OPA-C Optical Preamplifier–C band

OP-ELH Optical External Pump–Extended Long Haul–L band

OPR optical power received

OPT	optical power transmitted
ORB	object request broker
ORP-ELH-1	Optical Raman Pump–Extended Long Haul–1 (1470 nm)
ORP-ELH-2	Optical Raman Pump–Extended Long Haul–2 (1490 nm)
OS	1. operating system
	2. operations system
OSC	1. optical service channel
	2. Optical Supervisory Channel
OSCM	Optical Service Channel Modem
OSI	Open System Interconnection
OSPF	Open Shortest Path First
OSS	Operations Support System
OSU-W	Optical Switch Unit
OTN	optical transport network

P

P	protect
PAD	packet assembler/disassembler
PAgP	Port Aggregation Protocol
PAP	Password Authentication Protocol
PBIT	parity bit
PBX	private branch exchange
PCA	protection channel access
PDH	plesiochronous digital hierarchy
PDI-P	payload defect indication path
PDU	protocol data unit
PE	provider edge
PIR	peak information rate

PLCP	physical layer convergence procedure
PLF	Power Line Filter
PLIM	physical layer interface module
PM	1. performance management
	2. performance monitoring
PMTU	Path Maximum Transmission Unit
PNNI	Private Network-Network Interface
POH	path overhead
POP	point of presence
PoS	1. packet over SONET
	2. packet over SDH
POST	power-on self-test
P-OTS	Packet-Optical Transport System
pots	plain old telephone service
PPJC-PDET	positive pointer justification count, STS path detected
PPJC-Pgen	positive pointer justification count, STS path generated
PPM	pluggable port module
PPMN	path-protected mesh networking
PPP MP	Point-to-Point Multilink Protocol
PRE-L	Pre-Line Amplifier
PRE-L-IR	Pre-Line Amplifier–Infrared band
PRI	Primary Rate Interface
PS	perceived severity
PSC	protection switching count
PSC-R	protection switching count-ring
PSC-S	protection switching count-span
PSC-W	protection switching count-working
PSD	protection switching duration
PSD-R	protection switching duration-ring

PSD-S protection switching duration-span

PSD-W protection switching duration-working

PSK Presharing Key

PSN packet-switching network

PTP physical termination point

PTS Packet Transport System

PVC permanent virtual circuit

PXM1E Processor Switch Module, Enhanced

PXM45 Processor Switch Module (45 Gb/s switching capacity)

Q

QoS quality of service

R

RAI remote alarm indication

RAM random-access memory

RBA Red-band Booster Amplifier

RBA-10G Red-band Booster Amplifier–10 Gb/s

RBA-10G-E Red-band Booster Amplifier–10 Gb/s–ETSI

RBU Router Bridge Unit

RDI remote defect indication

REI remote error indication

REP Resilient Ethernet Protocol

RFC Request for Comments

RFI remote failure indication

RHS right-hand side

RIP Routing Information Protocol

RMON remote monitoring

RPM	Route Processor Module
RPR	Resilient Packet Ring
RSTP	Rapid Spanning Tree Protocol
RSVP	Resource Reservation Protocol
RSVP-TE	Resource Reservation Protocol-Traffic Engineering
RT-10G	Receive Transponder–10 Gb/s
RT-10G-S	Receive Transponder–10 Gb/s–Single slot
RT-10G-S13	Receive Transponder–10 Gb/s–Single slot 1300 nm
RT-25G	Receive Transponder–2.5 Gb/s
Rx	receive
RX CVRD	code violations and running disparity errors encountered in the receive direction
RX HEC	number of CDL header errors encountered in the receive direction
RX Power	optical power level received on the trunk side interfaces
RXT	Receive Transponder
RXT-10G-F	Receive Transponder–10 Gb/s–Forward Error Correction
RXT-10G-N	Receive Transponder–10 Gb/s–Normal
RXT-10H-M	Receive Transponder–10 Gb/s High Output Power–B1 Monitoring
RXT-622-N	Receive Transponder–622 Mb/s–Normal
RXT-DM-F	Receive Transponder–Directly Modulated–Forward Error Correction
RXT-DMLH-M	Receive Transponder–Directly Modulated Long Haul–B1 Monitoring
RXT-DM-M	Receive Transponder–Directly Modulated–B1 Monitoring
RXT-DM-N	Receive Transponder–Directly Modulated–Normal

S

SA	service affecting
SA/DA	service address/destination address
SAM	1. SONET Access Module 2. SDH Access Module

