Maintaining an Efficient Network

This topic contains the following information to help you maintain an efficient network:

Note For information about configuring users and user-related parameters, creating and modifying advisory messages, and accessing logs, see Chapter 8, "Managing Security."

Overview

Maintaining your network focuses on tasks that will keep your network running smoothly. Examples include:

- Backing up and restoring memory and the database
- Creating and maintaining protection groups
- Restoring default settings when necessary
- Monitoring tasks and jobs
- Modifying basic server and NE information
- Finding modules or boards
- Updating software images and versions
- Exporting data and generating reports
- Performing administrative database operations

How Do I Manage the Database?

This section describes procedures for managing the Oracle database and deals specifically with Cisco Prime Optical data stored in the database. For a complete description, refer to the Oracle documentation.

A useful tool for managing the database is the Oracle Enterprise Manager, part of the Oracle 10g Client CD. The Oracle Enterprise Manager provides an integrated solution for managing heterogeneous environments and combines a graphical console, agents, common services, and tools to provide a comprehensive systems-management platform for managing Oracle products.

Viewing and Modifying Database Properties

The Database Properties pane in the Control Panel shows and defines database pruning parameters and the configuration that the Prime Optical server uses to connect to the Oracle database. The pane contains the following tabs:

- Configuration—Defines the values used by the Prime Optical server to log into the Oracle database. Fields are grouped into two columns: Activated After Restart and Active. The Activated After Restart column shows the values that the Prime Optical server uses after the server is restarted. The Active column displays the values currently used by the Prime Optical server.
- Pruning—Defines the Prime Optical database pruning frequency. Database pruning is enabled by default. You can configure the performance monitoring (PM) pruning interval for 5-minute, 10-minute, 15-minute, and 1-day data collection, giving you a finer level of control over the pruning of performance data from the system. Pruning frequency changes take effect as soon as you save them; you do not need to reboot the Prime Optical server.
- Database Operations—Allows you to start a database backup or export from the Control Panel. After entering the password, click Start to begin the database backup or export. The backup section is disabled if the database is not installed in ARCHIVELOG mode. The ARCHIVELOG mode is stored in the CTM_config_table by the server installer.

Complete the following steps to view and modify the database properties:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Database Properties** to open the Database Properties pane. The following table provides descriptions.

Step 3 (Optional) Modify the values in the Configuration, Pruning, or Database Operations tabs.

Step 4 Click **Save**.

Table 4-1 Field Descriptions for the Database Properties Pane

Field	Description
Configuration Tab	
Database Server Configuration	*Display only.* Displays the size of the database server.

Table 4-1 Field Descriptions for the Database Properties Pane (continued)

Field	Description

Enable ARCHIVELOG Mode	If checked, the ARCHIVELOG mode is enabled. When the database is in ARCHIVELOG mode, Prime Optical supports automatic pruning of the /db05 partition.
	Note When you check the Enable ARCHIVELOG Mode check box, the Archive Log Pruning Parameters check box (located in the Database Operations tab) is checked automatically.
	Caution To change the ARCHIVELOG mode in a high availability (HA) configuration, you must freeze the ctmgrp service group before making the change, and unfreeze the ctmgrp service group when the change is complete.
	Enter the following commands on all of the clusters to freeze the ctmgrp service group:
	`haconf -makerw`
	`hagrp -freeze ctmgrp -persistent`
	`haconf -dump -makero`
	After the Prime Optical server restarts, enter the following commands on all of the clusters to unfreeze the ctmgrp service group:
	`haconf -makerw`
	`hagrp -unfreeze ctmgrp -persistent`
	`haconf -dump -makero`

Configuration Mode	Configuration Mode tells the Prime Optical server the values to use to log into the Oracle database. When set to Auto, the Prime Optical server uses the configuration that was set when Prime Optical was installed. When set to Manual, the Password field can be changed, and the Prime Optical server uses the new password after the server is rebooted.
	Note If you change the configuration mode to Manual, enter the following commands to set the ORACLE_HOME and ORACLE_SID environment variables before logging into Prime Optical again. (The C-shell is assumed for all UNIX commands.)
	`setenv ORACLE_HOME` *`Oracle-home-directory`*
	`setenv ORACLE_SID CTM`
	`setenv LD_LIBRARY_PATH $ORACLE_HOME/lib`
	`setenv PATH $PATH:$ORACLE_HOME/bin`
	Restart the Prime Optical server after setting these environment variables. To do this, enter the **opticalctl stop** command to shut down the Prime Optical server. Then, enter the **opticalctl start** command to restart it.
	Caution If you set the configuration mode to Auto and restart the Prime Optical server, the CTMServer.cfg file does not change; the parameters retain their previous values.

Username	*Display only.* Displays the username that the Prime Optical server uses to access the Oracle database.

Table 4-1 Field Descriptions for the Database Properties Pane (continued)

Field	Description
Password	Displays the password that gives the username access to the Oracle database. You can change the database password only if the database is not embedded and if the configuration mode is set to Manual. If the configuration mode is set to Auto, the password is display only. **Note** The database password cannot contain the characters @, ", and /, because SQL*PLUS interprets them as special characters. **Note** After a Prime Optical server restart, the Prime Optical client attempts to log in automatically for 6 minutes before exiting. If the Prime Optical server initialization requires additional time to complete, you might need to restart the Prime Optical client. **Caution** The default password is *Ctm123!* and any changes are saved in the CTMServer.cfg file. If you change the default password, the following caution is displayed: "Changing the database password will restart the Prime Optical server. Are you sure you want to continue?" Click **Yes** to confirm the action. The password is validated and the following message is broadcast: "Caution: The database password has been changed by a user. The Prime Optical server will restart in 15 seconds." **Caution** To change the Oracle database password in an HA configuration, see "Changing the Oracle Database Password from the Prime Optical Client in an HA Configuration" in *Cisco Prime Optical Release 9.6 High Availability Installation Guide*.
Confirm Password	(Available when the configuration mode is set to Manual) Re-enter the database password to confirm it.
Location	*Display only.* Displays the IP address that the Prime Optical server uses to connect to the database.
Port	*Display only.* Displays the port number that is used to connect to the database.
System ID	*Display only.* Displays the Oracle system ID. The ORACLE_SID specifies the system identifier (SID) value of the database instance that you create with the Prime Optical installer. For a single-instance database, the SID value should be the same as the name of the database it manipulates (initialization parameter DB_NAME), and no more than four characters. **Note** During Prime Optical installation, the default system ID is *CTM*.

SQL Network Alias	*Display only.* Displays the SQL*Net listener alias set in the system listener.ora file. When the listener is running, entering the **ps** command displays the following output (not all systems display *listener_alias*):
	`tnslsnr [listener_alias] [-inherit]`
	Shadow processes (dedicated servers) spawned by the SQL*Net listener have the following syntax:
	`oracleSID [(LOCAL=NO)]`

Pruning Tab	
PM Data (5, 10, 15 min)	Specifies the number of days to save 5-, 10-, or 15-minute PM data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 30 days. You can also specify the time of day when the PM data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the PM data pruning.

Table 4-1 Field Descriptions for the Database Properties Pane (continued)

Field	Description
PM Data (1 day)	Specifies the number of days to save 1-day PM data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 30 days. You can also specify the time of day when the PM data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the PM data pruning.
FM Data	Specifies the number of days to save cleared and acknowledged alarms in the Alarm Log before Prime Optical prunes alarms from it. You can save from 1 to 1000 days of data. The default value is 7 days. You can also specify the time of day when alarms will be pruned by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate alarm pruning. **Note** Alarms shown in the Alarm Browser are not pruned. They are saved to the Alarm Log when they are cleared and acknowledged. Alarms can be acknowledged manually by a user, or acknowledged automatically if the automatic acknowledgement feature is enabled in the **Control Panel > UI Properties pane > Fault Management** area.
Audit Log Data	Specifies the number of days to save Audit Log data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 7 days. You can also specify the time of day when the Audit Log data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the Audit Log data pruning.
Error Log Data	Specifies the number of days to save Error Log data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 7 days. You can also specify the time of day when the Error Log data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the Error Log data pruning.
Audit Trail Data (*for CTC-based NEs*)	Specifies the number of days to save audit trail data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 7 days. You can also specify the time of day when the audit trail data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the audit trail data pruning.
Self Monitor Data	Specifies the number of days to save self-monitoring data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 7 days. You can also specify the time of day when the self-monitoring data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the self-monitoring data pruning.
Job Monitor Data	Specifies the number of days to save job monitoring data before Prime Optical runs the database pruning script. You can save from 1 to 1000 days of data. The default value is 7 days. You can also specify the time of day when the job monitoring data will be saved by choosing the hour and minute from the Hour, Minutes, and AM/PM fields. Minutes are listed in 5-minute intervals. Check the **Enable** check box to activate the job monitoring data pruning.
Database Operations Tab > Backup Area	
'sys' Password	The password for the sys user. The default Oracle password for the sys user is *change_on_install*.
Backup Status	The status of the database hot backup. The default is Unknown.
Oracle Installation	Check this check box to back up the entire Oracle installation directory.
Solaris Configuration	Check this check box to back up the common Solaris configuration files used by the Oracle installation.

Table 4-1 Field Descriptions for the Database Properties Pane (continued)

Field	Description
Database Configuration	Check this check box to back up the operating system configuration files.
All	Check this check box to back up all of the database components (Oracle installation, Solaris configuration, and database configuration).
Start button	Click the **Start** button to back up the selected database component(s).
Database Operations Tab > Archive Log Pruning Parameters Area	
Enable	Allows you to enable (default) or disable archive log pruning. **Caution** If ARCHIVELOG mode is enabled, the archive log pruning should never be disabled. If the archive log pruning is disabled, the /db05 partition might fill up and the Prime Optical database might shut down.
Threshold	Enter the pruning threshold. By default, when the archive log reaches 70 percent of capacity, pruning begins. **Caution** Do not set this threshold to a high value (such as 90 percent). If the threshold is too high, the /db05 partition could fill up before the archive log pruning makes space available.
Archive Log Backup Directory	Specify the location for the archive log backup files. The default directory is /ctm_backup. **Caution** Make sure that the archive log backup directory exists and has enough space to store the compressed archive log files. Check periodically to make sure that this directory is not full.
Database Operations Tab > Export Area	
Export Status	The status of the database export process. The default is Unknown.
Oracle Installation	Check this check box to export the entire Oracle installation directory. **Caution** This option requires a large amount of disk space (about 2.5 GB) in the /ctm_backup directory.
Solaris Configuration	Check this check box to export the common Solaris configuration files used by the Oracle installation.
Database Configuration	Check this check box to export the operating system configuration files.
All	Check this check box to export all of the database components (Oracle installation, Solaris configuration, and database configuration).
Start button	Click the **Start** button to export the selected database component(s).

Changing the Prime Optical Database Password

Complete the following procedure to change the password that gives the username access to the Oracle database. You can perform this operation only if the database is not embedded.

The following procedure applies to changing the Oracle database password in a non-HA environment. To change the database password in an HA configuration, see "Changing the Oracle Database Password from the Prime Optical Client in an HA Configuration" in *Cisco Prime Optical Release 9.6 High Availability Installation Guide*.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Database Properties** to open the Database Properties pane.

Step 3 Click the **Configuration** tab.

Step 4 Change the password in the Password field. The default password is *Ctm123!* and any changes are saved in the CTMServer.cfg file. You can change the database password if the configuration mode is set to Manual. If the configuration mode is set to Auto, the password is display only.

Note The database password cannot contain the characters @, ", and /, because SQL*PLUS interprets them as special characters.

Step 5 In the Confirm Password field, re-enter the database password to confirm it.

Step 6 After you change the default password, the following caution is displayed: "Changing the database password will restart the Prime Optical server. Are you sure you want to continue?" Click **Yes** to confirm the action. The password is validated and the following message is broadcast: "Caution: The database password has been changed by a user. The Prime Optical server will restart in 15 seconds."

Step 7 Click **Save**.

The Audit Log records the history of the database password change.

- If the Prime Optical server stops, the database password change procedure executes and all Prime Optical clients are shut down.

  To check whether the password change succeeded, view the Alarm Browser, which should not indicate a failure with the database password change. The CTMServer.cfg file in the /opt/CiscoTransportManagerServer/cfg directory should report *CHANGED* in the db-password-change-status section of the file. You can view the file with a system editor or with the command **cat CTMServer.cfg**.

  If the Alarm Browser reports a password-related alarm, view the following report logs in the /temp directory:

  - change_db_password_execute.log (the logger file)
  - change_db_password_execute.err (the file that contains the error)
  - change_db_password.out (the output of the opticalctl stop and opticalctl start scripts)

- If the Prime Optical server does not stop, a prerequisite check failed. View the Alarm Browser for an alarm that explains the failure. Also view the preceding log files to understand the error.

Overview of Backing Up the Prime Optical Database

This section provides guidelines for backing up the Prime Optical database. Various factors affect the database backup, including the type of installation and the Prime Optical system performance. Ultimately, your database administrator (DBA) must determine the best method of backing up the Prime Optical database.

Consider the following definitions:

- *Backing up the database* means safely storing the data in the Prime Optical database.
- *Restoring the database* means taking a specific image of a previous database backup and applying it to re-establish an earlier situation.
- *Recovering the database* means taking a specific image of a previous database backup and applying it to recover from data corruption or loss of data.

You can back up the Prime Optical database using the following methods, which are described in Table 4-2 and in the subsequent sections:

- Hot backup
- Cold backup
- Export

Table 4-2 Methods for Backing Up the Prime Optical Database

Method	Description	Prime Optical Status	Available from the GUI?	Available from the CLI?
Hot backup	A physical copy of the database	The Prime Optical server can be running; the Prime Optical database (Oracle) must be running.	Yes	Yes
Cold backup	A physical copy of the database	The Prime Optical server and the Prime Optical database (Oracle) must be shut down.	No	Yes[1]
Export	A logical copy of the database	If the database is exported from the CLI, the Prime Optical server must be shut down and the Prime Optical database (Oracle) must be running. If the database is exported from the GUI, both the Prime Optical server and database must be running. In this case, all NE and PM services must be shut down, and only one Prime Optical client can be connected.	Yes[2]	Yes

1. You can perform a cold backup manually by using Telnet or an SSH session (CLI) on the Prime Optical database server; however, there are no Prime Optical scripts available for this operation.
2. The exported image might contain inconsistencies when exporting from the GUI, because the Prime Optical server is running during the export.

Understanding Hot Backup, ARCHIVELOG Mode, and the /db05 Directory

You can perform a hot backup while the Prime Optical server is running. A hot backup requires no downtime, but your Prime Optical database must be running in ARCHIVELOG mode.

In ARCHIVELOG mode, the database saves a redo log whenever a log switch occurs in /db05/*.arc files. Redo logs are composed of a group of special files that are filled cyclically. Before rewriting an existing redo log, the archive process makes a copy of the log and produces the archive (.arc) files.

Oracle registers in the redo logs every activity that occurs in the database.

It is not possible to estimate the rate of production of archive files, because the rate depends on the number of log switches in the system. The number of log switches relates to the Prime Optical server workload: During an intensive session with multiple commits of active transactions, the number of log switches increases.

The archive files, in addition to the initial backup of the database, are part of the backup itself and must be kept in a safe place, such as on tape or on a similar storage device. Prime Optical uses the /db05 partition to store the archive files.

During normal system operation, the /db05 directory fills up. You can configure automatic pruning of the /db05 directory in the Control Panel. If automatic pruning is enabled, the archive files are zipped and moved to the /ctm_backup directory.

Prime Optical checks the /db05 partition once every 5 minutes. When archive log pruning for the /db05 partition exceeds the configured threshold, all archive files except for the most recent one are compressed and moved to the /ctm_backup directory. Therefore, make sure that /db05 is in its own partition and not under the root directory.

Set the archive log pruning threshold to a medium value, such as 60 or 70 percent. If you set the threshold to a very high value (such as 90 percent), you risk filling up the /db05 partition. If the /db05 partition fills while ARCHIVELOG mode is enabled, Oracle stops and Prime Optical hangs.

If you set the threshold to a very low value (such as 10 percent), the /db05 partition is pruned continuously, which slows down the system unnecessarily.

To view or change the archive log pruning threshold:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Database Properties** to open the Database Properties pane.

Step 3 Click the **Database Operations** tab. The Archive Log Pruning Parameters area shows the configured threshold.

Step 4 After modifying the Threshold value, click **Save**.

A database backup comprises two main groups of files:

- The files produced under the /ctm_backup directory, which contains a compressed dump of all of the data in the database, including the actual read logs.
- The archive (.arc) files produced during and after the backup.

You can perform a hot backup from the GUI (see Backing Up the Prime Optical Database from the Prime Optical GUI, page 4-12). You can also perform a hot backup from the CLI, using the backupdb.sh script (see Backing Up or Exporting the Prime Optical Database from the CLI, page 4-14).

The Prime Optical restore procedure manages all of the information required to restore the database; you provide only the location of the backup and archive files.

A hot backup has the following advantages:

- You can recover the database contents up to the last transaction that occurred before a crash, returning the lowest amount of lost data.
- There is no Oracle downtime.
- You can use Oracle's RMAN product to configure the backup.

A hot backup has the following disadvantages:

- It requires more disk space, because depending on database activity, the archive log function produces many snapshots.
- It requires planning to avoid filling up the archive log and the /db05 partition.

Use the following guidelines for performing a hot backup:

- By default, the files created by the hot backup are saved in the /ctm_backup directory. Make sure that the /ctm_backup directory exists and has the correct permissions and adequate space.
- Make sure that /ctm_backup is not under the root partition, because it could fill up.
- For optimal results, the Prime Optical server should perform limited activity on the database while the hot backup is running. Therefore, launch the hot backup when users are not working on the system.
- All of the changes performed by the Prime Optical server after the backup starts are logged to the archive files under /db05. These archive files contain required copies of redo logs that are overwritten by Oracle along with the backup files under /ctm_backup.
- Perform a hot backup regularly, especially after completing a significant amount of work. Regular backups reduce the number of archive files to save.
- In a stable network, it is recommended that you perform both a hot backup and a full export. Before the first backup, remove all nonessential files from the /ctm_backup and /db05 directories.
- After a hot backup, save all files in the /db05 and /ctm_backup directories in a safe place.

Use the following guidelines for restoring the database:

- After using a hot backup to restore or recover the database, all previous backups become obsolete. It is recommended that you perform a hot backup after a restore, when all previous backups can be safely removed.
- Restore the database on the same workstation where the backup was performed. This is particularly important in high availability configurations.

Use the following guidelines for managing the archive log:

- It is important to store safely the archive files that are produced *after* a hot backup.
- To avoid generating many archive files that must be saved on disk or tape, perform a hot backup on a regular basis. Regular backups facilitate the restore/recovery operation by reducing the number of archive files to save.

Monitoring the Growth of the /ctm_backup Directory

Because it is not possible to estimate the rate of production of archive files, the /ctm_backup directory might exhaust the available disk space. Without disk space, the Oracle archive process cannot archive the redo logs to be overwritten, and the database freezes. The archive redo logs, which are vital to restore and recover a database, should be saved in a safe place. You might want to create a cron job to save your data.

Understanding Cold Backup

A cold backup is the safest way to take a snapshot of the database. In a cold backup, the Prime Optical server is stopped; then, the Oracle database is shut down. The database contents and the directories /db01, /db02, /db03, /db04, and /db05 are copied to a tape or storage device.

A cold backup has the following advantages:

- Thorough, safe physical backup of the database.
- Simple to complete using basic operating system (OS) commands and by copying all of the files and the directory structure of /db01, /db02, /db03, /db04, and /db05.

A cold backup has the following disadvantages:

- Because you take a physical copy of the entire database at a specific time while Prime Optical and Oracle are down, the database image is not updated with subsequent modifications.
- A cold backup requires you to shut down Prime Optical, during which time network monitoring is unavailable.

There is no recommended procedure to perform a cold backup; instead, your database administrator determines the exact steps. Use the following guidelines:

- Take a cold backup before any activities that could cause problems with Prime Optical or your OS (for example, before installing an Oracle patch or upgrading your Prime Optical version).
- Take a cold backup after important changes.
- Create a .tar file of all of the structures in $ORACLE_HOME and include it with the cold backup files.

Understanding Export

An export is a logical copy of the database objects on a single *.dmp file. You can export the database from the GUI (see Exporting the Prime Optical Database from the Prime Optical GUI, page 4-13). You can also export the database from the CLI, using the export_full_db.sh script (see Backing Up or Exporting the Prime Optical Database from the CLI, page 4-14).

When exporting the database, all of the constraints are removed; then, the objects and constraints are recreated. It is recommended that the Prime Optical server be shut down during the export operation.

An export has the following advantages:

- It is relatively easy to take a logical snapshot of the database contents at a specific time.
- There is no Oracle downtime.
- The restore operation is simple and can be applied on different servers (with the correct database schema).

An export has the following disadvantages:

- It is not a complete backup. If you have database corruption that you cannot recover from, you must recreate the database and then repopulate it with a full export.
- To avoid inconsistencies, you must stop the Prime Optical server.

Use the following general guidelines when exporting the database:

- An export is useful to re-establish the previous contents of the database. Use an export when you plan a critical modification or to eliminate fragmentation.

  For example, export the database before migrating from a single-server Prime Optical configuration (where the Prime Optical server and database are on the same workstation) to a dual-server Prime Optical configuration (where the Prime Optical server and database are on separate workstations).

- If you want to restore a database backup that was exported before you migrated to a later Prime Optical version, you must reinstall the earlier Prime Optical version in order to maintain the earlier Prime Optical database schema. Whenever you restore a database, you must restore it on the same Prime Optical version from which it was created. Otherwise, the restored data does not match the current database schema and Oracle cannot interpret the data.
- Export the database only after the Prime Optical server is stable; for example, after the first network discovery is complete. Doing so ensure that you have an accurate snapshot of your entire network configuration.

Backing Up the Prime Optical Database from the Prime Optical GUI

If your database is in ARCHIVELOG mode, you can perform a hot database backup or a database export. If your database is not installed in ARCHIVELOG mode, you can only perform a database export.

Prime Optical uses the /ctm_backup directory as the default backup directory.

To perform a hot database backup, complete the following steps:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Database Properties** to open the Database Properties pane. Table 4-1 provides descriptions.

Step 3 Click the **Database Operations** tab.

Step 4 In the Backup area, enter the sys password in the 'sys' Password field.

Step 5 (Optional) To back up additional database components, check any of the following check boxes in the Backup area:

- Oracle Installation—Backs up the entire Oracle installation directory.
- Solaris Configuration—Backs up the common Solaris configuration files used by the Oracle installation.
- Database Configuration—Backs up the operating system configuration files.
- All—Backs up all of the database components.

Note If you do not check any of the preceding check boxes, only the Prime Optical database is backed up.

Step 6 In the Backup area, click **Start**.

The backup log file is saved to /oracle/admin/*ORACLE-SID*/udump/backup_db.log. The log file contains all of the files that have been backed up.

Note If the backup is interrupted, you cannot start a new backup from a Prime Optical client; you must use the CLI. Launch the script /setDbBackupStatus.sh from the server as root where the database is installed, at the following location:

cd/opt/CiscoTransportManagerServer/bin

Note It is recommended that you protect your data by backing it up regularly. Backups can be stored on a local or network-mounted, disk-based file system; on a local tape drive; or on a remote tape drive. Commercially available tools for Oracle and system-level backup include:

- Legato Networker (or "Solstice Backup" when purchased from Sun Microsystems)
- VERITAS NetBackup
- BMC Software SQL Backtrack
- GNU Oraback.sh

Exporting the Prime Optical Database from the Prime Optical GUI

Caution Using the Prime Optical GUI to export the database could result in invalid or inconsistent data when other operations are performed on the database (for example, NEs are in service, alarms are being reported, or PM data is being collected). Whenever possible, use the CLI to export the database. If you use the GUI to export the database, verify the following *before* exporting the database:
— Only one Prime Optical client is connected to the Prime Optical server
— All NE and PM services are stopped

To perform a database export, complete the following steps:

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Database Properties** to open the Database Properties pane. Table 4-1 provides descriptions.

Step 3 Click the **Database Operations** tab.

Step 4 Check any of the following check boxes in the Export area:

- Oracle Installation—Exports the entire Oracle installation directory.
- Solaris Configuration—Exports the common Solaris configuration files used by the Oracle installation.
- Database Configuration—Exports the operating system configuration files.
- All—Exports all of the database components.

Note If you do not check any of the preceding check boxes, only the Prime Optical database is exported.

Step 5 In the Export area, click **Start**.

The file is exported to the /ctm_backup/export_dir directory using the filename export_CTM*time-stamp*.dmp. The log file is named export_CTM.log.

Backing Up or Exporting the Prime Optical Database from the CLI

Prime Optical uses the /ctm_backup directory as the default backup directory.

Step 1 To perform a logical database backup (export) from the CLI, enter the following commands as the root user:

Note You can perform a logical database backup whether your database is running in ARCHIVELOG mode or in non-ARCHIVELOG mode.

Performing an export_full_db operation from the CLI requires you to shut down the Prime Optical server.

```
cd /opt/CiscoTransportManagerServer/bin
./export_full_db.sh
```

The file is exported to the /ctm_backup/export_dir directory using the filename export_CTM*time-stamp*.dmp. The log file is named export_CTM.log.

Step 2 To export the database and back up selected components, enter any of the following commands as the root user:

- **export_full_db.sh ORA_INST**—Exports the database and backs up the entire Oracle installation.
- **export_full_db.sh ORA_CFG_FILE**—Exports the database and backs up the configuration files, including init.ora, tnsnames.ora, listener.ora, and sqlnet.ora.
- **export_full_db.sh OS_CFG_FILE**—Exports the database and backs up the OS configuration files, including /etc/passwd, /etc/group, /etc/system, and /var/opt/oracle/oratab.
- **export_full_db.sh ALL**—Exports the database and backs up all of the preceding configuration files.

Step 3 To perform a full database hot backup, enter the following commands as the root user:

Note You can perform a hot database backup only if your database is running in ARCHIVELOG mode.

```
cd /opt/CiscoTransportManagerServer/bin
./backupdb.sh
```

The backup log file is saved to /oracle/admin/*ORACLE-SID*/udump/backup_db.log. The log file contains all of the files that have been backed up. Detailed logs of the export operation are located in the /ctm_backup/export_dir directory.

Step 4 To back up selected components, enter any of the following commands as the root user:

- **backupdb.sh ORA_INST**—Backs up the entire Oracle installation.
- **backupdb.sh ORA_CFG_FILE**—Backs up the configuration files, including init.ora, tnsnames.ora, listener.ora, and sqlnet.ora.
- **backupdb.sh OS_CFG_FILE**—Backs up the OS configuration files, including /etc/passwd, /etc/group, /etc/system, and /var/opt/oracle/oratab.

- **backupdb.sh ALL**—Backs up the database and all of the preceding configuration files.

Restoring the Prime Optical Database from the Previous Backup

Complete the following steps to restore the Prime Optical database from a hot database backup set or from an export.

Note The revert procedure will result in loss of local database information stored after the upgrade. In other words, a reverse database migration is not supported; rather, a backup copy of the original database is used.

Step 1 (*For HA configurations only; for non-HA configurations, begin at Step 2*) Enter the following commands on all of the clusters to freeze the ctmgrp service group:

```
haconf -makerw
hagrp -freeze ctmgrp -persistent
haconf -dump -makero
```

Step 2 Disconnect all of the Prime Optical clients and enter the following command to shut down the Prime Optical server, if it is running:

```
opticalctl stop
```

Step 3 To restore the database from a hot backup, log into the Prime Optical database workstation as the root user and enter the following commands:

```
cd /opt/CiscoTransportManagerServer/bin
./restore_db.sh backup-file-location backup-configuration-file log-directory
```

Note The default *backup-configuration-file* location is /ctm_backup/backup_conf.cfg. The restore_db.sh script uses the latest backup to restore the database.

Step 4 Enter the following command to manually restart the Prime Optical server:

```
opticalctl start
```

Note The Prime Optical server does not restart automatically after restoring the database.

Step 5 (*For HA configurations only; for non-HA configurations, skip this step*) After the Prime Optical server restarts, enter the following commands on all of the clusters to unfreeze the ctmgrp service group:

```
haconf -makerw
hagrp -unfreeze ctmgrp -persistent
haconf -dump -makero
```

Step 6 To restore from an export dump file, enter the following commands to import the database:

Caution Be sure to disable ARCHIVELOG mode before you import the database. If you do not disable ARCHIVELOG mode, the /db05 directory could fill up.

```
cd /opt/CiscoTransportManagerServer/bin
./import_full_db.sh export-file-location export-configuration-file log-directory
```

The default location of the configuration file is /ctm_backup/export_conf.cfg.

Pruning the Prime Optical Database

Database pruning is critical to Oracle server performance. If the Prime Optical database files grow too large, it creates extra work for Oracle to insert or remove records from the middle of the database. This section describes how to set the time and date for automatic database pruning and how to use pruning scripts.

Setting the Time and Date for Automatic Pruning

Choosing to prune the database automatically prunes daily all PM, FM, Audit Log, Error Log, audit trail, self monitor, and job monitor data older than the specified retention period.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 Click **Database Properties** to open the Database Properties pane.

Step 3 Click the **Pruning** tab.

Step 4 Check the **Enable** check box for each field as desired, and set the number of days and time of pruning.

Consider scheduling database pruning for the middle of the night, when Prime Optical is least busy. It is helpful to schedule each pruning activity to start separately, with some time between each pruning script. For example, you might start pruning at midnight and allow 30 to 45 minutes for each pruning activity before starting the next one.

Note that the start time for pruning activities is set according to Greenwich Mean Time (GMT), not local time.

Step 5 After making the selections, click **Save**. Changes take effect immediately.

Using Pruning Scripts

Aside from automatic pruning, you can also prune Prime Optical data from the Oracle database at any given time by running database pruning scripts. Pruning scripts allow you to prune the following types of data:

- Audit Log data
- Audit trail data
- Error Log data
- FM data
- All PM data
- NEs and all related information
- Self Monitor table data

Complete the following steps to prune Prime Optical data using pruning scripts:

Step 1 Log in as the root user on the Sun Solaris workstation where the Prime Optical server is installed.

Step 2 Enter the following command to change directories to the Prime Optical server bin directory:

```
cd /opt/CiscoTransportManagerServer/bin
```

Step 3 Enter the following command to see a list of pruning scripts:

```
ls -al prune*
```

Step 4 Select a script and a parameter (based on database pruning) and enter the corresponding command on the UNIX shell.

For example, to prune Error Log data older than 25 days, enter:

```
./prune_errlog.sh 25
```

The following table lists parameters that can be passed to the following scripts, and the tables that are affected:

- Prune Audit Log data
- Prune Error Log data
- Prune FM data
- Prune audit trail data
- Prune Job Monitor table data
- Prune Self Monitor table data

Table 4-3 Parameters for Database Pruning: Multiple Scripts

Tables Affected	Input Parameters	Remarks
Prune Audit Log Data Script (prune_auditlog.sh)		
transaction_log_table	No. of days (1 to 1000)	Removes all Transaction Log entries that were created before *n* days.
Prune Error Log Data Script (prune_errlog.sh)		
error_log_table	No. of days (1 to 1000)	Removes all Error Log entries that were created before *n* days.
Prune FM Data Script (prune_fm.sh)		
alarm_event_table	No. of days (1 to 1000)	Removes all alarm and event entries that were created before *n* days.
active_alarm_table	No. of days (1 to 1000)	
Prune Audit Trail Data Script (prune_audittrail.sh)		
ne_audit_trail_table	No. of days (1 to 1000)	Removes all NE audit trail entries that were created before *n* days.
PruneJob Monitor Table Script (prune_admin_job_table.sh)		
admin_job_table	No. of days (1 to 1000)	Removes all job monitor entries that were created before *n* days.

Table 4-3 Parameters for Database Pruning: Multiple Scripts (continued)

Tables Affected	Input Parameters	Remarks
Prune Self Monitor Table Script (prune_server_monitor.sh)		
server_monitor_table	No. of days (1 to 1000)	Removes all self monitor entries that were created before *n* days.

Table 4-4 lists parameters that can be passed to the prune_pm.sh script, and the tables that are affected. The prune_PM.sh script removes all PM entries that were created before *n* days.

Note Based on the value of "Is 24 flag," Prime Optical prunes 15-minute data, 1-day data, or both 15-minute and 1-day data. If the "Is 24 flag" value is blank, Prime Optical prunes both 15-minute and 1-day data.

Table 4-4 Parameters for Database Pruning: Prune PM Data Script (prune_pm.sh)

Tables Affected	Input Parameters
ONS15454_DS3_PM_TABLE	• No. of days (1 to 1000) • Is 24 flag (where 0 = 15 min, 1 = 1 day, and 2 = both 15 min and 1 day)
ONS15454_SONET_PATH_PM_TABLE	
ONS15454_SONET_LINE_PM_TABLE	
ONS15454_SONET_SEC_PM_TABLE	
ONS15454_ENET_PM_TABLE	
ONS15454_DS1_PM_TABLE	
ONS15454_Sonet_VT_PM_Table	
ONS15454SDH_RS_PM_Table	
ONS15454SDH_MS_PM_Table	
ONS15454SDH_HO_PM_Table	
ONS15454SDH_LO_PM_Table	
ONS15454SDH_E1_PM_Table	
ONS15454SDH_E3_PM_Table	
ONS15454SDH_E4_PM_Table	
ONS15600_Sonet_Sec_PM_TABLE	
ONS15600_Sonet_Line_PM_Table	
ONS15600_Sonet_Path_PM_Table	
ONS15454_PHY_LAYER_PM_Table	
ONS15454_POS_PM_Table	
ONS15454_OTN_SEC_PM_Table	
ONS15454_OTN_PATH_PM_Table	
ONS15454_OTN_FEC_PM_Table	
ONS15600SDH_RS_PM_Table	
ONS15600SDH_MS_PM_Table	
ONS15600SDH_HO_PM_Table	
ONS1530x_RS_PM_TABLE	
ONS1530x_MS_PM_TABLE	
ONS1530x_HO_PM_TABLE	
ONS1530x_LO_PM_TABLE	
ONS1530x_IP_PM_TABLE	

Table 4-5 lists parameters that can be passed to the prune_ne.sh script, and the tables that are affected. The prune_ne.sh script removes all information about the NE from the database. Use this script with extreme caution.

Caution Before running the script, shut down all Prime Optical clients and the Prime Optical server.

Table 4-5 Parameters for Database Pruning: Remove an NE Script (prune_ne.sh)

Tables Affected	Input Parameter
ACTIVE_ALARM_TABLE	NE SYS ID
ADDITIONAL_DEVICE_INFO	NE SYS ID
ADMIN_JOB_TABLE	NE SYS ID
ALARM_COUNT_TABLE	NE SYS ID
ALARM_EVENT_TABLE	NE SYS ID
APS_GROUP_TABLE	NE SYS ID
AUDIT_LOG_TABLE	NE SYS ID
CERENT_NE_GROUP_TABLE	NE SYS ID
CIRCUIT_DEST_TBL	NE SYS ID
CIRCUIT_SPAN_TBL	NE SYS ID
CIRCUIT_TBL	NE SYS ID
CIRCUIT_VCG_TBL	NE SYS ID
CIRCUIT_VLAN_TBL	NE SYS ID
DOMAIN_TABLE	NE SYS ID
EQPT_INFO_TABLE	NE SYS ID
EQPT_RELATIONSHIP_TABLE	NE SYS ID
IF_CROSS_CONNECT	NE SYS ID
IF_DWDM_CHANNEL_GROUP	NE SYS ID
IF_OPTICAL_PHY_CONFIG_TABLE	NE SYS ID
INTERFACE_APS_INFO	NE SYS ID
INTERFACE_DWDM_FREQUENCY	NE SYS ID
INTERFACE_STACK_TABLE	NE SYS ID
LINK_TABLE	NE SYS ID
MANAGED_ET_TAB	NE SYS ID
MAP_CUST_TABLE	NE SYS ID
MIB2_INTERFACE_TABLE	NE SYS ID
NE_AUDIT_TRAIL_TABLE	NE SYS ID
NE_INFO_TABLE	NE SYS ID
NE_INVENTORY_TABLE	NE SYS ID
NE_PORT_STATUS_TABLE	NE SYS ID
NE_SWIMAGE_TABLE	NE SYS ID
ONS15216_ACTIVE_USER_TABLE	NE SYS ID
ONS15216_NE_INVENTORY_TABLE	NE SYS ID
ONS15216_USER_TABLE	NE SYS ID
ONS1530X_HO_PM_TABLE	NE SYS ID
ONS1530X_IP_PM_TABLE	NE SYS ID

Table 4-5 Parameters for Database Pruning: Remove an NE Script (prune_ne.sh) (continued)

Tables Affected	Input Parameter
ONS1530X_LO_PM_TABLE	NE SYS ID
ONS1530X_MS_PM_TABLE	NE SYS ID
ONS1530X_NE_INVENTORY_TABLE	NE SYS ID
ONS1530X_RS_PM_TABLE	NE SYS ID
ONS15454SDH_E1_PM_TABLE	NE SYS ID
ONS15454SDH_E3_PM_TABLE	NE SYS ID
ONS15454SDH_E4_PM_TABLE	NE SYS ID
ONS15454SDH_HO_PM_TABLE	NE SYS ID
ONS15454SDH_LO_PM_TABLE	NE SYS ID
ONS15454SDH_MS_PM_TABLE	NE SYS ID
ONS15454SDH_RS_PM_TABLE	NE SYS ID
ONS15454_327_NE_TABLE	NE SYS ID
ONS15454_8B10B_PM_TABLE	NE SYS ID
ONS15454_ACTIVE_USER_TABLE	NE SYS ID
ONS15454_CBQOS_INFO_TABLE	NE SYS ID
ONS15454_CLASSMAP_PM_TABLE	NE SYS ID
ONS15454_COS_PM_TABLE	NE SYS ID
ONS15454_DS1_PM_TABLE	NE SYS ID
ONS15454_DS3_PM_TABLE	NE SYS ID
ONS15454_ENET_PM_TABLE	NE SYS ID
ONS15454_FC_PM_TABLE	NE SYS ID
ONS15454_IFX_PM_TABLE	NE SYS ID
ONS15454_MATCH_STMT_PM_TABLE	NE SYS ID
ONS15454_NE_INVENTORY_TABLE	NE SYS ID
ONS15454_OTN_FEC_PM_TABLE	NE SYS ID
ONS15454_OTN_PATH_PM_TABLE	NE SYS ID
ONS15454_OTN_SEC_PM_TABLE	NE SYS ID
ONS15454_PHY_LAYER_PM_TABLE	NE SYS ID
ONS15454_POLICE_PM_TABLE	NE SYS ID
ONS15454_POS_PM_TABLE	NE SYS ID
ONS15454_SONET_LINE_PM_TABLE	NE SYS ID
ONS15454_SONET_PATH_PM_TABLE	NE SYS ID
ONS15454_SONET_SEC_PM_TABLE	NE SYS ID
ONS15454_SONET_VT_PM_TABLE	NE SYS ID
ONS15454_USER_TABLE	NE SYS ID
ONS15600SDH_HO_PM_TABLE	NE SYS ID

Table 4-5 Parameters for Database Pruning: Remove an NE Script (prune_ne.sh) (continued)

Tables Affected	Input Parameter
ONS15600SDH_MS_PM_TABLE	NE SYS ID
ONS15600SDH_RS_PM_TABLE	NE SYS ID
ONS15600_ENET_PM_TABLE	NE SYS ID
ONS15600_POS_PM_TABLE	NE SYS ID
ONS15600_SONET_LINE_PM_TABLE	NE SYS ID
ONS15600_SONET_PATH_PM_TABLE	NE SYS ID
ONS15600_SONET_SEC_PM_TABLE	NE SYS ID
OSS_ALARM_FLTR_TID_DENY_TBL	NE SYS ID
PM_HISTORICAL_APPOINTMENTS	NE SYS ID
PROXY_SERVER_TABLE	NE SYS ID
ROUTER_SONETAPS	NE SYS ID
ROUTER_SONETAPS_CHANNEL	NE SYS ID
SERVER_MONITOR_TABLE	NE SYS ID
SWAY_USER_PORT_TABLE	NE SYS ID
TCA_EVENT_TABLE	NE SYS ID
TRANSACTION_LOG_TABLE	NE SYS ID
UNMANAGED_NE_INVENTORY_TABLE	NE SYS ID
USER_MAP_TABLE	NE SYS ID
USER_MAP_TABLE_TEMP	NE SYS ID

Using the SQL*PLUS Client to Manage the Database

To access the database and Prime Optical schema objects, use the SQL*PLUS client that ships with Oracle products. The SQL*PLUS client is available for Microsoft Windows 2000 or NT 4.0 PCs or Sun Solaris workstations. Refer to the Oracle documentation to install and run the SQL*PLUS client on a Windows 2000 or NT 4.0 PC.

On a Sun Solaris workstation, the SQL*PLUS client is installed as part of the Oracle server installation. The following guidelines are for logging into SQL*PLUS as a Prime Optical user and managing Prime Optical schema objects and data. Refer to Oracle's *SQL*PLUS User's Guide and Reference* for a complete description.

Step 1 On the Sun Solaris workstation running Oracle, log in as the Oracle owner user. Use the username that was used when installing Oracle 10g.

Note To verify the username, enter the **id** command on the shell.