SAN	storage area network
SAS-L	line severely errored frame/alarm indication signal
SAS-P	path severely errored frame/alarm indication signal
SASP-P	path SEF/AIS second
SCC	serial communication controller
SCF	Subrack Common Functions
SCL	system communications link
SCU	1. Single-channel Unit 2. Shelf Control Unit
SD	signal deterioration
SDCC	1. section data communications channel 2. SONET data communications channel
SDH	Synchronous Digital Hierarchy
SEF	severely errored frame
SEFS	severely errored framing second
SEFS-S	section severely errored framing second
SES	severely errored second
SES-L	line severely errored second
SES-P	path severely errored second
SES-S	section severely errored second
SES-V	VT layer severely errored second
SF	1. signal failure 2. Superframe
SFP	small form factor pluggable
SID	system identifier
SLIP	Serial Line Internet Protocol
SMDS	Switched Multimegabit Data Service
SNC	subnetwork connection
SNCP	subnetwork connection protection

SNCP-Ring subnetwork connection protection ring

SNH Supervision Network Hub

SNMP Simple Network Management Protocol

SNS Supervision Network Switch

SNTP Simple Network Time Protocol

SOH section overhead

SONET Synchronous Optical Network

SPA shared-port adapter

SPE synchronous payload envelope

SPQ Strict Priority Queuing

SPR shared packet ring

SPVC soft permanent virtual connection

SQL Structured Query Language

SRLG shared risk link group

SSH Secure Shell Protocol

SSM synchronization status message

STCN segment topology change notifications

STP 1. shielded twisted-pair

2. Spanning-Tree Protocol

STS synchronous transport signal

STS-n synchronous transport signal level *n*

STU synchronization traceability unknown

SVLAN service provider virtual LAN

SVT system verification test

T

TC threshold crossing

TCA threshold crossing alert

TCC	Timing Communications and Control
TCC+	Timing Communications and Control+
TCF	training check field
TCP	Transmission Control Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
TDM	time-division multiplexing
TDS	time-division switching
TE	traffic engineering
TFTP	Trivial File Transfer Protocol
TID	target identifier
TIM	trace identifier mismatch
TL1	Transaction Language 1
TLAN	transparent local-area network
TMF	TeleManagement Forum
TMN	Telecommunication Management Network
TOH	transport overhead
TP	termination point
TPA	transmit power amplifier
TPA-B	Transmit Power Amplifier–Blue band
TPA-IR	Transmit Power Amplifier–Infrared band
TPA-R	Transmit Power Amplifier–Red band
TSI	time slot interchange
TSV	tab-separated values
TT-10G-Cxx	Transmit Transponder–10 Gb/s–C band–channel xx
TT-10G-SCxx	Transmit Transponder–10 Gb/s–Single slot–C band–channel xx
TT-10G-SLxx	Transmit Transponder–10 Gb/s–Single slot–L band–channel xx
TT-25G-Cxx	Transmit Transponder–2.5 Gb/s–C band–channel xx
TUG	tributary unit group
Tx	transmit

U

UAS unavailable second

UAS-L line unavailable second

UAS-P path unavailable second

UAS-V VT layer unavailable second

UCR uncorrected codeword rate

UDC User Data Channel

UDP User Datagram Protocol

UI user interface

UNI User-Network Interface

UTC Coordinated Universal Time

UTP unshielded twisted-pair

V

V volt

VAD voice activity detection

VAP VT aggregation point

VC virtual channel

VCCV virtual circuit connection verification

VCAT virtual concatenation

VCG virtual concatenation group

VCI virtual channel identifier

VCL virtual channel link

VLAN virtual local-area network

VLB VLAN load balancing

VOA variable optical attenuator

VoIP Voice over IP

VPI virtual path identifier

VPL	virtual path link
VT	Virtual Tributary
VTB	Virtual Tributary Bundle
VTG	Virtual Tributary Group
VTP	VLAN Trunking Protocol

W

W	working
WAN	wide-area network
WCM	Wavelength Converter Module
WCM-10G-Fxx	Wavelength Converter Module–10 Gb/s–Forward Error Correction
WCM-10G-Mxx	Wavelength Converter Module–10 Gb/s–B1 Monitoring
WCM-10G-Nxx	Wavelength Converter Module–10 Gb/s–Normal
WCM-10H-Mxx	Wavelength Converter Module–10 Gb/s High Output Power–B1 Monitoring
WCM-622-Nxx	Wavelength Converter Module–622 Mb/s–Normal
WCM-EM-Fxx	Wavelength Converter Module–Externally Modulated–Forward Error Correction
WCM-EM-Mxx	Wavelength Converter Module–Externally Modulated–B1 Monitoring
WCM-EM-Nxx	Wavelength Converter Module–Externally Modulated–Normal
WDM	wavelength division multiplexing
WRR	Weighted Round Robin

X

XC	Cross Connect
XC10G	10 Gigabit Cross Connect
XCVT	Cross Connect Virtual Tributary
XTC	Integrated Crossconnect, Timing, and Control

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