Step 2 Verify that the following UNIX environment variables for the Oracle user are set correctly:

- ORACLE_HOME
- ORACLE_SID

- PATH variable has $ORACLE_HOME/bin in the path
- LD_LIBRARY_PATH

Step 3 On the command line, enter the following command:

sqlplus ctmanager/*password*

Caution The default password is *Ctm123!* and any changes are saved in the CTMServer.cfg file. If you change the default password, the following caution is displayed: "Changing the database password will restart the Prime Optical server. Are you sure you want to continue?" Click **Yes** to confirm the action. The password is validated and the following message is broadcast: "Caution: The database password has been changed by a user. The Prime Optical server will restart in 15 seconds."

The message "Connected to: Oracle10g..." and the SQL> prompt should appear. If not, enter the username and password again.

Step 4 Upon connection to SQL*PLUS, enter any SQL command supported by Oracle. For a list of SQL commands supported by Oracle, refer to the *SQL*PLUS User Guide*.

Understanding Basic SQL Commands for Prime Optical Schema Objects

The following table lists commands that display, update, or modify Prime Optical schema objects. Run each command in SQL*PLUS by entering the command at the SQL> prompt.

Table 4-6 SQL Commands for Prime Optical Schema Objects

SQL Command	Description
`select * from user_tables;`	Returns a list of all table names owned by the ctmanager user.
`select * from user_views;`	Returns a list of all views owned by the Prime Optical user.
`describe ;`	Takes a *table-name* as a parameter (valid table names are those returned by the first two commands) and lists the name, type, and size of columns in the table.
`describe ;`	Takes a *view-name* as a parameter (valid view names are those returned by the first two commands) and lists the name, type, and size of columns in the view.
`select col1, col2… coln from table-name;`	Takes *col1….coln* and *table-name* as parameters and displays data for all the columns listed. To display data for all columns, use an asterisk (*) instead of col1, col2, and so on.

Table 4-6 SQL Commands for Prime Optical Schema Objects (continued)

SQL Command	Description
`select col1, col2... coln from table-name where col1 = value1 and col2 = value2...`	Takes *col1...coln* and *table-name* as parameters and displays data for all the columns listed that meet the condition specified in the "where" clause. For example, the command: `select nedbaccessid from ne_info_table where nesysid = 'ANGEL';` returns the value of column nedbaccessid from table ne_info_table for all rows for which nesysid = ANGEL.
`select col1, col2... coln from view-name where col1 = value1 and col2 = value2...`	Takes *col1...coln* and *view-name* as parameters and displays data for all the columns listed that meet the condition specified in the "where" clause.
`delete table-name;`	Takes *table-name* as a parameter and deletes the entire contents of the table. To make the change permanent, enter **commit;** at the SQL> prompt.

Using the Prime Optical Interactive Database Console to Manage the Database

To access the database and Prime Optical schema objects, use the Prime Optical Interactive Database Console. The database console is used when the server is installed with an embedded database.

Get the Prime Optical Interactive Database Console from the Prime Optical Client service folder at one of the following locations (where xxx is the build number):

- Under the Windows folder at C:\Cisco\PrimeOptical_9.6_xxx\DB_Console
- Under the Solaris/Linux folder at C:\Cisco\PrimeOptical_9.6_xxx/DB_Console

Executing the Prime Optical Interactive Database Console

The Prime Optical Interactive Database Console tool is a Java application that you execute by running runme.bat (Windows) or runme.sh (Solaris/Linux). JRE 1.6 or higher is required to execute DB Console. Go to the Java website to obtain the latest version of Java Runtime Environment for your operating system.

Connecting to the Database

Complete the following steps to connect to the database:

Step 1 Choose **Session > Connect**.

Step 2 In the Hostname field, enter the hostname of the server or the IP address.

Step 3 Click **Connect**.

Note You must connect to the database through a special database user login. Using this login, you will only be able to view tables and other objects in the embedded database. You will not have read/write access.

Managing the Database Using the Prime Optical Interactive Database Console

Interactive Database Console is a command-line interface (CLI) that allows you to browse the database tables.

To get a list of allowed commands, execute the following command in the CLI:

```
help
```

To get the detailed synopsis and description of a specific command, execute the following command in the CLI:

```
help <command>
```

The following example shows output for the **import** command:

```
ctmreadonly@oracle:jeeg#1> help import
SYNOPSIS
    import from <filename> into <tablename> columns (col1[:type][,col2[:type]])
[column-delim "\t"] [row-delim "\n"] [encoding <encoding>] [start-row <number>]
[row-count|end-row <number>]
    col could be a column name or '-' if the column is to be ignored
    the optional type can be one of [string,number,date]

DESCRIPTION
    Import the content of the file into table according to the format
    If the filename ends with '.gz', the
    content is unzipped automatically
```

Table 4-41 lists the aliases that already exist to enable you to check the status of the Prime Optical database:

Table 4-7 Aliases for Checking the Prime Optical Database

Alias	Description
export <table>	Export the contents of a given table.
list_indexes	List all the indexes that Prime Optical DB uses.
list_jobs	List all the Prime Optical scheduled jobs with scheduling details.
list_nes	List all the NEs present in Prime Optical DB.
list_objects	List all the DB objects (tables, views, indexes, and so on.)
list_sequences	List all the DB sequences.
list_tasks	List all the DB tasks.
ls	List all the DB table names.
search_invalid_indexes	Search the DB for invalid indexes.
search_invalid_objects	Search the DB for invalid objects.

Table 4-7 Aliases for Checking the Prime Optical Database (continued)

Alias	Description
search_property	Search the CTM_CONFIG_TABLE.
size <table>	Count the number of rows in a given table.

The Database Interactive Console supports automatic command completion (Tab key), and command history (up/down arrow). To clear command history, choose **Edit > Clear History**.

Launching Batch Scripts

To launch automatic scripts, choose **File > Load Script**.

A batch script can contain any number of allowed commands. DB_Console includes an example script named report.txt that collects information on the status of the Prime Optical database.

Setting Preferences for the Prime Optical Interactive Database Console

Complete the following steps to set the preferences for the Interactive Database Console:

Step 1 Choose **Edit > Preferences.**

Step 2 In the General tab, set preference for the following:

- Default Hostname or IP Address
- Database Schema ID (SID)
- Screen Buffer Size

Step 3 In the Font and Color tab, set preferences for the following:

- Font color
- Background color
- Foreground color

Step 4 Click **Apply**. For some changes (for example, default host or screen buffer) to take effect, you must restart the application.

Regenerating Statistics in the Database

Internal Oracle statistics allow Oracle to work efficiently, especially during data query operations. If there is Prime Optical system performance degradation during normal database activities, the database might be using stale statistics. The database statistics should be regenerated to improve system performance, either before or after a significant system workload.

In Oracle 10g, the statistics are automatically regenerated every night. The Prime Optical installation uses the default settings of Oracle 10g. If you need to change the statistics regeneration schedule, refer to the official Oracle 10g documentation for instructions on how to change the settings.

Cleaning Up the Disk and Maintaining Disk Space on the Prime Optical Server

It is important to clean up the disk and maintain disk space on the Prime Optical server. To maintain an efficient server and maximize performance, you must delete unnecessary files and retain only the minimum number of files. For detailed information, see Clean Up the Disk and Maintain Disk Space on the CTM Server.

How Do I Manage the Network Software?

Follow the procedures described in this section to upgrade the Cisco Transport Controller (CTC) binary file and download new or modified images to supported NEs.

Transferring Images

You can transfer NE binary software images from the client file system into an appropriate NE software repository in the Prime Optical server, to make the images available for selection when requesting a software download.

Use the Image Transfer dialog box to transfer software images to the following NEs:

- ONS 15216 EDFA
- ONS 15216 EDFA2
- ONS 15216 EDFA3
- ONS 15305 (including the CTC-based ONS 15305 R3.0)
- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH
- ONS 15327
- ONS 15454 SONET
- ONS 15454 SDH
- ONS 15600 SONET
- ONS 15600 SDH

To transfer images into an appropriate NE software repository:

Step 1 In the Domain Explorer, select an NE and choose **Administration > Image Transfer**. The Image Transfer dialog box opens.

Step 2 Select the source files from the Local File Selection list.

Step 3 Click **Browse** to locate files that are not visible in the field. You can select multiple files from the local machine for the upload process.

Step 4 To remove a file from the Local File Selection list, select the file from the list and click **Delete**.

Step 5 Select the NE-specific folder from the Prime Optical server drop-down list to choose where to transfer the image.

Step 6 To remove a file that is already present on the Prime Optical server, select the file from the list and click **Delete**.

Step 7 Click **Upload**.

Note If you cancel the image transfer process while it is in progress, only the files that have already been transferred at the time of cancellation are retained. The current file being transferred and other pending files are canceled.

Software Management

Use the Software Management wizard to download software images to the following NEs:

- ONS 15216 EDFA2 (R2.3.0 and later)
- ONS 15216 EDFA3
- ONS 15305 (not supported for the ONS 15305 R3.0)
- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH
- ONS 15327
- ONS 15454 SONET
- ONS 15454 SDH
- ONS 15600 SONET
- ONS 15600 SDH

Follow the procedures described in this section to download new or modified images to NEs.

Usage Notes:

- Refer to the appropriate NE documentation for precautions and guidelines before performing an NE software upgrade.
- Before updating the software image on an NE, check the Prime Optical release notes to verify whether the NE software release is supported by Prime Optical. See the "Prime Optical-Supported NE Software Releases" table in the release notes at *http://www.cisco.com/en/US/products/ps11670/tsd_products_support_series_home.html*.
- If a software download has a status of Queued, and if it has a task in the running list, the download cannot be canceled.
- If you mark an NE as an Out of Service while a software download is in progress on that NE, the software download might not complete successfully.
- To download software images to NEs, it is recommended that the data communications network (DCN) bandwidth be 56 kb/s or higher. If DCN bandwidth is less than 56 kb/s, software download might take an extended period of time. For example, a typical ONS 15327 software image is

approximately 2.5 MB. If a 2.5-MB file is downloaded to a single NE over a 19.2-kb/s link, it will take 15 to 30 minutes depending on the volume of traffic. Performing software downloads in parallel increases the length of time by a multiple of the number of NEs targeted.

- The latest ONS 15216 EDFA2 R2.4 hardware does not support software download to a software release other than 2.4.0. The ONS 15216 EDFA2 R2.3 hardware supports software download for NE software releases 2.3 and 2.4.

Downloading Software Images to ONS 15216, ONS 153xx, ONS 15454, and ONS 15600 NEs

Step 1 In the Domain Explorer tree, select a management domain or group that contains NEs that are assigned an In Service or Under Maintenance operational state. Alternatively, select an NE that is assigned an In Service or Under Maintenance state.

Note Only one software download can occur on a specific NE at any given time.

Step 2 Choose **Administration > Software Management > Optical**. The Software Management wizard opens. Table 4-8 provides descriptions.

Step 3 Enter the following information:

- NE model
- NEs
- Source
- Job comments
- Time

Caution If the Prime Optical client and server run on the same machine and thus the local source directory is the same as the default destination directory, an error message is generated. To retrieve the software image selected from the local source directory, navigate to the appropriate path and restore it from the *software-image-name.old* file.

Step 4 Click **Finish** to initiate the software download to the standby memory on the NE.

Step 5 To activate the new image automatically, select **Reboot and Activate**. If Reboot and Activate is selected, the NE is rebooted with the newly downloaded image. If Reboot and Activate is not selected, you can activate the image later from the Flash File table.

Step 6 Select the following information:

- NEs
- Flash banks

Note To view information about the files stored in the flash bank of the NE, click **Flash File Table** at the bottom of the wizard. The Flash File table shows the flash bank names and the name and status for each stored file.

Note The currently active flash bank is unavailable; users cannot download to the active flash bank.

Step 7 Click **Finish**. The image will be downloaded to all of the NEs in the Selected Downloads list.

Prime Optical stores two software versions: active and standby. When you download software, it is saved as the standby version.

Step 8 To check the status of the download job or verify that the download job was successful:

a. Check the Job Monitor table (**Administration > Job Monitor**).

b. Select the NE and check the Software Version field of the Equipment Inventory table (**Configuration >** *NE-model* **> Equipment Inventory Table**).

c. Select the NE and check the Active Software Filename field in the NE Software table (**Administration > NE Software Table**) for the software image version.

Note To download software to an ONS 15216 EDFA3 NE using the Server option, first choose **Administration > Image Transfer**. The Image Transfer dialog box opens. The image will be copied from the local file system in the directory specified in the Prime Optical Server area. Choose **Cisco ONS 15216 EDFA3** from the drop-down list; then, click **Upload**. Then, choose **Administration > Software Management > Optical**. The Software Management wizard opens with the Server radio button enabled.

Table 4-8 Field Descriptions for the Software Management Wizard

Field	Description
NE Model	Select the NE type to which you want to download software. The type you select determines the NEs that are displayed under Network Elements.
Network Elements	Use the **Add** and **Remove** buttons to move NEs to the Selected NEs list or remove NEs from the list. Software will be downloaded to NEs in the Selected NEs list.
Source	Specify the location of the software: • **Local** allows you to select an image on the current client system. • **Server** allows you to select an image on the Prime Optical server to which your client is connected. The Server radio button is not active unless an image file exists on the server. • **Remote** allows you to select an image on another network server that has TFTP or FTP configured and running. Specify the IP address of the server and the fully qualified pathname of the image, relative to the tftpboot directory. Remote is the only selectable source option for the ONS 15305 (earlier than R3.0). **Note** If the Remote TFTP Server option is selected for ONS 15216 EDFA2, the software image that you are downloading must have been saved in the default directory, such as the tftpboot directory on the remote TFTP server. **Note** The tftpboot directory must have read-write access, or the software download will fail. See Chapter 3, "Building the Network" for information about how to configure the TFTP directory with read-write access.

Table 4-8 Field Descriptions for the Software Management Wizard (continued)

Field	Description
Job Comments	Enter comments about the software download.
Time *(time zone)*	Set a time for the download. Click **Now** to begin downloading immediately, or click **At Time** and specify when to begin downloading, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

Scheduling Bulk Software Activation

Use the Bulk Software Activation dialog box to schedule software activation for multiple NEs simultaneously. Bulk software activation is supported on NEs that support the Revert/Switch operation: ONS 15216 EDFA2, ONS 15216 EDFA3, ONS 15305, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, ONS 15600 SDH.

Step 1 In the Domain Explorer tree, select a management domain or group that contains NEs that are assigned an In Service or Under Maintenance operational state. Alternatively, select one or more NEs that are assigned an In Service or Under Maintenance state.

Step 2 Choose **Administration > Bulk Software Activation**. The Bulk Software Activation dialog box opens. The following table provides descriptions.

Note You can also launch the dialog box by selecting one or more rows in the NE Software table and choosing **Edit > Commit**.

Step 3 In the dialog box, select the NEs for which you want to activate software, enter any comments about the job, and specify the time for the software activation to occur.

Caution If you try to activate a software version that Prime Optical does not support, the following caution is displayed: “Caution: You are about to revert to an unsupported software version for the following NEs: *NE-versions*. Do you want to continue?”

If you activate an unsupported NE software version, the Prime Optical server might not communicate with one or more NEs in the domain, causing erroneous behavior.

Step 4 Click **OK**.

To view the results of the bulk software activation, check the Job Monitor table (**Administration > Job Monitor**).

Table 4-9 Field Descriptions for the Bulk Software Activation Dialog Box

Field	Description
Network Elements	Use the **Add** and **Remove** buttons to move the NEs for which you want to activate software to the Selected NEs list, or to remove NEs from the list.
Job Comments	Enter comments about the software activation, if needed.
Time *(time zone)*	Set a time for the bulk software activation. Click **Now** to begin software activation immediately, or click **At Time** and specify when to begin software activation, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

Viewing Software Versions and Restarting the NE with a New Software Image

The NE Software table lists the software that is installed on an NE. Use the Edit menu options to restart an NE with a new software image.

Tip Back up the NE database before activating or reverting to the standby software image on the NE.

Caution If you try to activate, revert, or switch to a software version that Prime Optical does not support, the following caution is displayed: "Caution: You are about to revert to an unsupported software version: *version-number*. Do you want to continue?"

If you activate, revert, or switch to an unsupported NE software version, the Prime Optical server might not communicate with one or more NEs in the domain, causing erroneous behavior.

Step 1 In the Domain Explorer tree, select an NE and choose **Administration > NE Software Table**. Table 4-10 provides descriptions.

- For NEs other than the ONS 15216 EDFA, the NE Software table displays the active and standby software versions for the NE.
- For ONS 15216 EDFA NEs, the NE Software table displays the active, standby, and running software versions.

Note The NE Software table can also be launched from the Job Monitor table. From the Job Monitor table, choose **Edit > NE Software Table** (or click the **NE Software Table** tool).

Step 2 To activate new software on an NE, select the NE in the table and choose **Edit > Commit** (or click the **Commit** tool). At the confirmation prompt, click **OK**.

For the ONS 15305 (non-CTC-based) and CTC-based NEs, this makes the standby software version the active version (if the standby version is newer than the active version) and restarts the NE with the newer version.

Note The Commit feature is not available for ONS 15216 EDFA NEs.

Step 3 To revert to the standby software version on an NE, select the NE and choose **Edit > Revert/Switch** (or click the **Revert/Switch** tool). At the confirmation prompt, click **OK**.

- For the ONS 15216 EDFA, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, and ONS 15454 SDH, this reverts the active software version back to the standby version (if the standby version is older than the active version) and restarts the NE with the newer version.
- For the ONS 15600 SONET and ONS 15600 SDH, the Revert operation opens the Memory Restore dialog box, and you will need to provide a compatible database. For example, if the NE is running software release 1.1 and you want to download a release 1.0 package, you must provide a release 1.0 database after downloading the software release 1.0 package.

Step 4 To accept the software version of an NE, select the NE and choose **Edit > Accept** (or click the **Accept** tool). The Accept command copies the downloaded software onto the standby Timing & Shelf Controller (TSC) and activates it.

Note The Accept feature is only available for the ONS 15600 SONET and ONS 15600 SDH.

Table 4-10 Field Descriptions for the NE Software Table

Field	Description
NE Model Name	Displays the model of the selected NE.
Alias ID	Displays the alias name of the NE.
Physical Location	Displays the location where the software is running.
NE Type	For ONS 15454 NEs, displays the NE type. Values are: • DWDM—For ONS 15454 MSTP R9.2 or later NEs. • TDM—For ONS 15454 MSPP R9.2 or later NEs. • Not Available—For all other NE versions.
Active Software Filename	Displays the active software version.
Standby Software Filename	Displays the standby software version. For the ONS 15305 (non-CTC-based), it is the NE software version that has been downloaded. **Note** The standby software version is not available for the ONS 15305 R3.0.
Running Software Filename	For the ONS 15216 EDFA, displays the running software version.
Busy Flag	Indicates whether the NE is rebooting to perform a software commit or revert. While the NE is rebooting, the value is True; when the NE has finished rebooting, the value is False.

Table 4-10 Field Descriptions for the NE Software Table (continued)

Field	Description
Partial Upgrade	Possible values are: • True • False • N/A
NE ID	Displays the ID name of the selected NE.

Activating a New NE Software Version on One or More ML-Series Cards

When an ONS 15310 CL, ONS 15454 SONET, or ONS 15454 SDH NE is partially upgraded to a new software version, you can choose to activate the new NE software version on one or more ML-series cards.

Note If the Partial Upgrade field in the NE Software Table is set to False, it means that the NE and all its cards are upgraded to the new NE software version. If set to True, it means that one or more cards are still running an older software version.

Step 1 In the Domain Explorer, select a group or an ONS 15310 CL, ONS 15454 SONET, or ONS 15454 SDH NE that contains ML-series cards, and choose **Administration > NE Software Table**.

Step 2 In the NE Software Table, select one or more NEs that are in Partial Upgrade mode and choose **Edit > Reset ML Cards** (or click the **Reset specific ML Cards** tool).

Step 3 In the Reset ML Cards dialog box, select the ML-series cards on which to activate the new software. Use the **Add** button to move the ML-series cards to the Selected list. Use the **Remove** button to move the ML-series cards to the Available list.

Step 4 Click **OK**.

Delaying Software Activation on the ML-Series Cards

You can delay software activation on an ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, or ONS 15454 SDH NE's ML-series cards when the NE is partially upgraded to a new software version and the NODE.software.AllowDelayedUpgrades parameter is set to TRUE.

Note You can change the value of the NODE.software.AllowDelayedUpgrades parameter in the NE Defaults tab of the NE Explorer.

Step 1 In the Domain Explorer, select a group or an ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15454 SONET, or ONS 15454 SDH NE that contains ML-series cards, and choose **Administration > NE Software Table**.

Step 2 In the NE Software table, select an NE that is in Partial Upgrade mode and choose **Edit > Commit** (or click the **Commit** tool). The Bulk Software Activation wizard opens.

Step 3 Do the following:

a. Select the NE for which you want to activate software

b. Enter any comments about the job.

c. Specify the time for the software activation to occur.

Step 4 Click **OK**. The Software Activation dialog box opens.

Step 5 Check the **Delay automatic activation on the ML cards** check box to delay software activation. Uncheck the check box if you do not want to delay software activation.

Note The Delay automatic activation on ML cards check box is checked by default if the NODE.software.DefaultDelayedUpgrades parameter is set to TRUE.

Step 6 Click **OK** in the Software Activation dialog box.

Step 7 Click **OK** in the Confirm commit message box.

Step 8 Click **OK** in the Prime Optical Progress message box.

Adding a New NE Software Version to the Prime Optical Domain

The Supported NE table provides information about the software version that is currently supported on a selected NE.

Use this procedure only to apply a minor upgrade to the default, Prime Optical-supported software on the supported NE. Major upgrades to NE software might require you to update Prime Optical.

Caution It is recommended that this feature be used only at the advice of a Cisco technical support engineer. If incorrect modifications to data in the Supported NE table are made, the Prime Optical server might not communicate with one or more NEs in the domain.

Complete the following steps to add a new NE software version to the Prime Optical domain:

Step 1 In the Domain Explorer window, choose **Administration > Supported NE Table**. Table 4-11 provides descriptions.

Step 2 Select an NE.

Step 3 Choose **Edit > Add** (or click the **Add Device Maintenance Version** tool).

The Add Device Maintenance Version dialog box opens.

Step 4 From the NE Model drop-down list, select the NE model.

Step 5 In the Software Version field, enter the software version.

Step 6 Click **Submit**.

Note You cannot customize the Version Name field. Prime Optical retrieves the version name from the Version Name field of the base version.

A message appears, displaying the version name.

Step 7 Click **OK**.

The new NE is added and the newly added NE displays an icon in the Software Version column.

Table 4-11 Field Descriptions for the Supported NE Table

Field	Description
NE Model	Displays the model of the selected NE. **Note** The Supported NE table includes passive NEs, such as the ONS 15216 DCU and OSC. Passive NEs are shown in the Supported NE table for informational purposes only. The Prime Optical server does not check the software validity of passive NEs.
Software Version	Specifies the software version that is supported on the selected NE. **Note** You cannot delete the default NE software version. The default software version rows are created when the Prime Optical server is installed. These rows are the factory-default settings and cannot be deleted.
Version Name	Specifies the software version name. For example, "15454 7.00" represents ONS 15454 SONET R7.0. **Note** If the software version is manually added, the version name displays the value used by Prime Optical to manage the software version.

Deleting an NE Software Version from the Prime Optical Domain

Step 1 In the Domain Explorer window, choose **Administration > Supported NE Table**.

Step 2 Select the NE for which you want to delete the software version; then, choose **Edit > Delete** (or click the **Delete Supported NE Version** tool).

Note NE images that were manually added can be deleted. Default NE images cannot be deleted.

Step 3 Click **OK** in the confirmation dialog box.

How Do I Modify the Network?

Follow the procedures described in this section to change IP, subnet, and network addresses; configure proxy settings; change the operational state of an NE; set the date, time, and location on CTC-based NEs; and configure SNTP and application-specific parameters.

Note For information about setting up routing protocols, see Configuring Routing Protocols on Optical NEs, page 5-2.

Changing IP Addresses for NEs

Prime Optical displays the active IP address of the selected NE. The active IP address field for end NEs (ENEs) is the IP address of the gateway NE (GNE) that the NE is using. This information is calculated on a theoretical projection, which does not necessarily equate to a real network situation.

Changing the NE IP Address on CTC-Based NEs

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

Step 2 In the property sheet of the NE Explorer, click the **Network** tab > **Address** subtab.

Step 3 Change the IP address in the IP Address field. (For an IPv6 node, change the address in the IPv6 Config > IPv6 Address field.)

Note If you enter an IP address that is already in use, you receive the error message "A network element with this IP address already exists in the database, or this is a secure IP address." You must enter a unique IP address.

Step 4 If necessary, change the following fields:

- Default Router (for an IPv4 node)
- Subnet Mask (for an IPv4 node)
- IPv6 Config > Default IPv6 Router (for an IPv6 node)
- IPv6 Config > IPv6 Subnet Mask (for an IPv6 node)

Step 5 Click **Apply**.

Step 6 A confirmation dialog box informs you that the NE will reboot. Click **Yes**. Prime Optical will lose connectivity to the NE. After several minutes, the NE will be back in service with the new IP address.

Changing the NE IP Address in a GNE/ENE Environment

When changing NE IP addresses in a GNE/ENE environment, change the IP address on the ENE node first; then, change the IP address on the GNE node. You do not need to remove NEs from Prime Optical.

Note This procedure applies only to NE releases 5.0 and later.

To change the IP address of a GNE and then convert all GNE/ENE settings to LAN-connected NE (LNE) in Prime Optical:

Step 1 Remove the ENE settings on the ENE. In the Network Explorer, click the **Network** tab > **Firewall/Proxy** subtab; then, uncheck the **Enable Proxy Server on Port** check box.

Step 2 Launch the NE Explorer for the ENE and click the **Network** tab > **Address** subtab. Change the IP address of the ENE. The NE reboots and does not come back up until the cable connections are correct in the network.

Step 3 Make the necessary cable connections to all NEs in the topology. (In this case, make all the NEs LAN-cable connected.)

Step 4 Remove the GNE settings on the GNE. In the Network Explorer, click the **Network** tab > **Firewall/Proxy** subtab; then, uncheck the **Enable Proxy Server on Port** check box.

The GNE becomes unavailable in Prime Optical. After some time, the GNE comes up as an LNE in Prime Optical.

Step 5 Wait until all the NEs come up as LNEs in Prime Optical.

Switching Connectivity from IPv4 to IPv6

Prime Optical provides IPv6 support for the following NE releases: ONS 15310 MA SDH R9.3, ONS 15310 MA SONET R9.3, ONS 15454 SDH R9.3, and ONS 15454 SONET R9.3.

Note IPv6 loopback address must be configured on the server in order for Prime Optical to work with IPv6.

Prime Optical tries to connect to an NE using its preferred IP address: IPv4 or IPv6, depending on how the NE was added or discovered by Prime Optical.

- For a user-added NE, the preferred IP address is the one that was entered when the NE was added.
- For a discovered NE, the preferred IP address depends on the IP connectivity of the GNE that discovered it.

If the preferred IP address is not reachable, Prime Optical tries to connect to the NE with the other IP address.

To enable IPv6 on an NE that supports this feature, complete the following steps:

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

Step 2 In the property sheet of the NE Explorer, click the **Network** tab > **Address** subtab.

Step 3 In the IPv6 Config area, check the **Enable IPv6** check box and configure the following fields:

- IPv6 Address
- Default IPv6 Router
- IPv6 Subnet Mask

Step 4 Click **Apply**.

Note If the IPv4 address is unavailable or disabled on the NE, Prime Optical uses the IPv6 address. If the NE is reachable through its IPv4 address, Prime Optical uses that address.

Changing the NE IP Address in Prime Optical Only

Note If the IP address is changed in Prime Optical, the change is made only in Prime Optical.

Complete the following steps to change the IP address in Prime Optical only:

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

Step 2 Click the **Address** tab. In the Active IP Address field, enter the new IP address.

Step 3 Click **Save**.

Changing the Internal Subnet Address—ONS 15600 SONET and ONS 15600 SDH

To avoid IP address conflicts, change the class B subnet address if your internal network uses the same address range as the default subnet address. To change class B subnet address for the TSC cards, complete the following steps.

Caution All network changes should be approved by your network administrator.

Complete the following steps to change the internal subnet address:

Step 1 In the Domain Explorer tree, select an ONS 15600 SONET or ONS 15600 SDH NE.

Step 2 Choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 3 In the node properties pane of the NE Explorer, click the **Network** tab > **Internal Subnet** subtab.

Step 4 Specify the following values in the TSC section:

- TSC1—Class B subnet address for the first TSC.
- TSC2—If there are two TSCs are installed, enter the class B subnet address for the second TSC.

Step 5 Click **Apply**.

Viewing and Changing the Network Address—CTC-Based NEs

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane of the NE Explorer, click the **Network** tab > **Address** subtab.

Step 3 Complete the following information:

- IP Address—IP address of the NE.
- Default Router—IP address of the default router.
- Subnet Mask—Subnetwork mask ID of the NE.
- MAC Address—*Display only.* Address as identified in the IEEE 802 MAC layer.
- LCD IP Setting—(ONS 15454 SONET and SDH only) Select one of the following:
  - Allow Configuration—Allows users to change the shelf IP address from the LCD screen.
  - Display Only—Displays the shelf IP address in the LCD screen and does not allow any configuration.
  - Suppress Display—Shelf IP address is not displayed in, and cannot be configured from, the LCD screen.
- Forward DHCP Requests—When checked, forwards the Dynamic Host Configuration Protocol (DHCP) requests to the IP address.
- DHCP Server—IP address of the DHCP server.

Step 4 In the node properties pane of the NE Explorer, click the **Security** tab > **Access** subtab.

Step 5 In the CORBA (IIOP) Listener Port field, select one of the following values to allow communication with the NE through firewalls:

- Default-Fixed
- Standard Constant (683)
- Other Constant

Step 6 Click **Apply**.

Configuring Proxy Server Settings—CTC-Based NEs

CTC-based NEs have a proxy server feature set that allows networking these NEs in environments where visibility and accessibility are restricted. In the proxy server environment, CTC-based NEs are designated as either GNEs, ENEs, or tunnel NEs (TNEs). The GNE is LAN-connected to the DCN, while the ENE is accessed through the proxy server feature on the GNE over the SDCC. The ENE is not directly accessible through the IP address, while the GNE has an IP address that is valid for the DCN LAN. Prime Optical connects to TNEs that belong to an OSI network behind a non-Cisco GNE. Also, if an NE is LAN-connected and its proxy is disabled, the NE is shown as a LAN-connected NE (LNE).

Enabling Proxy

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the Properties pane of the NE Explorer, select the **Network** tab > **Firewall/Proxy** subtab.

Step 3 Check the **Enable Proxy Server on Port** check box. When enabled, the NE serves as a proxy for connections between CTC clients and the NEs that are DCC-connected to proxy NEs. Uncheck the check box to disable the proxy. The **on port** field has a default value of 1080.

Step 4 You can enable the proxy on one of the following:

- ENE
- GNE
- Proxy-only

If the ENE and GNE are in different IP subnets, or if the ENE and GNE are in different Ethernet segments, the proxy should be enabled on the GNE. If the firewall is enabled on the GNE, it prevents communication between the laptop connected to the LAN port of the ENE and the network operations center (NOC), even if the proxy is enabled on both the ENE and GNE. Whenever the firewall is enabled on a GNE, the proxy should be enabled on the GNE as well.

Step 5 Click **Apply**.

Notes on Configuring Proxy Server Settings

Note the following when configuring proxy server settings:

- In a proxy environment, you can launch CTC from Prime Optical for a proxy GNE if you are launching CTC for an ENE. CTC cannot be launched for a non-GNE if the proxy GNE is marked as Out of Service or is not reachable from Prime Optical. Launching CTC for NEs that are not reachable before Prime Optical can determine whether they are reachable displays the error messages "Error in launching CTC node view for *NE*" and "Initializing Class Loaders Failed–Timeout opening *NE IP*:*Port*."
- In a proxy environment, you cannot launch a TL1 Telnet session directly for an NE. You can launch the Telnet window for the GNE and then enter the **ACT-USER** command, specifying the ENE as the TID.
- Prime Optical can configure multiple GNEs but it can only associate a single GNE for a given ENE. If the GNE becomes inaccessible, Prime Optical can automatically use one of the other available GNEs to reach the ENE.
- When a proxy-enabled GNE (named GNE1) is first added to Prime Optical, Prime Optical automatically discovers all associated NEs (through the topology discovery feature) and identifies them as ENEs associated with GNE1. If there are other proxy-enabled GNEs that are discovered from GNE1, Prime Optical will mark them as GNEs. When proxy is enabled on any GNE, all ENEs lose connectivity and eventually regain it. In a multiple DCC-connected GNE scenario, NEs that do not regain connectivity should be marked as Out of Service, then marked as In Service again.
- If both LAN and DCC connections exist between the GNE and ENEs, the DCC connection takes precedence.

Configuring Proxy Server Settings for NEs Equipped with ML-Series Cards

Prime Optical supports only the following configurations for NEs that are equipped with ML-series cards:

- GNE with SNMPv1, v2, and v3.

Note Prime Optical considers an NE to be a GNE if proxy-only is enabled, or if proxy with firewall is enabled.

- ENE with SNMPv1, v2, and v3.

Note Prime Optical considers an NE to be an ENE if proxy is not enabled, or if proxy/firewall and craft access are enabled.

For NE release 4.6 and earlier, see Table 4-12. For NE release 5.0 and later, see Table 4-13. In order for Prime Optical to support a proxy/firewall scenario, the scenario must have a "Yes" in all four columns of the table, and CLI launch must be supported.

For an explanation of proxy server settings on the NEs, refer to the NE hardware documentation.

The following table describes the proxy server settings for release 4.6 and earlier NEs.

Table 4-12 Proxy Server Settings for R4.6 and Earlier NEs

Proxy Scenario	FM	CM	PM	RMON Threshold
Proxy only, GNE (CLI launch is supported)[1]				
SNMPv1	No	Yes	Yes	Yes
SNMPv2	Yes	Yes	Yes	Yes
Proxy only, ENE (CLI launch is not supported)[2]				
SNMPv1	No	Yes	Yes	No
SNMPv2	No	Yes	Yes	No
Proxy and internal firewall, GNE (CLI launch is supported)[3]				
SNMPv1	No	Yes	Yes	Yes
SNMPv2	Yes	Yes	Yes	Yes
Proxy and internal firewall, ENE (CLI launch is not supported)[4]				
SNMPv1	No	Yes	Yes	No
SNMPv2	No	Yes	Yes	No
Proxy only, GNE, with external firewall and NAT (CLI launch is not supported)[5]				
SNMPv1	No	Yes	Yes	No
SNMPv2	Yes	Yes	Yes	No
Proxy only, GNE, with internal firewall, external firewall, and NAT (CLI launch is not supported)[6]				
SNMPv1	No	Yes	Yes	No
SNMPv2	No	Yes	Yes	No
Proxy only, ENE, with internal firewall, external firewall, and NAT (CLI launch is not supported)[7]				
SNMPv1	No	Yes	Yes	No
SNMPv2	No	Yes	Yes	No
External firewall and PAT[8] (CLI launch is not supported)[9]				
SNMPv1	No	No	No	No
SNMPv2	No	No	No	No

1. In this scenario, the NE is set up as a GNE with proxy enabled. The internal firewall is not turned on and there is no external firewall between the server and the NEs.
2. In this scenario, the NE is set up as an ENE with proxy enabled. The internal firewall is not turned on and there is no external firewall between the server and the NEs.
3. In this scenario, the NE is set up as a GNE with proxy and internal firewall enabled. There is no external firewall between the server and the NEs.
4. In this scenario, the NE is set up as an ENE with proxy and internal firewall enabled. There is no external firewall between the server and the NEs.

5. In this scenario, the NE is set up as a GNE with proxy enabled. The internal firewall is not turned on. There is an external firewall between the server and the NEs that is using NAT.
6. In this scenario, the NE is set up as a GNE with proxy and internal firewall enabled. There is an external firewall between the server and the NEs that is using NAT.
7. In this scenario, the NE is set up as an ENE with proxy and internal firewall enabled. There is an external firewall between the server and the NEs that is using NAT.
8. PAT = Port Address Translation.
9. There is an external firewall between the server and the NEs that is using PAT. The NE and Prime Optical do not support this configuration.

The following table describes the proxy server settings for release 5.0 and later NEs.

Table 4-13 Proxy Server Settings for R5.0 and Later NEs

Proxy Scenario	FM	CM	PM	RMON Threshold
Proxy only, GNE (CLI launch is supported)[1]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	Yes	Yes	Yes	Yes
Proxy only, ENE (CLI launch is not supported)[2]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	No	Yes	Yes	Yes
Proxy and internal firewall, GNE (CLI launch is supported)[3]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	Yes	Yes	Yes	Yes
Proxy and internal firewall, ENE (CLI launch is not supported)[4]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	No	Yes	Yes	Yes
Proxy only, GNE, with external firewall and NAT (CLI launch is not supported)[5]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	Yes	Yes	Yes	Yes
Proxy only, GNE, with internal firewall, external firewall, and NAT (CLI launch is not supported)[6]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	Yes	Yes	Yes	Yes
Proxy only, ENE, with internal firewall, external firewall, and NAT (CLI launch is not supported)[7]				
SNMPv1	Yes	Yes	Yes	Yes
SNMPv2/v3	No	Yes	Yes	Yes
External firewall and PAT (CLI launch is not supported)[8]				
SNMPv1	No	No	No	No
SNMPv2/v3	No	No	No	No

1. In this scenario, the NE is set up as a GNE with proxy enabled. The internal firewall is not turned on and there is no external firewall between the server and the NEs.
2. In this scenario, the NE is set up as an ENE with proxy enabled. The internal firewall is not turned on and there is no external firewall between the server and the NEs.
3. In this scenario, the NE is set up as a GNE with proxy and internal firewall enabled. There is no external firewall between the server and the NEs.
4. In this scenario, the NE is set up as an ENE with proxy and internal firewall enabled. There is no external firewall between the server and the NEs.

5. In this scenario, the NE is set up as a GNE with proxy enabled. The internal firewall is not turned on. There is an external firewall between the server and the NEs that is using NAT.
6. In this scenario, the NE is set up as a GNE with proxy and internal firewall enabled. There is an external firewall between the server and the NEs that is using NAT.
7. In this scenario, the NE is set up as an ENE with proxy and internal firewall enabled. There is an external firewall between the server and the NEs that is using NAT.
8. There is an external firewall between the server and the NEs that is using PAT. The NE and Prime Optical do not support this configuration.

Conditions Under Which Prime Optical Recognizes an NE as an LNE, a GNE, a TNE, or an ENE

An NE in Prime Optical can show up as an LNE, a GNE, a TNE, or an ENE. The type is denoted in a small rectangle next to the corresponding NE in the Domain Explorer tree. The following tables document how Prime Optical determines whether an NE in the network is considered an LNE, GNE, TNE, or ENE.

NE terminology:

- *LAN Connected* denotes whether the NE is connected directly to the LAN.
- *Proxy Enabled* denotes whether the "Enable Proxy" option is checked for the NE (in the NE Explorer > Network > Firewall/Proxy subtab).
- *Firewall Enabled* denotes whether the "Enable Firewall" option is checked for the NE (in the NE Explorer > Network > Firewall/Proxy subtab).
- *Craft Access Enabled* denotes whether the "Craft-Access Only" option is checked for the NE (in the NE Explorer > Network > Firewall/Proxy subtab).
- *GNE* denotes whether the "Gateway Network Element (GNE)" option is selected for the NE (in the NE Explorer > Network > Firewall/Proxy subtab).
- *ENE* denotes whether the "External Network Element (ENE)" option is selected for the NE (in the NE Explorer > Network > Firewall/Proxy subtab).
- *Proxy-only* denotes whether the "Proxy-only" option is selected for the NE (in the NE Explorer > Network > Firewall/Proxy subtab).
- A value of *N/A* indicates that the setting for that column is irrelevant to the end result.

Prime Optical terminology:

- Prime Optical *GNE*—Gateway network element. A GNE is an NE that is LAN-connected and provides access to and proxies for other NEs that are otherwise unreachable.
- Prime Optical *ENE*—External network element. An ENE is an NE that is not directly reachable. These NEs can only be accessed via (proxied by) a GNE.
- Prime Optical *LNE*—LAN-connected NE. An LNE is connected on the LAN and does not proxy for and is not proxied by other NEs.
- Prime Optical *TNE*—Tunnel NE. Prime Optical can connect to a TNE that belongs to an OSI network behind a non-Cisco GNE. You can open a new TL1 tunnel on a selected TNE, close an existing TL1 tunnel, or modify the TL1 tunnel settings. TNEs do not support SNMP. The following NE models support TL1 tunnels: ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, and ONS 15454 SDH.

Note the following configuration restrictions:

- For all cases where the NE type is denoted as ENE, per current Prime Optical design, an ENE will not have connectivity in Prime Optical unless there is at least one GNE in the same ring as the ENE.
- All NEs on the same Ethernet segment must have the same value for craft access. Mixed values might leave some nodes unreachable through the shared Ethernet segment.

- All NEs on the same Ethernet segment must have the same value for the firewall. Mixed values might leave some nodes unreachable.
- All NEs in the same SDCC area must have the same value for the firewall. Mixed values might leave some nodes unreachable.
- If the firewall is enabled on an NE, the proxy server must also be enabled. If the proxy server is not enabled, CTC cannot see nodes on the DCC side of the NE.
- If Craft Access Only is enabled on an NE, the proxy server must also be enabled. If the proxy server is not enabled, CTC cannot see nodes on the DCC side of the NE.
- Only those NEs that have no LAN connectivity to the Prime Optical server can have Craft Access Only enabled or be set as an ENE.

Table 4-14 ONS 15327, ONS 15454 SONET/SDH R4.1.x

NE State Type	Proxy Enabled?	Craft Access Only?	Firewall Enabled?	LAN Connected?	DCC Connected?
GNE	Yes	No	Yes	Yes	N/A
GNE	Yes	No	No	Yes	N/A
ENE	Yes	N/A	N/A	No	Yes[1]
ENE	No	N/A	N/A	No	Yes[1]
ENE	No	N/A	N/A	Yes	Yes[1]
LNE	No	No	N/A	Yes	No
LNE	No	No	N/A	Yes	Yes[2]

1. Prime Optical discovers this NE as an ENE if there is at least one GNE on the same DCC domain with proxy server enabled.
2. Prime Optical discovers this NE as an LNE if all the NEs on the same DCC domain have proxy server disabled.

Table 4-15 ONS 15310, ONS 15327, ONS 15454 SONET/SDH R4.6 and Later

NE State Type	Proxy Enabled? (GNE, ENE, or Proxy-only Enabled on the NE)	LAN Connected?	DCC Connected?
GNE	Yes	Yes	Yes
GNE	Yes	Yes	No
ENE	Yes	No	Yes[1]
ENE	No	No	Yes[1]
ENE	No	Yes	Yes[1]
LNE	No	Yes	No
LNE	No	Yes	Yes[2]

1. Prime Optical discovers this NE as an ENE if there is at least one GNE on the same DCC domain with proxy server enabled.
2. Prime Optical discovers this NE as an LNE if all the NEs on the same DCC domain have proxy server disabled.

Table 4-16 ONS 15310 CL, ONS 15327, ONS 15454 SONET/SDH R6.0 and Later; ONS 15310 MA SONET R7.0 and Later; ONS 15310 MA SDH R9.1, R9.2, R9.3

NE State Type	Proxy Enabled?	Craft Access Only?	Firewall Enabled?	LAN Connected?	DCC Connected?
TNE	Yes	No	Yes	No	N/A
TNE	Yes	No	No	No	N/A

Table 4-17 ONS 15600 SONET R1.1.2, 1.1.3, 1.3.1; ONS 15600 SDH R1.4

NE State Type	Proxy Enabled?	Firewall Enabled?	LAN Connected?	DCC Connected?
GNE	Yes	Yes	Yes	N/A
GNE	Yes	No	Yes	N/A
ENE	Yes	N/A	No	Yes[1]
ENE	No	N/A	No	Yes[1]
ENE	No	N/A	Yes	Yes[1]
LNE	No	N/A	Yes	No
LNE	No	N/A	Yes	Yes[2]

1. Prime Optical discovers this NE as an ENE if there is at least one GNE on the same DCC domain with proxy server enabled.
2. Prime Optical discovers this NE as an LNE if all the NEs on the same DCC domain have proxy server disabled.

Creating a New Proxy Tunnel

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **Proxy Tunnels** subtab.

Step 4 Click **Create**. The Create New Proxy Tunnel dialog box opens. The following table provides descriptions.

Step 5 After making your selections, click **OK**.

Table 4-18 Field Descriptions for the Create New Proxy Tunnel Dialog Box

Field	Description
Source Address	Enter the source IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Source Mask Length	Specify the length of the source mask (from 0 to 32).
Source Mask	Enter the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

Table 4-18 Field Descriptions for the Create New Proxy Tunnel Dialog Box (continued)

Field	Description
Destination Address	Enter the destination IP address in the source-destination pair for the tunnel that will be routed through the proxy server.
Destination Mask Length	Specify the length of the destination mask (from 0 to 32).
Destination Mask	Enter the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the proxy server.

Creating a New Firewall Tunnel

Step 1 In the Domain Explorer tree, select a CTC-based NE and choose **Configuration > NE Explorer** (or click the **Open NE Explorer** tool).

Step 2 In the node properties pane, click the **Network** tab.

Step 3 Click the **Firewall Tunnels** subtab.

Step 4 Click **Create**. The Create New Firewall Tunnel dialog box opens. The following table provides descriptions.

Step 5 After making your selections, click **OK**.

Table 4-19 Field Descriptions for the Create New Firewall Tunnel Dialog Box

Field	Description
Source Address	Enter the source IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Source Mask Length	Specify the length of the source mask (from 0 to 32).
Source Mask	Enter the source subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Address	Enter the destination IP address in the source-destination pair for the tunnel that will be routed through the firewall.
Destination Mask Length	Specify the length of the destination mask (from 0 to 32).
Destination Mask	Enter the destination subnetwork mask in the source-destination pair for the tunnel that will be routed through the firewall.

Changing the Operational State of an NE

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

Step 2 In the Network Element Properties pane > Status tab > Operational State field, choose one of the following values:

- Preprovisioned—(Not available if already provisioned) The NE has been added to the database for provisioning but is not yet in service. Prime Optical does not manage preprovisioned NEs.
- In Service—The NE is deployed and requires monitoring. Prime Optical collects polling, fault management (FM), configuration management (CM), and PM data from in-service NEs and stores the data in the database.
- Out of Service—The NE has been marked Out of Service by a network administrator and does not require monitoring. The Prime Optical database records the last known state of the NE when it was in service.
- Under Maintenance—The NE is temporarily under maintenance but requires monitoring. This state is the same as In Service except that Prime Optical does not report alarms or events for under-maintenance NEs.

Tip You can also right-click an NE in the Domain Explorer tree or Subnetwork Explorer tree and choose **Mark Under Maintenance**, **Mark In Service**, or **Mark Out of Service** from the shortcut menu.

There are two additional states that you cannot choose. These operational states are changed by Prime Optical based on the initialization tasks that are completed:

- In Service–Initializing—The NE is marked as In Service–Initializing when Prime Optical reaches connectivity of the NE (Communication State is marked as Available) and the discovery process starts. The initialization process is completed when fault and inventory have been synchronized. The operational state changes from In Service–Initializing to In–Service Synch Configuration.
- In-Service Synch Configuration—The NE is marked as In–Service Synch Configuration when Prime Optical uploads a configuration for that NE. You can change the operational state of an NE from In-Service Synch Configuration to Out of Service.

Step 3 Click **Save**.

Step 4 Click **Yes** in the confirmation dialog box.

Timesaver If an NE is brought down, mark it as **Out of Service** to prevent unnecessary polling traffic on the DCN.

Note When you mark an NE as Out of Service and then mark it as In Service, the Prime Optical alarm time stamp in the Alarm Browser window is resynchronized with the time stamp when the NE is put back in service.

Setting Date, Time, and Location on CTC-Based NEs

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

Step 2 In the node properties pane, click the **General** tab > **Identification** subtab.

Step 3 In the Location area:

- Set the latitude of the NE by selecting North or South from the Latitude drop-down list; then, enter the degrees and minutes (or click the up or down arrow to increase or decrease each by 1 unit).
- Set the longitude of the NE by selecting East or West from the Longitude drop-down list; then, enter the degrees and minutes (or click the up or down arrow to increase or decrease each by 1 unit).

Step 4 In the Date and Time area:

- Time—Enter the date and time.
- Time Zone—From the drop-down list, select the time zone where the NE is located.
- Use Daylight Savings Time—When checked, Daylight Savings Time is observed.

Step 5 Click **Apply**.

Using the SNTP Server to Set the Date and Time

Simple Network Time Protocol (SNTP) is an internet protocol used to synchronize the clocks of computers to a time reference. Using the SNTP server ensures that all NEs use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades. To use the SNTP server to set the date and time for CTC-based NEs, complete the following steps.

Note SNTP is not supported on the CTC-based ONS 15305 R3.0.

Step 1 In the Domain Explorer, select an NE and choose **Configuration > NE Explorer**.

Step 2 In the node properties pane, click the **General** tab > **Identification** subtab.

Step 3 In the SNTP Settings area, do one of the following:

- Set up the SNTP server and optional backup SNTP server, to set the date and time of the node:
  - Check the **Use NTP/SNTP Server** check box.
  - In the SNTP Server field, enter the SNTP server's IP address.
  - (Optional) In the Backup SNTP Server field, enter the backup SNTP server's IP address.
- If you do not use the SNTP server, in the Date and Time area, enter the date and time in the Time field (for more information, see Setting Date, Time, and Location on CTC-Based NEs, page 4-48).

Step 4 Click **Apply**.

Configuring SNTP for Multiple NEs

Use the SNTP Configuration dialog box to provision a set of SNTP parameters on multiple NEs at the same time. You can provision primary and secondary NTP and SNTP server addresses. Both the primary and secondary NTP/SNTP address can have IPv4 or IPv6 format.

When the SNTP address setting on an NE fails, the reason for the failure is logged in the Error Log table. As part of a bulk SNTP operation, if the setting on an NE fails, Prime Optical continues to set the SNTP server address on the remaining NEs that are part of the operation.

Note SNTP configuration is not available for ONS 15216 NEs.

Step 1 In the Domain Explorer, choose **Administration > SNTP Configuration**. The SNTP Configuration dialog box opens. Table 4-20 provides descriptions.

Step 2 Enter the following information:

- NEs
- Job comments
- SNTP
- Time (*time zone*)

Step 3 Click **Finish**.

A job is scheduled for each NE that was assigned the SNTP server IP address. The job status is listed in the Job Monitor table. (For more details, see Viewing the Job Monitor Table, page 4-80.) The status of each SNTP set operation is updated as the job progresses. Job status can be one of the following:

- Queued—The job has been scheduled but has not yet been processed.
- Running—The job is being processed.
- Succeeded—The SNTP server IP address is set on the NE.
- Failed—The SNTP server IP address was not set on the NE. The reason for the failure is logged in the Error Log table.
- Waiting—The job is waiting for the NE to be in service.

Table 4-20 Field Descriptions for the SNTP Configuration Dialog Box

Field	Description
Network Elements	Use the **Add** and **Remove** buttons to move NEs to the Selected NEs list, or to remove NEs from the list. The SNTP server address is set on the NE(s) in the Selected NEs list.
Job Comments	Enter comments about the SNTP server address setting, if needed.

Table 4-20 Field Descriptions for the SNTP Configuration Dialog Box (continued)

Field	Description
SNTP	Use the Resync Time (min; ONS 15305 only) field if you want the ONS 15305 NE to use the SNTP server to synchronize time information. The Resync Time field is the time passed between two synchronization operations. The NE uses this information to know when to synchronize with the SNTP server. If you check the **Use NTP/SNTP Server** check box, Prime Optical uses the NTP or SNTP server to set the date and time of the node. Using the NTP or SNTP server ensures that all NEs use the same date and time reference. After checking the check box, enter the server IP address in the SNTP IP Address field. If you want to include a backup SNTP server, enter the backup SNTP server IP address in the Backup SNTP Server field. If you do not check the Use NTP/SNTP Server check box, the NE stores the NTP or SNTP address but does not use it to synchronize time information. **Note** In the SNTP IP Address field, enter the IP address of your active SNTP server. Do not enter the IP address of your Prime Optical server. The Prime Optical server is not an NTP/SNTP server. If you do not know your SNTP server IP address, contact your system administrator.
Time (*time zone*)	Set a time for the SNTP address setting. Click **Now** to begin immediately, or click **At Time** and specify when to begin the SNTP set, specifying the date, hour, and minute in 5-minute increments. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

Configuring Application-Specific Parameters

The UI Properties pane allows you to configure application-specific parameters.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **UI Properties** to open the UI Properties pane. The following table provides descriptions.

Step 3 After making your selections, click **Save**.

Table 4-21 Field Descriptions for the UI Properties Pane

Field	Description
Fault Management	• Alarm Acknowledgement—Allows you to specify automatic or manual alarm acknowledgement in the Alarm Browser window. If you choose manual alarm acknowledgment, you must manually acknowledge alarms. Cleared alarms move from the Alarm Browser to the Alarm Log. If you choose automatic alarm acknowledgment, the Prime Optical server automatically acknowledges alarms when they are cleared and moves them from the Alarm Browser to the Alarm Log. Before alarms move to the Alarm Log, they must be both cleared and acknowledged. **Note** You can still manually acknowledge alarms in automatic acknowledgement mode. • Overwrite Alarm Notes—Enables or disables the ability to overwrite alarm notes created by another user. • Alarm Unacknowledgement—Enables or disables the ability to unacknowledge alarms that have been acknowledged.
Circuit Management	• Overwrite Circuit Notes—Enables or disables the ability to overwrite circuit notes created by another user. • Automatically Route Internode Circuits—Enables or disables the ability to automatically route internode circuits. The default state is Enabled (that is, automatic routing is allowed). **Note** The Route Automatically option (located in the Routing Preferences pane in the Circuit Creation wizard) is disabled when the Automatically Route Internode Circuits radio button is set to Disable. **Note** When the Automatically Route Internode Circuits option is set to Enable/Disable, it is set for all client sessions logged into that Prime Optical server.
Job Management	Overwrite Job Notes: Enables or disables the ability to overwrite job notes created by another user.
Domain Management	Allows you to specify how node names longer than 25 characters are truncated in the Network Map. If a string is longer than 25 characters, the first 22 characters display followed by an ellipsis (...). You can choose to truncate the first or last characters of the node name.
Subnetwork Grouping	Enables or disables the ability to automatically group NEs in subnetworks. If you check the **Automatically Group NEs in Subnetworks** check box, you cannot change the subnetwork of an NE, meaning: • The option of selecting a subnetwork in the Add New NE wizard is disabled and shows <System Default>. • The add NE process applies all automatic grouping rules. • Drag-and-drop functionality is disabled on the Subnetwork Explorer. • You cannot change the subnetwork assignment from the NE Properties pane. **Note** During the transient period when this option is changed, any current operations (such as dropping an NE in a subnetwork) are completed.

Table 4-21 Field Descriptions for the UI Properties Pane (continued)

Field	Description
Network Discovery	Using the Allow Provisioning check box, you can allow or disallow the discovery mode that you have set to be changed later. • To allow a change of the mode later—Check the Allow Provisioning check box, and select a mode of discovery from the Default Discovery Mode drop-down list below. This lets you change the mode of discovery while creating a new NE service. • To disallow a change of the mode later—Uncheck the Allow Provisioning check box, and select a mode of discovery from the Default Discovery Mode drop-down list below. Using the Default Discovery Mode option, you can set the mode of discovery of the NEs; the mode of discovery can be manual or automatic. Set the discovery mode to one of the following: • Automatic—When a new NE is added, Prime Optical automatically discovers the NE and adds it to the network partition. • Manual—When a new NE is added to Prime Optical, the NE remains in the Undiscovered Network Elements group in the Domain Explorer. You can add the NE to the desired network partition. click **Add Undiscovered NEs** to add the NEs to a network partition. **Note** This option is available only for CTC-based NEs.
Audit Trail State	Allows you to enable or disable audit trails. NEs that are added or discovered will be assigned this setting.

How Do I Manage Redundancy and Failover?

Follow the procedures described in this section to back up and restore memory; modify NE service properties; back up client files; restore server configuration files; initialize a node resynchronization; manage protection groups; restore NE defaults; and configure card redundancy.

Backing Up NE Memory

Prime Optical allows you to back up and restore memory for selected NEs. For example, if you want to save your settings for a particular NE, you can back up the memory for only that NE.

Prime Optical backs up configuration and provisioning information residing in the flash memory of an NE. Prime Optical provides three methods by which to perform the configuration backup operation:

- Manually on demand
- Scheduling (one time only)
- Periodic, automatic scheduling based on a configurable time set by the operator

You can specify the number of backup configurations that should be kept at any given time. The default number is seven.

Note The maximum number of copies that can be saved is dictated by the amount of disk space available.

The oldest configuration that was backed up is replaced by the current backup depending on the configured number of copies you want to retain at any given time. The memory restore function in Prime Optical can then be used to roll back to any one of the previous configurations that was saved. Once the configuration is downloaded, you will need to enter CLI commands to activate the new configuration.

Note The restore operation is service affecting, because the node is rebooted to reflect the restored configuration.

Follow the procedures described in these sections to back up and restore memory (configuration data) on NEs. Prime Optical allows you to back up memory for the following NEs:

- ONS 15216 EDFA2 (R2.3.0 and later)
- ONS 15216 EDFA3
- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH
- ONS 15327
- ONS 15454 SONET
- ONS 15454 SDH
- ONS 15600 SONET
- ONS 15600 SDH
- CPT 200
- CPT 200 SDH
- CPT 600
- CPT 600 SDH

Usage Notes:

- The latest ONS 15216 EDFA2 R2.4 hardware does not support memory backup to a software release other than 2.4.0. The ONS 15216 EDFA2 R2.3 hardware supports memory backup for NE software releases 2.3 and 2.4.
- Prime Optical does not support memory backup for the ONS 15305 or Not Managed/Other Vendor NEs.

The Memory Backup procedure backs up configuration and provisioning information residing in the flash memory of an NE. By default, the Prime Optical server automatically backs up memory for NEs once a day for seven days and stores the backup files on the Prime Optical server. After seven days, the oldest backup file is replaced by the current backup. For more information, see Configuring Automatic NE Backup Parameters, page 4-65.

Step 1 In the Domain Explorer tree, select a management domain or group that contains an NE that is assigned an In Service or Under Maintenance operational state. Alternatively, select an NE that is assigned an In Service or Under Maintenance state.

Note Memory backup is not allowed for preprovisioned or out-of-service NEs.

Step 2 Choose **Administration > Memory Backup**.

Step 3 The Memory Backup dialog box opens. Enter the following information (see Table 4-22 for details):

- NE model
- Selected NEs
- Job comments
- Tag name
- Time (time zone)

Note For the ONS 15216 EDFA2, the backup file must be saved in the default directory, such as the tftpboot directory on the remote TFTP server, in case the file will be restored from the remote TFTP server. The tftpboot directory must have read-write access, or the backup job will fail. See Chapter 3, "Building the Network" for information about configuring the tftp directory with read-write access.

Note The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

Step 4 Depending on the type of NE, do one of the following:

- For ONS 15600 NEs, proceed to Step 6.
- For ONS 15216, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, or ONS 15454 SDH NEs, click **Finish** to initiate the memory backup procedure.
- For the ONS 15216, the configuration file is copied to the $CTMHOME/admin/*NE-system-ID*/15216-*tag-name-time-stamp*-backup.cfg file.
- For the ONS 15310 CL, ONS 15310 MA SONET, or ONS 15310 MA SDH, the configuration file is copied to the $CTMHOME/admin/*NE-system-ID*/15310-*tag-name-time-stamp*-backup.cfg file.
- For the ONS 15327, the configuration file is copied to the $CTMHOME/admin/*NE-system-ID*/15327-*tag-name-time-stamp*-backup.cfg file.
- For the ONS 15454 SONET or ONS 15454 SDH, the configuration file is copied to the $CTMHOME/admin/*NE-system-ID*/15454-*tag-name-time-stamp*-backup.cfg file.

Note If **System Default** is chosen for the tag name, the tag is left blank and the filename is, for example, 15454--backup.cfg. If **User Specified** is chosen and **hello** is entered for the tag name, the filename is 15454-hello-*YYYYMMDDHHMM*-backup.cfg, where *YYYYMMDDHHMM* is the backup date, consisting of:

YYYY—Four-digit year
MM—Two-digit month
DD—Two-digit day
HH—Two-digit hour (in 24-hour format)
MM—Two-digit minute

Step 5 For ONS 15600 SONET and ONS 15600 SDH NEs:

a. Click **Next** to display memory backup options. Select the category of data to back up (see Table 4-22 for details):

- Provisioning data (is selected by default and is display only)
- Alarm data
- PM data

b. Click **Finish** to initiate the memory backup procedure.

The configuration file is copied to the $CTMHOME/admin/*NE-system-ID*/15600-*tag-name-time-stamp*-backup.cfg file.

After scheduling the backup, look at the Job Monitor table (**Administration > Job Monitor**) to see the job status. If the job fails, the Additional Information field in the Job Monitor table provides more information.

If a memory backup job fails, the EMS raises an alarm. All prior memory backup failure EMS-generated alarms on an NE are cleared under the following conditions:

- After a successful memory backup operation on the NE
- When the operational state of the NE changes to Out of Service

Table 4-22 Field Descriptions for the Memory Backup Dialog Box

Field	Description
NE Model	Select the NE type that you want to back up. The type you select determines the NEs that are displayed in the Network Elements area.
Network Elements	Use the **Add** and **Remove** buttons to move the NEs that you want to back up to the Selected NEs list, or to remove NEs from the list.
Job Comments	Enter comments about the backup, if needed.
Tag Name	Add a tag to the system-generated filename. If you select System Default, no tag name is added. If you select User Specified, you can enter a tag name.
Time *(time zone)*	Set a time for the backup. Click **Now** to begin backup immediately, or click **At Time** and specify when to begin backup, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.
Memory Backup Dialog Box 2 for ONS 15600 SONET and ONS 15600 SDH NEs	
Provisioning Data	*Display only.* Backs up the ONS 15600 provisioning data.
Alarm Data	If checked, the ONS 15600 alarm data is backed up.
PM Data	If checked, the 15-minute and 1-day PM data for the ONS 15600 is backed up.

Restoring NE Memory

Use the Memory Restore dialog box to restore provisioning and configuration information stored in the flash memory of the following NEs. (This information is backed up by using the Memory Backup dialog box.)

- ONS 15216 EDFA2 (EDFA2 R2.3.0 and later)
- ONS 15216 EDFA3
- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH
- ONS 15327
- ONS 15454 SONET
- ONS 15454 SDH
- ONS 15600 SONET
- ONS 15600 SDH

Usage Notes:

- The latest ONS 15216 EDFA2 R2.4 hardware does not support memory restore to a software release other than 2.4.0. The ONS 15216 EDFA2 R2.3 hardware supports memory restore for NE software releases 2.3 and 2.4.
- Prime Optical does not support memory restore for the ONS 15305 or Not Managed/Other Vendor NEs.

Complete the following steps to restore NE memory:

Step 1 In the Domain Explorer tree, select an NE that is assigned an In Service or Under Maintenance operational state.

Note Run the Memory Restore procedure for *one* NE at a time. You cannot restore memory for preprovisioned or out-of-service NEs.

Step 2 Choose **Administration > Memory Restore**. The Memory Restore dialog box opens.

Step 3 Enter the following information (see Table 4-24 for details):

- NE model
- NEs (select only one)
- Source
- Job comments
- Memory restore options (available only for CTC-based NEs)
- Time

Step 4 Depending on the type of NE, do one of the following:

- For the ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, or ONS 15454 SDH, proceed to Step 5.
- For the ONS 15600 SONET or ONS 15600 SDH, proceed to Step 7.

- For the ONS 15216 EDFA2 or ONS 15216 EDFA3 NEs, click **Finish**.

Step 5 For the ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, or ONS 15454 SDH, click **Next** to verify the following file properties:

- Node description
- Node name
- Node type
- IP address
- Software version

Prime Optical performs a compatibility check. The following table lists the compatibility factors and the corresponding action. The restore operation is not allowed if the NEs are of different types or if the software version is incompatible.

Table 4-23 Compatibility Factors for Memory Restore

Compatibility Factor	Action
Different NE type	Finish button is disabled; click **Cancel**.
Incompatible software version	Finish button is disabled; click **Cancel**.
Different node name	Prime Optical displays a warning message. You can click **Finish** to proceed with the restore operation or **Cancel** to cancel the operation.
Different software version	Prime Optical displays a warning message. You can click **Finish** to proceed with the restore operation or **Cancel** to cancel the operation.

Caution Restoring the memory of an NE using an incompatible or corrupted file might cause loss of traffic or loss of connectivity.

Step 6 For the ONS 15600 SONET or ONS 15600 SDH:

a. Click **Next** to display the memory restore options. Select the category of data to restore (see Table 4-24 for details):
   - Provisioning data (is selected by default and is display only)
   - Alarm data
   - PM data

b. Click **Finish** to initiate the memory restore procedure.

To view the results of the memory restore operation, open the Job Monitor table (**Administration > Job Monitor**). For information about the Job Monitor table, see Monitoring Scheduled Tasks, page 4-79.

Table 4-24 Field Descriptions for the Memory Restore Dialog Box

Field	Description
NE Model	Select the NE model that you want to restore. The model you select determines the NEs that are displayed in the Network Elements field.
Network Elements	Use the **Add** and **Remove** buttons to move the NE that you want to restore to the Selected NE list. You can run the Memory Restore procedure for only one NE at a time.
Source	Specify the location of the backup file that you want to use to restore the NE: • Click **Local** to browse a local client directory for the backup file. • Click **Server** to restore the file from the Prime Optical server. The files shown are in the /opt/CiscoTransportManagerServer/admin/*NE-system-ID* directory in chronological order, with the most recent backup file displayed at the top of the list. The backup file uses the naming convention *NE-model-date time*-backup.cfg, where: – *date* has the format *YYYYMMDD* (that is, 20080206 is February 6, 2008) – *time* has the format *hhmmss* (that is, 144911 is 2:49:11 p.m.) For example, a valid backup filename is Cisco_ONS_15454-20080201144911-backup.cfg. **Note** The Server radio button is not active unless a file exists in that directory. • Click **Remote TFTP Server Address** to restore from another network server. (The Remote option is not supported for CTC-based NEs.) In the TFTP Server Address field, enter the IP address of the TFTP server. In the Relative TFTP File Path field, enter the fully qualified pathname of the backup file to be restored, relative to the tftpboot directory. TFTP must be configured and running on the network server. The Remote option is supported for the ONS 15216 EDFA2 R2.3.0 and later. **Note** If the Remote option is selected for the ONS 15216 EDFA, the backup file that you are restoring must have been saved in the default directory, such as the tftpboot directory on the remote TFTP server. **Note** The tftpboot directory must have read-write access, or the restore job will fail. See Chapter 3, "Building the Network" for information about how to configure the tftp directory with read-write access. • Click **Remote FTP Server Address** to restore from any UNIX workstation that is running FTP. This option requires authentication. In the FTP Server Address field, enter the IP address of the FTP server. In the FTP File Path field, enter the fully qualified pathname of the backup file to be restored, relative to the FTP directory. In the FTP Username field, enter the FTP username. In the FTP User Password field, enter the FTP user password. The Remote FTP Server option is supported only for the ONS 15216 EDFA3.
Job Comments	Enter comments about the restore procedure, if needed.
Memory Restore Options *(available only for CTC-based NEs)*	For CTC-based NEs, specify whether you want to partially or completely restore memory. This feature is available only to users with SuperUser or NetworkAdmin privileges. • Click **Partial Restore** to restore only the provisioning database, which includes information about links, circuits, and information contained in the NE Explorer. Partial Restore is selected by default. • Click **Complete Restore** to restore both the provisioning database and the system database. The system database parameters include software version, version name, NE node name, and so on.

Table 4-24 Field Descriptions for the Memory Restore Dialog Box (continued)

Field	Description
Time *(time zone)*	Set a time for memory restore. Click **Now** to begin memory restore immediately, or click **At Time** and specify when to begin memory restore, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.
Memory Restore Dialog Box 2 for ONS 15600 SONET and ONS 15600 SDH NEs	
Provisioning Data	*Display only.* Restores the ONS 15600 provisioning data.
Alarm Data	If checked, the ONS 15600 alarm data is restored.
PM Data	If checked, the 15-minute and 1-day PM data for the ONS 15600 is restored.

Viewing and Modifying NE Service Properties

The NE Service pane in the Control Panel window allows you to view and update Prime Optical server configuration information, which includes timing parameters and NE backup parameters. You can also stop or start an individual NE service instance.

All server configuration changes take effect when you save them. The NE Service pane contains the following tabs, which are described in Table 4-25:

- NE Poller—Allows you to change timing parameters and CTC IIOP port information.
- NE Auto Backup—Allows you to configure automatic NE backup parameters.
- NE Manual Backup—Allows you to configure manual NE backup parameters.

Note The NE service is not started as a process until you activate an NE for that particular service.

When you add a network partition, the NE service is not started automatically. It starts only when you add an NE to the network partition. When the last NE is removed from the network partition, the NE service is not stopped automatically. The NE service stops only when the network partition is deleted.

Note Prime Optical is limited to running a maximum number of 23 Java processes. Enter the **opticalctl status** command to view the current number of running processes.

Understanding the Unmanaged NE Service

Unmanaged NEs have their own NE service. This Unmanaged NE Service allows Prime Optical to support unmanaged NE devices that are not in the Supported NE table. Unmanaged NEs can be Cisco or non-Cisco devices. The Unmanaged NE Service is required for operations such as:

- Creating manual links between managed and unmanaged NEs
- Creating manual links between unmanaged NEs
- Changing the operational state of unmanaged NEs

The Unmanaged NE Service also supports DWDM topology with IP Address along with the optical configuration.The following features are supported:

- Assign the type of the NE (CRS-1, CRS-3) and the IP address.
- Ability to cross-launch Prime Network from the unmanaged device.
- Create manual links between ONS and unmanaged NEs.
- Create patchcords that connects any CRS port to the ROADM device.

Note Passive NEs such as the ONS 15216 EDFA1 are not considered unmanaged NEs.

Changing Timing Parameters

Use the NE Service pane to tune timing parameters and accommodate different Prime Optical server-to-NE connectivity scenarios. When timing parameters are tuned, network utilization and Prime Optical server load are optimized. As a rule, timing parameters increase as the network slows.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **NE Service** to open the NE Service pane. Table 4-25 describes the fields in the NE Service pane.

Step 3 Click the **NE Poller** tab and enter the NE health poll interval.

Step 4 In the Control Panel window, expand the **NE Service** and click an NE. Table 4-26 describes the fields in the individual NE Service panes.

Step 5 In the Resync Scheduling area of the individual NE Service pane, enter the interval at which the configuration is retrieved and processed. This field is not available for all NEs.

Note The default values are adequate for most network configurations. Decreasing the values of the parameters could adversely impact server performance.

Step 6 Click **Save**. Changes take effect immediately.

Table 4-25 Field Descriptions for the NE Service Pane

Field	Subfield	Description
NE Poller Tab		
Timing Parameters	NE Health Poll Interval	Displays the NE polling interval (in seconds). The default is 240 seconds (4 minutes).
CTC IIOP Port Configuration	CTC IIOP Port Range	Displays CTC IIOP ports or a range of ports for CTC-based network services that have been selected to be configured. When all ports have been removed in the CTC IIOP Selection dialog box, the CTC IIOP Port Range field displays a zero.
	Edit CTC IIOP Port Range button	Click the Edit CTC IIOP Port Range button to open the CTC IIOP Port Selection dialog box, which allows you to configure CTC IIOP ports or a range of ports for CTC-based network services. **Note** Table 4-27 describes the fields in the CTC IIOP Port Selection dialog box.

Table 4-25 Field Descriptions for the NE Service Pane (continued)

Field	Subfield	Description
NE Auto Backup Tab		
Select Modify Mode	All NE Models, NE Model	Allows you to specify whether the automatic backup should apply to a specific NE model (ONS 15216 EDFA2 [R2.3.0 and later], ONS 15216 EDFA3, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454, ONS 15454 SDH, ONS 15600, ONS 15600 SDH, CPT 200, CPT 200 SDH, CPT 600, or CPT 600 SDH) or to all applicable NE models.
	Apply All Changes	If checked and All NE Models is selected, all of the values on this tab will be applied to all of the NE models. The applied changes also include the values that have not been modified currently. If unchecked, only the current changes will be applied to all of the NE models.
Configuration Parameters	NE Model	If NE Model is selected under Select Modify Mode, this field allows you to specify the NE model that will be backed up automatically.
	Enable Auto Backup	If checked, the system automatically backs up all NE models, or a specific NE model. When NE Auto Backup State is set to Enabled, an entry is added to the Job Monitor table with a new job ID and a new task ID for each NE. Scheduled Time is set to the selected autobackup time and Task Status is set to Queued. When the autobackup time is reached and the task begins, Task Status is set to Running. After the backup is complete, Task Status is set back to Queued and Scheduled Time is reset to the time and date of the next scheduled backup time. When NE Auto Backup State is set to Disabled, Task Status is set to Cancelled. The default state is Disabled. When you first enable Memory Auto Backup, the job runs the same day if the scheduled time has not already passed. If the time has passed, the job runs the next day. However, if you later modify the Memory Auto Backup schedule, the job always runs the next day, regardless of whether or not the scheduled time has passed.
	Number of Backup Copies Retained	Allows you to specify the number of backup copies to keep. The valid range is from 1 to 50 backup copies; the default is 7. Only automatic backup copies count toward the total number of backup copies saved; manual backup copies do not count toward the total. Each time Prime Optical creates a new backup file, it checks the existing number of backup copies. Prime Optical deletes files as needed, beginning with the oldest file, so as not to exceed the specified number of backup copies to keep.
	Backup Time	Allows you to set the time when the automatic backup will be performed.
NE Manual Backup Tab		
Select Modify Mode	—	Allows you to specify whether the manual backup should apply to a specific NE model (ONS 15216 EDFA2 [R2.3.0 and later], ONS 15216 EDFA3, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454, ONS 15454 SDH, ONS 15600, ONS 15600 SDH, CPT 200, CPT 200 SDH, CPT 600, or CPT 600 SDH) or to all applicable NE models.

Table 4-25 Field Descriptions for the NE Service Pane (continued)

Field	Subfield	Description
Configuration Parameters	NE Model	If NE Model is selected under Select Modify Mode, this field allows you to specify the NE model that will be backed up manually.
	Number of Backup Copies Retained	Allows you to specify the number of backup copies to keep. The default is 7. Each time Prime Optical creates a new backup file, it checks the existing number of backup copies. Prime Optical deletes files as needed, beginning with the oldest file, so as not to exceed the specified number of backup copies to keep.

Viewing the Individual NE Service Panes

The individual NE Service panes in the Control Panel window allow you to stop, start, or configure an individual NE service instance.

Table 4-26 Field Descriptions for the Individual NE Service Panes

Field	Description
Status Tab	
Service Status *(This field is called Network Service Status for CTC-based SONET and CTC-based SDH NEs)*	Displays the current status of the service: Active or Not Active. By default, the status is Not Active. **Note** The NE service can take up to 60 seconds to initialize after the GUI status has changed to indicate that the service is up. The status is an indication of the successful initiation of the service startup, not successful initialization.
Service Action	Allows you to stop or start a process. Notice that the Service Action button toggles between Activate and Deactivate, and that the Service Status field changes accordingly.
Threshold	Displays the maximum number of NEs that each NE service instance can manage. The threshold depends on the NE type, as follows: • ONS 15216 NE Service can manage up to 1000 ONS 15216 NEs. • ONS 15305 NE Service can manage up to 1000 ONS 15305 NEs. • ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, or ONS 15600 SONET NE Service can manage up to 400 ONS 15310 CL, ONS 15310 MA SONET, ONS 15327, ONS 15454 SONET, or ONS 15600 SONET NEs (for NE releases earlier than R5.0). **Note** For NE release 5.0 or later in a large or high-end configuration, the NE service can manage up to 500 NEs. • ONS 15454 SDH and ONS 15600 SDH NE Service can manage up to 600 ONS 15454 SDH or ONS 15600 SDH NEs. • Unmanaged NE Service can manage up to 500 unmanaged NEs.

Table 4-26 Field Descriptions for the Individual NE Service Panes (continued)

Field	Description
Resync Scheduling *(not applicable to unmanaged NEs)*	Allows you to specify a schedule for database resynchronization for each NE model. A schedule consists of the following configurable parameters: • Days of the week to run: All, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday. Check the check box next to the day(s) to run the configuration resynchronization. • Time of day to initiate the resynchronization, in *HH*:*MM* AM/PM format (specific format based on locale). • Interval between synchronizations, in *HH*:*MM* format. The maximum interval is 24:00; the minimum is 5:00. The resynchronization interval is calculated only until the end of the day. The schedule for the next day takes effect after the end of the current day. For example, if you choose Wednesday with a start time of 10:00 a.m. and an interval of 6 hours, the resynchronization occurs at 10:00 a.m., 4:00 p.m., and 10:00 p.m. on Wednesdays. After you set the time interval between synchronizations, the Prime Optical server resynchronizes the database with the configuration changes from the last resynchronization time. This synchronizes the database with NE, card, and line configuration information. **Note** The Last Resync field shows when the NE was last synchronized. • Enable Resync Alarms check box—This check box is available after you select the days of the week for database resynchronization. When checked, the Config Resync operation starts and Prime Optical resynchronizes with all the active alarms that are present on the NE.
Bandwidth Utilization Report *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Check the Enable Bandwidth Data Service Provisioning (DSP) check box to enable the bandwidth check during L2 service provisioning. The bandwidth utilization report shows available and used bandwidth for each L2 topology. This report can be used during L2 service provisioning to verify whether the requested Committed Information Rate (CIR) is available on the topology. Based on the report, a warning is returned if there is not enough bandwidth available for a drop port. Be careful not to oversubscribe the bandwidth.
Designated Socks Server *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Check the Enable Designated Socks Server check box to allow the CTC-based SONET or CTC-based SDH NEs to serve as a designated SOCKS server (DSS). If the NE is a DSS, it manages connectivity among other NEs through network firewalls.
Threshold Crossing Alerts *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Check the Enable Threshold Crossing Alerts Receiver check box to forward events to other services (for example, from network service to other services) for CTC-based SONET or CTC-based SDH NEs. If the Enable Threshold Crossing Alerts Receiver check box is unchecked, events are not forwarded to other services and TCA information is not saved on the database.
Robust Fault Synchronization *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Allows you to enable or disable the robust fault synchronization for the ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, ONS 15600 SDH, CPT 200, and CPT 600.
BLSR-Ring/MS-SPRing Switch Interval *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Allows you to set the BLSR or MS-SPRing switch interval, in seconds. The default is 60 seconds.

Table 4-26 Field Descriptions for the Individual NE Service Panes (continued)

Field	Description
TL1 Tunnel Connection Timeout *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Allows you to set the time it takes to set up a TL1 tunnel connection between the Prime Optical server and the tunneled NE (TNE). When a new NE is added using the Add NE wizard, you can connect to the new NE using a TL1 tunnel. The Prime Optical server establishes a TCP/IP connection to a non-Cisco GNE (NGNE) and the NGNE establishes an OSI connection to the TNE. If the Prime Optical server cannot set up the TL1 tunnel connection before the specified TL1 tunnel connection timeout, the Add NE operation fails and the TNE connection state becomes unavailable.
Audit Trail Collection Interval *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Allows you to set the audit trail collection interval, in minutes. **Note** For NE releases earlier than release 6.0, the audit trail records are not cleared automatically. Instead, you must clear the alarms manually by archiving the audit records from CTC. In NE release 6.0 and later, the CTC API clears the audit trail records automatically, and the alarms are cleared automatically in Prime Optical. To manually clear audit trail records for NE releases earlier than 6.0, launch CTC and choose **Maintenance > Audit > Archive**.
L2 Service Resync Delay *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Allows you to configure the delay after which Prime Optical performs a Cisco IOS configuration synchronization on ML cards to keep the NE and the Prime Optical Data Provisioning Service synchronized. This operation synchronizes the L2 topology. Full Cisco IOS configuration synchronization is performed automatically by Prime Optical to keep the NE and the Prime Optical Data Provisioning Service synchronized. Full configuration resynchronization might be delayed depending on Prime Optical server usage. For the Prime Optical server deployed as a monitoring server, the recommended value for the delay parameter is 120 seconds. For the Prime Optical server deployed as a provisioning server, the recommended value for the delay parameter is 10 minutes (600 seconds).
ENEs List Poll Interval *(applicable to CTC-based SONET and CTC-based SDH NEs)*	Time interval in which all CTC-based GNEs in Prime Optical need to refresh their list of ENEs. The list of ENEs for each GNE is obtained and compared with the existing ENE list. If there are any changes to the ENE list, topology changes are carried out so that the Domain Explorer will reflect the current topology with correct GNE and ENE icons.

Configuring Automatic NE Backup Parameters

Prime Optical can be configured to automatically back up ONS 15216 EDFA2, ONS 15216 EDFA3, ONS 15310 CL, ONS 15310 MA SONET, ONS 15310 MA SDH, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, and ONS 15600 SDH NEs once a day.

Automatic backup files are saved in the following locations and have the following names:

- $CTMHOME/admin/*NE-system-ID*/15216-*YYYYMMDDHHMM*-auto.cfg
- $CTMHOME/admin/*NE-system-ID*/15310-*YYYYMMDDHHMM*-auto.cfg
- $CTMHOME/admin/*NE-system-ID*/Cisco_ONS_15327-*YYYYMMDDHHMM*-auto.cfg
- $CTMHOME/admin/*NE-system-ID*/15454-*YYYYMMDDHHMM*-auto.cfg
- $CTMHOME/admin/*NE-system-ID*/15600-*YYYYMMDDHHMM*-auto.cfg
- $CTMHOME/admin/*NE-system-ID*/*CTM-YYYYMMDDHHMM*-auto.cfg

where:

- *YYYYMMDDHHMM* is the date of the backup:
  - *YYYY* is the four-digit year
  - *MM* is the two-digit month
  - *DD* is the two-digit day
  - *HH* is the two-digit hour (in 24-hour format)
  - *MM* is the two-digit minute

  For example, 4:01 p.m. on September 29, 2006 is represented as 200609291601.
- *Active-CPU-slot-number* is the slot number of the active CPU at the time of job creation.
- [running | startup] indicates whether the backup is of the NE's running configuration or startup configuration.

Note Automatic backup is not available for all NEs.

Use the NE Service pane to set automatic NE backup parameters.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **NE Service** to open the NE Service pane. Click the **NE Auto Backup** tab. Table 4-25 provides descriptions.

Step 3 Enter the following information:

- Select Modify Mode
- NE Model
- Enable Auto Backup
- Number of Backup Copies Retained
- Backup Time
- Backup Data (available only if ONS 15600 SONET or ONS 15600 SDH is selected as the NE model)

Step 4 Click **Save**. Changes take effect immediately; however, the backup already scheduled for the next 24 hours remains in effect. A backup with the new parameters will occur after the previously scheduled backup runs.

If the time you scheduled for the backup is prior to the current time of the current day, a backup for the current day will be scheduled for immediate execution. Otherwise, backups for the current day and subsequent days will occur at the specified time.

To verify whether Prime Optical is automatically backing up the NE, go to the Job Monitor table (**Administration > Job Monitor**), verify that the task is listed, and check its task status. If automatic backup for an NE failed, the task status will be "Failed." This failure is logged in the Audit Log and an alarm is generated.

Note If the Prime Optical server restarts after the scheduled automatic backup time for that day, Prime Optical automatically schedules a backup for all ONS 15327, and ONS 15454 SONET NEs to take place 5 to 10 minutes after the restart. Conversely, if the server restarts before the scheduled backup time for that day,

the backup occurs at the regularly scheduled time. This behavior ensures that a backup is performed for each NE at least once a day.

For example, if the automatic backup time is set for 2:00 a.m. and the Prime Optical server restarts at 8:00 p.m., the server schedules a backup 5 to 10 minutes after the restart because the backup time is earlier than the restart time on the same day. As another example, if the automatic backup time is set for 11:00 p.m. and the Prime Optical server restarts at 8:00 p.m., the server waits until 11:00 p.m. to run the backup because the backup time is later than the restart time.

An entry is added to the Audit Log for each successful completion or failed NE autobackup task.

Configuring Manual NE Backup Parameters

Use the NE Service pane to set manual NE backup parameters.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **NE Service** to open the NE Service pane. Click the **NE Manual Backup** tab. Table 4-25 provides descriptions.

Step 3 Enter the following information:

- Select Modify Mode
- NE Model
- Number of Backup Copies Retained

Step 4 Click **Save**. Changes take effect immediately; however, the backup already scheduled for the next 24 hours remains in effect. A backup with the new parameters will occur after the previously scheduled backup runs.

CTC IIOP Port Configuration

The CTC IIOP Port Selection dialog box allows you to configure individual CTC IIOP ports, or a range of ports, for the CTC-based NE service.

Typically you would configure a specific CTC IIOP port (or a range of ports) if you have a firewall between the Prime Optical server and the NE.

The number of ports configured must equal the number of CTC-based NE services, unless you have SSLIOP configured on the NE. If you have SSLIOP configured on the NE, each NE service requires two ports (instead of one port): one for IIOP and one for SSLIOP.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **NE Service** to open the NE Service pane.

Step 3 Click the **NE Poller** tab.

Step 4 Click the **Edit CTC IIOP Port Range** button to open the CTC IIOP Port Selection dialog box, which allows you to select CTC IIOP ports or a range of ports for the CTC-based NE service. Table 4-27 provides descriptions.

Step 5 Enter the port values.

Note You can specify a single port (leaving the To text field blank) or a port range by specifying the initial value (From text field) and the end value (To text field).

Step 6 Click the **Add Port** button to add the ports you entered. The ports are added to the Selected Port list in ascending order.

Tip You can remove ports from the Selected Port list by selecting the port you want to remove and clicking the **Remove** button. The port moves to the Deleted Port list.

Step 7 Click **OK** to close the CTC IIOP Port Selection dialog box. At the confirmation prompt, click **OK**. The values displayed in the Selected Port list are formatted and displayed in the CTC IIOP Port Range field.

Caution The NE service will not start if the ports you select are already in use by the server. Verify that the port values you select in the CTC IIOP Port Selection dialog box are not already in use by the server before saving your changes.

Table 4-27 Field Descriptions for the CTC IIOP Port Selection Dialog Box

Field	Description
Specify CTC IIOP Port Range	
From/To fields	Enter a port range by specifying the initial value in the From field and the end value in the To field. You can specify a single port by entering the port value in the From field, leaving the To field blank. The valid range for the From/To fields is from 0 to 65,535.
Add Port button	Click the **Add Port** button to add the ports specified in the From/To fields to the Selected Port list. Ports listed in the Selected Port list will appear in the CTC IIOP Port Range field.
Port Selection	
Deleted Port	Displays the list of ports to be deleted from the CTC IIOP Port Range.
Selected Port	Displays the list of ports to be added to the CTC IIOP Port Range.
Add button	Select a port in the Deleted Port list and click the **Add** button to move the port to the Selected Port list. Ports listed in the Selected Port list will appear in the CTC IIOP Port Range field.
Remove button	Select a port in the Selected Port list and click the **Remove** button to move the port to the Deleted Port list. Ports listed in the Deleted Port list will not appear in the CTC IIOP Port Range field.

Viewing and Modifying Service Instance Properties

The NE Service Instance pane in the Control Panel window allows you to view a list of NEs managed by the service instance. You can also activate or deactivate debug logging on selected NEs.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, expand **NE Service**.

Step 3 Expand an individual NE service and click **NE Service Instance**. The following table provides descriptions.

Table 4-28 Field Descriptions for the NE Service Instance Pane

Field	Description
Status	
Network Partition	Displays the name of the associated Network Partition. This is a read-only field.
Service Status	Displays the current status of the service: Running or Stopped. The network service can take up to 60 seconds to initialize after the GUI status has changed to indicate that the service is up. The status is an indication of the successful initiation of the service startup, not successful initialization.
Start Service Instance, Stop Service Instance	Allows you to stop or start an individual network service instance. If you click **Start Service Instance**, the service status changes to *Running*. If you click **Stop Service Instance**, the status changes to *Stopped*. The list of managed NEs shows which NEs are being managed by the selected service instance. If you stop the specified service instance, the NEs in the list are no longer managed.
Dump Cache button	Click the **Dump Cache** button to export the cache (memory) information of the selected service instance to a log file. This feature applies only to CTC-based NE service instances.
Debug Table button	Click the **Debug Table** button to open the Prime Optical NE Module Level Debug table. See Viewing the Prime Optical NE Module Level Debug Table, page 4-70.
Discovery Mode	Lets you set the mode of discovery of NEs; the mode of discovery can be manual or automatic. Set the discovery mode to one of the following: • Automatic—When a new NE is added, Prime Optical automatically discovers the NE and adds it to the network partition. • Manual—When a new NE is added to Prime Optical, the NE remains in the Undiscovered Network Elements group in the Domain Explorer. You can later add the NE to the desired network partition; click **Add Undiscovered NEs** to add the NEs to a network partition. **Note** This option is available only for CTC-based NEs.
Overall Logging for the Instance	Enable—Click the **Enable** radio button to enable logging. When you click the Enable radio button, the debug modules in the Available list become selectable. Disable—Click the **Disable** radio button to disable logging. When you click the Disable radio button, the debug modules in the Available list become dimmed and you cannot make any selections from the Available list.
Managed NEs	
Filter button	Click the **Filter** button to filter the data displayed in the table.
NE ID	Displays the ID name of the selected NE.

Table 4-28 Field Descriptions for the NE Service Instance Pane (continued)

Field	Description
IP Address	Displays the IP address of the selected NE.
NE State	Displays the state of the selected NE.
Communication State	Displays the current connectivity state between Prime Optical and the selected NE. Values are Available or Unavailable.
Subnet ID	Displays the name of the subnetwork associated with the selected NE.
Debug Option	Displays whether the debug option is enabled or disabled for the selected NE.

Viewing the Prime Optical NE Module Level Debug Table

The Prime Optical NE Module Level Debug table displays the debug state of the selected NEs, and it lists the modules for which debugging is active.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, expand **NE Service** or **PM Service** then do one of the following:

- Expand one of the following under NE Service:
  - CTC-Based SONET NEs
  - CTC-Based SDH NEs
- Expand one of the following under the PM Service:
  - ONS 15305/ONS 15305 CTC
  - ONS 15310 CL/ONS15310 MA/ONS 15327/ONS 15454
  - ONS 15310 MA SDH/ONS 15454 SDH
  - ONS 15600
  - ONS 15600 SDH

Step 3 Click **Network Service Instance** or **PM Service Instance**.

Step 4 Select one or more managed NEs from the Managed NEs table.

Step 5 Click the **Debug Table** button. The Prime Optical NE Module Level Debug table opens. The following table provides descriptions.

Table 4-29 Field Descriptions for the Prime Optical NE Module Level Debug Table

Field	Description
NE ID	Displays the ID name of the selected NE.
Debug State	Displays the debug state (enabled or disabled).
Debug Modules	Displays a list of debug modules active on the selected node.

Configuring the NE Logging Options

The Network Element Logging Options dialog box allows you to modify the debug state for selected NEs.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, expand **NE Service**.

Step 3 Expand **CTC-Based SONET NEs** or **CTC-Based SDH NEs** and click **Network Service Instance**.

Step 4 Select one or more managed NEs from the managed NEs table.

Step 5 Click the **Debug Table** button. The Prime Optical NE Module Level Debug table opens.

Step 6 Click the **Open Debug Dialog** tool to open the Network Element Logging Options dialog box. The following table provides descriptions.

Step 7 Click **Save** to save the NE logging options.

Table 4-30 Field Descriptions for the Network Element Logging Options Dialog Box

Field	Description
Overall Logging	
Enable	Choose the Enable radio button to enable logging. When you choose the Enable radio button, the debug modules in the Available list become selectable.
Disable	Choose the Disable radio button to disable logging. When you choose the Disable radio button, the debug modules in the Available list become dimmed and you cannot make any selections from the Available list.
Apply to All NEs	Check the Apply to All NEs check box to apply all the modules to the NEs selected in the Prime Optical NE Module Level Debug table.
Debug Modules	
Available	Displays the modules available for debugging.
Selected	Displays the modules selected for debugging.

Backing Up Client Files

Use the Backup File dialog box to view a list of NE configuration files that were created during routine backups and saved on the Prime Optical server from the NEs. You can select one or more files from the list and save them to a local client workstation.

Step 1 In the Domain Explorer window, choose **Administration > Memory Backup Upload**. The Backup File dialog box opens. The following table provides descriptions.

Step 2 In the Files area, select backup files from the list. To select multiple files, hold down the **Ctrl** key on your keyboard while using your mouse to click files. Click **Select All** to select all files in the list.

Step 3 In the Upload Location text box, specify where you want to save the backup files on the client. Click **Browse** to choose a client location different from the default.

Step 4 Click **Upload** to upload the selected backup files to the specified client workstation.

Table 4-31 Field Descriptions for the Backup File Dialog Box

Field	Description
Files	Lists the backup files that are available on the server.
Upload Location	Allows you to specify where you want to save the backup files on the client. The default location is *Prime Optical-client-installation-directory*\admin\ or *Prime Optical-client-installation-directory*/admin/. Click **Browse** to choose a different location.
Upload button	Uploads the selected backup files to the specified client location.
Select All button	Selects all of the backup files in the list.
Cancel button	Replaces any changes to user-defined fields with the previous values and closes the dialog box.
Help button	Launches the online help for the Backup File dialog box.

Restoring Server Configuration Files

Step 1 Log into the server workstation as the root user.

Step 2 On the command line, enter the following commands:

```
cd/opt/CiscoTransportManagerServer/bin
./restore_config.sh backup-file-location log-directory ISHA
```

Note The ISHA value is 0.

Configuring Nodes for Database Restore—ONS 15600

Use the Configure Node dialog box to configure the selected ONS 15600 SONET or ONS 15600 SDH node. This feature is essentially a database restore without the check for a matching node ID, software version, and IP address. Additionally, you can specify that a new IP address overrides the IP address in

the database. When the node reboots after the database has been downloaded, it uses the new IP address you specified. Only the provisioning database is restored from the ONS 15600 database file, which can contain provisioning, alarm, PM, and audit databases.

Step 1 In the Domain Explorer tree, select an ONS 15600 SONET or ONS 15600 SDH NE that is assigned an In Service or Under Maintenance operational state. You cannot configure nodes for preprovisioned or out-of-service NEs.

Step 2 Choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > Configure Node**. The Configure Node dialog box opens. The following table provides descriptions.

Step 3 Enter the following information:

- NE model
- Selected NE
- Source
- Job comments
- Time

Step 4 Click **Next**.

Step 5 Verify the configuration. If necessary, change the IP address with which the new node will be configured.

Step 6 Click **Finish**.

To view the results of the node configuration, check the Job Monitor table (**Administration > Job Monitor**).

Table 4-32 Field Descriptions for the Configure Node Dialog Box

Field	Description
NE Model	Select the NE type that you want to configure. The type you select determines the NEs that are displayed in the Network Elements field. **Note** You can only select ONS 15600 SONET or ONS 15600 SDH.
Network Elements	Use the **Add** and **Remove** buttons to move the NE that you want to configure to the Selected NE list. You can run the node configuration procedure for only one NE at a time.
Source	Specify the location of the backup file that you want to use to configure the NE: • Click **Local** to browse to a local client directory for the backup file. • Click **Server** to configure the file from the Prime Optical server. The files shown are in the directory /opt/CiscoTransportManagerServer/admin/*NE-system-ID*. The Server radio button is not active unless a file exists in that directory. **Note** The Remote options are disabled and do not apply.
Job Comments	Enter comments about the node configuration procedure, if needed.
Time (*time zone*)	Set a time for the node configuration. Click **Now** to begin node configuration immediately, or click **At Time** and specify when to begin node configuration, in 5-minute increments. **Note** The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box.

Table 4-32 Field Descriptions for the Configure Node Dialog Box (continued)

Field	Description
Current Node Configuration	*Display only.* Displays the NE software version and IP address of the current node.
Memory Configuration	*Display only.* Displays the NE software version and IP address in the database file provided for configuring the node. The check box shows that only provisioning data will be considered for restoration.
New Node Configuration	Displays the NE software version and IP address with which the new node will be configured. By default, the IP address is the same as that of the current node. You can modify the IP address.

Managing Protection Groups

A protection group allows you to group modules together, so that if one module goes down for some reason, the other modules will be protected and will not go down as well. The following sections describe how to create, enable, edit, and delete protection groups.

Creating Protection Groups

Step 1 Select a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the NE Explorer window, click the **Protection** tab.

Step 3 In the **Protection Groups** subtab, click **Create**. The Create Protection Group dialog box opens. Table 4-33 provides descriptions. Fields shown depend on the type of NE that is selected.

Step 4 Specify the following information:

- Name
- Type
- Protect module

Caution If you are using Prime Optical GateWay/CORBA, make sure that you do not create multiple protection groups with the same name. Prime Optical GateWay/CORBA cannot distinguish between multiple protection groups with the same name while executing a delete protection group command or a perform protection switch command.

Note 1:N protection is not supported for the ONS 15327.

The Layer 2 1+1 protection group is created only between client ports on GE_XP or 10GE_XP cards (in L2 over DWDM mode), and only if Layer 2 trunk-to-trunk internal patchcords are created between the cards' trunk ports.

Based on these selections, a list of available working cards or ports is displayed.

Step 5 From the Available Entities list, choose the card or port that will be the working card or port. Click the arrow button to move each card or port to the Working Entities list.

Step 6 Complete the remaining information:

- Bidirectional switching
- Revertive
- Reversion time
- Recovery guard time
- Verification guard time
- Detection guard time

Step 7 Click **OK**.

Caution Before running traffic on a protected card within a protection group, enable the ports of all protection group cards.

Note After creating a protection group on DS3XM-6 cards, wait for 2 minutes while Prime Optical receives updates for all of the ports supported by the DS3XM-6 cards. The protection group is not visible in Prime Optical until the 2-minute update period is complete.

Note The ONS 15600 SONET must have cards carrying live traffic in order to switch protection. Even a forced switch will be overridden by a failed signal. You cannot perform manual and forced switches on an ONS 15600 using preprovisioned cards. If you try to perform a switch using preprovisioned cards, the NE returns an error, and the protection operation does not switch from Active to Protect. An APS_CLEAR is generated, which can be cleared.

Table 4-33 Field Descriptions for the Create Protection Group Dialog Box

Field	Description
Name	Enter a name for the protection group. The name can have up to 32 alphanumeric characters. **Note** You cannot set the protection group name for ONS 15305 CTC protection groups.
Type	Choose the protection type from the drop-down list: • 1:1 (card) • 1:N (card) • Y Cable (port) • 1+1 (port) • 1+1 Optimized (port) • Layer 2 1+1 The protection selected determines the cards that are available to serve as protect and working cards. For example, if you choose 1:N protection, only DS-1N-14 and DS-3N-12E cards are displayed. If you choose Layer 2 1+1, only the 10GE_XP and GE_XP cards are displayed.
Protect Module	Choose the protect module if using 1:1, 1:N, or Layer 2 1+1.
Available Entities	Displays a list of available entities. You can toggle between available and working entities.
Working Entities	Displays a list of working entities. You can toggle between working and available entities.
Bidirectional Switching	(Optical cards only) If checked, both the transmit and the receive channels switch if a failure occurs on one. This option is only available if you select 1+1 (port) type.
Revertive	If checked, the node reverts traffic to the working card or port after failure conditions remain corrected for the amount of time entered in the Reversion Time field. This option is not available if the 1:N (card) type has been selected.
Reversion Time	If Revertive is checked, choose the amount of time following failure condition correction that the node should switch back to the working card or port. Values are listed in half-minute increments.
Recovery Guard Time	Prevents rapid switches due to signal degrade (SD) or signal failure (SF) conditions. After the SD or SF condition is cleared on a facility protected by Optimized 1+1 protection, no switches are performed for the duration of the recovery guard timer.
Verification Guard Time	Specifies the amount of time that a user command has to complete. If a user command cannot be completed within the duration set by the verification guard timer, the command is cleared and an APS_CLEAR event is sent.
Detection Guard Time	Specifies the amount of time after a failure that the system has to complete a switch. After detecting an SD, SF, loss of signal (LOS), loss of frame (LOF), or alarm indication signal line (AISL) failure, the detection guard timer is started. If the detection guard timer is set to zero, the system completes a switch within 60 ms for failure events.

Enabling Ports of Protection Group Cards

Step 1 Select a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the tree view of the NE Explorer window, select the card.

Step 3 In the card slot properties pane, click the **Line** tab.

Step 4 In the Line Config subtab, under the Admin State column, select **IS** (in service).

Step 5 Click **Apply**.

Editing Protection Groups

Step 1 Select a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the node properties pane, click the **Protection** tab > **Protection Groups** subtab.

Step 3 In the Protection Groups area, choose a protection group.

Step 4 In the Selected Protection Group area, edit the fields as appropriate.

Step 5 In the Protection tab, click the **Operations** subtab.

Step 6 In the Protection Groups area, choose a protection group.

Step 7 In the Protection Group Details area, select a protection group port; then, choose from among the following:

- Clear—Clears a traffic switch on protection group port.
- Manual—Initiates a manual switch on the selected port. This command switches traffic only if the path has an error rate less than the signal degrade (SD) bit error rate (BER) threshold.
- Force—Initiates a forced switch on the selected port. This command switches traffic even if the path has SD or signal fail (SF) conditions. A Force switch has a higher priority than a Manual switch.
- Unlock—Unlocks the protection group. This button is enabled only after you click the Lock Out button.
- Lock Out—For NE software release 8.5 and later, this button sends the lockout command to the ports of the protection group. There are two types of lockout commands:
  - Lockout of protection—If you select the Protect/Standby port of an unlocked protection group, the LOCKOUT OF PROTECTION command is sent to CTC. This prevents the Working/Active port from automatically switching to the protected state. This command also prevents events that force the Protect/Standby port to switch.
  - Lockout of working—If you select the Working/Active port of an unlocked protection group, the LOCKOUT OF WORKING command is sent to CTC. This prevents the Protect/Standby port from automatically switching to the working state. This command also prevents events that force the Working/Active port to switch.
- Lock On—For NE software release 8.5 and later, this button is dimmed and not used.

Step 8 In the confirmation dialog box, click **OK**.

Step 9 Click **Apply**.

Deleting Protection Groups

Step 1 Select a CTC-based NE and choose **Configuration > NE Explorer**.

Step 2 In the node properties pane, click the **Protection** tab.

Step 3 In the **Operations** subtab, make sure that the protect card is in standby mode and the working card is in active mode. If the protect card is still active, do not continue.

Step 4 In the **Protection Groups** subtab, select the protection group.

Step 5 Click **Delete**.

Step 6 In the confirmation dialog box, click **OK**.

Restoring NE Defaults

The NE Defaults Management wizard allows you to choose an NE from which an NE defaults file can be loaded. Alternatively, you can load the file from your local (client) disk. The wizard then provides you a list of NEs where you can download the file. When you click Finish, Prime Optical schedules a job for this action. The NE defaults file downloaded to each selected NE is tracked as a separate task on the Job Monitor table.

Note

- If you are applying NE defaults from one NE to another, the NE versions must be identical. For example, you cannot apply NE defaults from an ONS 15454 SONET R7.5 to an ONS 15454 SONET R8.5.
- This feature is available for R3.4 NEs and later.

If you want to revert back to the default settings for an NE, you can download and apply a defaults override file to one or more selected NEs, as follows:

Step 1 In the Domain Explorer window, choose **Configuration > CTC-Based SONET NEs** or **CTC-Based SDH NEs > NE Defaults Management**. The NE Defaults Management wizard opens. The following table provides descriptions.

Step 2 Choose an NE from which a defaults override file can be loaded. The following options are available:

- From NE
- From File

Step 3 Click **Next**. A display-only list of NE defaults is shown.

Step 4 Click **Next**.

Step 5 Select the NE(s) to which you want to download the default-override file. The following options are available:

- Save to NE
- Save to File

Step 6 Click **Finish**.

Table 4-34 Field Descriptions for the NE Defaults Management Wizard

Field	Description
Select an NE to View the Defaults	
From NE	Select **From NE** if the NE defaults file is on an NE. If you select From NE, the From File options are dimmed.
Select NE	Select the NE where the NE defaults file exists.
From File	Select **From File** if the NE defaults file is on your client workstation or a server. If you select From File, the From NE options are dimmed.
Local	Select **Local** if the file is on your local client workstation. Enter the path for the file, or click **Browse** to search for it.
Server	Select **Server** if the file is located on a server. Use the drop-down list to select a server.
NE Defaults	
Display only. Use this screen to view the selected NE defaults.	
Save the NE Defaults	
Save to NE(s)	To save the defaults to one or more NEs, select **Save to NE(s)**. If you select Save to NE(s), the Save to File options are dimmed.
Available NE(s)	Select one or more NEs in the Available NE(s) field and click **Add** to move them to the Selected NE(s) field.
Selected NE(s)	Select one or more NEs in the Selected NE(s) field and click **Remove** to move them to the Available NE(s) field.
Save to File	To save the defaults to a file on your client workstation or a server, select **Save to File**. If you select Save to File, the Save to NE(s) options are dimmed.
Local	Select **Local** to save the file on your local client workstation. Enter the path for the file, or click **Browse** to search for it.
Server	Select **Server** to save the file on a server. Enter a server path in the field.

How Do I Monitor the Network?

Follow the procedures in this section to manage scheduled tasks, view NE discrepancies, and monitor client and server configuration details.

Monitoring Scheduled Tasks

The Job Monitor table provides information about scheduled administrative tasks—memory backup, memory restore, and software download. For example, you can see the system username of the person who entered a specific task, the time when the task began, and the time when the task ended.

Note A job consists of multiple tasks.

The Job Monitor table also monitors bulk operations: adding multiple users to multiple NEs, modifying a user on multiple NEs, and deleting multiple users on multiple NEs. (See Managing NE User Access, page 8-47 for more information about bulk operations.) When a request is made to the Prime Optical server to add, modify, or delete NE users, multiple entries are made in the Job Monitor table. Each entry consists of the following:

- Task Owner—User ID used during login.
- NE ID—NE ID on which the operation is executed.
- Task Creation Time—Server time when the request was made.

After these requests are executed, the job's status is updated accordingly in the Job Monitor table.

Note Sometimes, when a node is busy, a job request may fail. In such a scenario, Prime Optical automatically creates a new similar job and resends the request using the job retry functionality. The new job is triggered anytime within the first 10 minutes of detection of the failure. Prime Optical attempts to resend the request a maximum of five times. Rescheduled jobs can be monitored in the Job Monitor table.

Another task that is monitored is the BLSR/MS-SPRing switch scheduling. (See Switching BLSRs, page 7-203 or Switching MS-SPRings, page 7-214.) When the switch ring is scheduled, two tasks are created: the BLSR/MS-SPRing switch job in the west port and the BLSR/MS-SPRing switch job in the east port. The schedule time difference between these two tasks is specified in the Control Panel. (See Changing the MS-SPRing Switch Interval, page 7-215.)

If you schedule a BLSR/MS-SPRing switch successfully, the corresponding task and its status are monitored in the Job Monitor table. If more than one BLSR switch is scheduled at a certain time on the same ring, only one BLSR switch will be successfully completed. Tasks are marked Succeeded when the switch command is accepted by the NE. If the switch fails due to the unavailability of the NE or if the switch command is rejected by the NE, an alarm is reported in the Alarm Browser and is cleared on the next successful switch or when the cross-connect is reset.

Viewing the Job Monitor Table

To view the Job Monitor table, choose **Administration > Job Monitor** in the Domain Explorer window. The following table provides descriptions.

Note Some fields in the Job Monitor table apply only to certain tasks, NEs, or NE versions.

Table 4-35 Field Descriptions for the Job Monitor Table

Field	Description
Job ID	ID number corresponding to the selected job.
Task ID	ID number corresponding to the task. If a job includes more than one NE, each NE has a separate task ID for the job.
Task Type	Type of task. Tasks include adding users, applying alarm profiles, creating BLSR/MS-SPRings, configuring nodes, creating alarm profiles, deleting users, logging out users, automatically backing up memory, manually backing up memory, restoring memory, modifying users, setting up SNTP, setting NE defaults, setting security advisory messages, activating software, downloading software, reverting software, and cloning ML cards.

Table 4-35 Field Descriptions for the Job Monitor Table (continued)

Field	Description
Task Owner	System username of the person who entered the task.
Alias ID	Alias name of the NE.
Task Status	Current status of the task: • Queued—The task is scheduled but has not yet begun. • Running—The task is in progress. • Canceled—The task has been canceled. • Succeeded—The task succeeded. • Failed—The task failed. • Waiting—The node manager must be initialized before a task can begin. If the node manager is not initialized, the status of the task is Waiting. After the node manager becomes initialized, the task status changes to Queued. **Note** A job can be canceled only when its task status is either Queued or Waiting.
Task Creation Time	Date and time when the task was entered into the system.
Task Scheduled Time	Date and time when the task is scheduled to begin.
Task Start Time	Date and time when the task began.
Task End Time	Date and time when the task ended.
Display Information	Information related to the Task Type column.
Note	Any user-entered comments relating to the task.
Additional Information	Any additional information.
NE ID	Name of the NE on which the task is scheduled to run.

Viewing the Job Monitor Filter Dialog Box

Use the Job Monitor Filter dialog box to filter job data according to criteria that you select and to display the results in the Job Monitor table. The following table provides descriptions.

Table 4-36 Field Descriptions for the Job Monitor Filter Dialog Box

Tab	Description
Creation Time (*time zone*)	Allows you to filter job monitor data for a specified time period, ranging from the past hour to the past 180 days. Additionally, you can click the **User Specified** radio button to specify exact filter start and end times by date and hour. The time zone can be GMT, a user-defined offset from GMT, or local time, depending on what is specified in the User Preferences dialog box. Click **No Time Specified** if you want to filter events and the time period is not important. Use the calendar tool to choose the year, month, and day: • Year—Click the year combo box or the double arrow (<<, >>) at the bottom of the calendar. • Month—Click the month combo box or the single arrow (<, >) at the bottom of the calendar. • Day—Click the day number on the calendar. The current date is shown in blue.
NE ID	Allows you to move NEs back and forth between the list of available NE IDs and selected NE IDs. The filter runs on the NEs in the Selected NE ID list.
Task Owner	Allows you to move owners back and forth between the list of available owners and selected owners. The filter runs on the owners in the Selected Task Owner list.
Job/Task ID	Allows you to filter jobs by job and task IDs. Jobs consist of multiple tasks. For example, if you perform a memory backup for multiple NEs, the backup operation is a job, and each NE is a task. • If you specify a start and end ID range in the Job ID field but leave the Task ID field blank, the filter runs on the job ID range. • If you specify a start and end ID range in the Task ID field but leave the Job ID field blank, the filter runs on the task ID range. • If you specify a start and end ID range in both the Job ID and Task ID fields, the filter first applies the values in the Job ID field, then narrows the filter according to the values in the Task ID field. For example, if you specify that Job ID Start = 1, Job ID End = 3, Task ID Start = 1, and Task ID End = 2, the returned value is all entries with a Job ID of 1, 2, or 3 and a Task ID of 1 or 2.
Task Type	Allows you to move task types back and forth between the list of available task types and selected task types. The filter runs on the tasks in the Selected Task Types list.
Task Status	Allows you to filter tasks by status: • Queued—The task is scheduled but has not yet begun. • Running—The task is in progress. • Canceled—The task has been canceled. • Failed—The task failed. • Succeeded—The task succeeded. • Waiting—The node manager must be initialized before a task can begin. If the node manager is not initialized, the status of the task is Waiting. After the node manager becomes initialized, the task status changes to Queued.

Canceling a Scheduled Job or Task

Step 1 In the Domain Explorer window, choose **Administration > Job Monitor**.

Step 2 Select a task to cancel; then, choose **Edit > Cancel Task** or **Cancel Job** (or click the **Cancel Task** or **Cancel Job** tools).

Note Cancel is enabled only for jobs and tasks with a Queued status. When a job contains more than one task in a Queued status, choosing **Cancel Job** cancels all tasks with the same job ID.

Step 3 Click **OK** in the confirmation dialog box.

Adding Job Monitor Notes

The Job Monitor Note dialog box allows you to view and add notes to jobs displayed in the Job Monitor table. If a job has a note, a Job Monitor Note tool appears under the User Comments column.

Step 1 In the Domain Explorer window, choose **Administration > Job Monitor**.

Step 2 Select a task and choose **Edit > User Note**. The following table describes the fields in the Job Monitor Note dialog box.

Comments are visible to all users.

Table 4-37 Field Descriptions for the Job Monitor Note Dialog Box

Field	Description
Note	Provides space for you to type your comments about the selected job. The maximum length of this field is 2048 characters. To add comments to the previous comments, click the **Append** radio button. To overwrite the previous comments, click **Replace**. To delete the comments, click **Delete**.
History	Displays comments entered by previous users.

Monitoring Service Status

The Service Monitor table shows the status of the services that are running on the Prime Optical server. To view the Service Monitor table, choose **Administration > Service Monitor** in the Domain Explorer window. The following table provides descriptions.

Table 4-38 Field Descriptions for the Service Monitor Table

Field	Description	Default visible
Service Name	Displays the name of the selected service.	Yes
Logged In At	Displays the last time the service logged into the main Prime Optical server process.	Yes
IP Address	Displays the IP address of the selected service.	Yes

Table 4-38 Field Descriptions for the Service Monitor Table (continued)

Field	Description	Default visible
Session ID	Displays the unique session ID.	Yes
Host Name	Displays the hostname of the server running the selected service.	Optional

Note The **opticalctl status** command shows the processes that are running on the Prime Optical server. Because some of these processes implement Prime Optical services, the **opticalctl status** command is an alternate way of viewing services that are running on the Prime Optical server. The command also shows processes—such as the Apache web server—that are not Prime Optical services. Do not run multiple **opticalctl status** commands concurrently.

Monitoring Service Availability

You can view current and historical information about NE and PM services.

- The Service Availability table allows you to monitor the status of currently active services. See Viewing the Service Availability Table, page 4-84.
- The Service Uptime Log allows you to view historical uptime data for services that were previously activated, but are currently deactivated. See Viewing the Service Availability Log, page 4-85.

Viewing the Service Availability Table

The Service Availability table shows the services that are connected to the SM service, which is a process internal to the Prime Optical server. The Service Availability table differs from the Service Monitor table in that the Service Availability table does not show the SM service itself, whereas the Service Monitor table shows the SM service. Another difference is that Service Availability table displays and monitors service uptime, whereas the Service Monitor table shows only those services that are currently running.

To view the Service Availability table, choose **Administration > Service Uptime** in the Domain Explorer window. (See Table 4-39 for field descriptions.) The following events trigger an update to the Service Availability table:

- A service instance is started—For NE services, this occurs when you use the Add New NE wizard to add a new NE, and then you activate the corresponding NE service in the Control Panel. For PM services, this occurs when you activate a PM service in the Control Panel.
- A service instance is stopped—For NE services, this occurs when you deactivate an NE service in the Control Panel, or when there are no NEs added to that NE service in the Control Panel. For PM services, this occurs when you deactivate a PM service in the Control Panel.
- A service instance crashes—This occurs when a service stops running but is still active.
- A service instance is restarted after a crash.

If the Prime Optical server is shut down with the **opticalctl stop** or **opticalctl abort** command, all of the services are stopped. All service instances that were running when the Prime Optical server was shut down are marked as stopped and moved to the Service Uptime Log. When the Prime Optical server restarts, the new service instances are added to the Service Availability table.

Table 4-39 Field Descriptions for the Service Availability Table

Field	Description
Service Name	Name of the service instance.
Status	Current status of the service. Values are: • Running—The service is running. • Not Running—The service is not running.
Started At	Date and time when the service was started.
Last Crash	Date and time when the most recent service crash occurred. If the service has not crashed, this field displays a value of N/A.
Uptime	Amount of time that has elapsed since the most recent startup; or, if the service has not crashed, shows the amount of time that has elapsed since the service was started.
Total Time	Sum of all uptimes since the service was started.
Uptime Percentage	Percentage of time during which the service has been up. This value is the ratio between the total uptime and the amount of time that has elapsed since the service was started.

Viewing the Service Availability Log

The SM service sends an event to the Prime Optical client whenever a service instance is stopped. The Service Availability Log table refreshes to show a new row for each stopped service.

To view the Service Availability Log table, choose **Administration > Service Uptime Log** in the Domain Explorer window. The following table provides descriptions.

Table 4-40 Field Descriptions for the Service Availability Log Table

Field	Description
Service Name	Name of the stopped service instance.
Started At	Date and time when the service was started.
Stopped At	Date and time when the service was stopped.
Status	Current status of the service. The value is always Not Active, meaning the service has been stopped in the Control Panel, or, for NE services, no NEs of that type have been added to the Domain Explorer.
Last Crash	Amount of time that has elapsed since the most recent crash.
Total Uptime	Sum of all uptimes before the service was stopped.
Uptime Percentage	Percentage of time during which the service was up before it was stopped.

Monitoring Prime Optical Client and Server Configuration Details

The Prime Optical Properties pane in the Control Panel window displays information about the Prime Optical server and client configuration.

Step 1 In the Domain Explorer window, choose **Administration > Control Panel**.

Step 2 In the Control Panel window, click **Cisco Prime Optical** to open the Prime Optical Properties pane. The following table provides descriptions.

Table 4-41 Field Descriptions for the Cisco Prime Optical Properties Pane

Field	Description
Server Configuration Tab	
Server Name	Workstation name where the Prime Optical server application resides.
IP Address	IP address of the Prime Optical server.
Software Version	Prime Optical software version that is running.
Server Size	Size of the Prime Optical server installation. Values are small, medium, large, or high end.
Port Information Area	
Server JMOCO Port	JMOCO port number of the Prime Optical server. The Active field displays the current port; the Activated After Restart field displays the port that is active after the server is rebooted.
Service Manager IIOP Port	Service manager port number.
Client Configuration Tab	
Hostname	Workstation name where the Prime Optical client application resides.
IP Address	IP address of the Prime Optical client.
Username	Name that was used to log into the Prime Optical client.

Viewing the Prime Optical Server Version

You can view the Prime Optical server version in the Control Panel and in the About Cisco Prime Optical dialog box. You can also view the server version in the Management Domain Properties pane.

Step 1 To view the Prime Optical server version in the Control Panel, complete the following substeps:

- **a.** In the Domain Explorer window, choose **Administration > Control Panel**.
- **b.** In the Control Panel window, click **Cisco Prime Optical** to open the Prime Optical Properties pane.
- **c.** Click the **Server Configuration** tab. The Prime Optical server version is shown in the Software Version field.

Step 2 To view the Prime Optical server version in the About dialog box, choose **Help > About Cisco Prime Optical** in any window.

Step 3 To view the Prime Optical server version in the Management Domain Properties pane, complete the following substeps:

- **a.** In the Domain Explorer tree, click the management domain node to open the Management Domain Properties pane.

b. Click the **Identification** tab. The Prime Optical server version is shown in the Software Version field.

How Do I Manage CTC Operations?

CTC is the software interface that provides provisioning and administrative functionality for the following NEs:

- ONS 15305 R3.0
- ONS 15310 CL
- ONS 15310 MA SONET
- ONS 15310 MA SDH
- ONS 15327
- ONS 15454 SONET
- ONS 15454 SDH
- ONS 15600 SONET
- ONS 15600 SDH

Functionality Provided in CTC that Is Not Available in Prime Optical

The following table lists the CTC functions that are not supported in Prime Optical through generic Prime Optical features (such as PM, software download, or memory backup) or through the native NE Explorer (equipment provisioning) for CTC-based NEs. The table provides a brief description of each function and a reference to the location within CTC where the function is provided.

Table 4-42 CTC Functions that Are Not Supported in Prime Optical

CTC Function	CTC Reference
Network Level	
Prime Optical does not support management of overhead circuits.	Network View > Provisioning > Overhead Circuits
Node Level	
Prime Optical does not support access to the EtherBridge MAC table (and related operations) or trunk utilization.	Node View > Maintenance > EtherBridge > MAC table Node View > Maintenance > EtherBridge > Trunk Utilization
Prime Optical does not support management of Unified Control Plane (UCP) parameters.	Node View > Provisioning > UCP
Prime Optical does not support retrieval of the diagnostics file or operation of the lamp test.	Node View > Maintenance > Diagnostics
Prime Optical does not support test access.	Node View > Maintenance > Test Access
Prime Optical does not support a Routing Information Protocol (RIP) table for BLSRs.	Node View > BLSR > RIP Table
Card Level	

Table 4-42 CTC Functions that Are Not Supported in Prime Optical (continued)

CTC Function	CTC Reference
Prime Optical does not support the ability to clear or reset PM register statistics on the NE.	Card View > Performance
Prime Optical does not support the ability to provision the user data channels (UDCs) or line DCC, or perform virtual wire maintenance operations.	AIC Card View > Maintenance > Virtual Wires AIC Card View > Maintenance > Overhead Termination
Prime Optical does not support the ability to upgrade automatically the OC-n cards and spans.	Network View > Span Upgrade
Prime Optical does not support the ability to provision passive cards.	Node View > Provisioning > WDM-ANS > Passive Cards
Prime Optical does not support the ability to provision any objects in the Rack View.	—
Circuit Management	
Prime Optical does not support the ability to create TL1-like cross-connections. Prime Optical does not support specification of the interdomain SLA.	Circuit Creation wizard
Prime Optical does not support the ability to edit path selector attributes of an existing circuit.	Tools > Circuits > Set Path Selector Attributes
Prime Optical does not support the ability to provision internal patchcords that include passive cards.	Node View > Provisioning > WDM-ANS > Internal Patchcords
Prime Optical does not support the Spanning Tree Map for E-series Ethernet cards.	—
Prime Optical does not support in-service topology upgrades.	Tools > Topology Upgrade > Convert UPSR to BLSR Tools > Topology Upgrade > Convert Unprotected to BLSR

Specifying CTC Partitions for CTC-Based NEs

CTC-based NEs that are added to the Prime Optical domain to access other CTC-based NEs are called GNEs, or topology hosts. When starting CTC for a particular CTC-based NE, the GNE for that NE is specified in CTC. CTC can take more than one GNE as input and discover the nodes behind those GNEs.

In a stable network, if CTC is started with a particular set of GNEs, the CTC view looks the same every time it is started with that set of GNEs. Prime Optical tries to copy this behavior when starting CTC for a given NE.

The Prime Optical client smart-link feature maintains an association between the CTC instance and the list of CTC-based NEs that it can manage. You can navigate through NEs within the same CTC partition without relaunching CTC. This feature conserves memory resources and ensures a fast response time.

If you launch and exit one instance of CTC and then launch a second CTC instance from the same partition, the second CTC launch goes through a 1-minute timeout period to ensure that the previous instance has exited. The 1-minute timeout occurs even if you launched and exited the previous CTC instance for a different NE. After the timeout, CTC initializes and a new window is launched. There is a delay of 10 to 20 seconds while the CTC launch initializes.

Caution ONS 15454 SONET and ONS 15454 SDH NEs propagate VLANs whenever a node appears in the same network view as another node, regardless of whether or not the nodes are DCC-connected. When there is more than one CTC management domain in Prime Optical, nodes that are not connected through DCC often appear in the same CTC view that is launched for that domain. The ONS 15454 NEs propagate VLAN information to these DCC-disconnected nodes. To prevent VLAN propagation, make sure that DCC-disconnected nodes do not appear in the same CTC view.