C H A P T E R 3

Viewing Network Element Properties

The following topics describe the user access roles required to use Cisco Prime Network Vision (Prime Network Vision) and how to view network element physical and logical properties in any mapped network:

- User Roles Required to Work with Prime Network Vision, page 3-2
- Information Available in Element Icons, page 3-3
- Viewing the Properties of a Network Element, page 3-6
- Viewing and Modifying VNE Properties, page 3-11
- Viewing VNE Communication Status, page 3-12
- Updating VNE Information, page 3-14
- Opening the Inventory Window, page 3-14

Note The inventory window also enables you to view all the tickets that are collected on the selected element in the ticket and events pane. For more information, see Ticket and Events Pane, page 3-20.

- Viewing the Physical Properties of a Device, page 3-21
- Working with Ports, page 3-24
- Viewing the Logical Properties of a Network Element, page 3-30
- Viewing Device Operating System Information, page 3-36

Note Prime Network Vision maintains continuous, real-time discovery of all the physical and logical entities of the network inventory and the relationships among them. The Prime Network Vision distributed system inventory automatically reflects every addition, deletion, and modification that occurs in the network.

User Roles Required to Work with Prime Network Vision

This topic identifies the roles that are required to work with Prime Network Vision. Prime Network determines whether you are authorized to perform a task as follows:

- For GUI-based tasks (tasks that do not affect elements), authorization is based on the default permission that is assigned to your user account.

- For element-based tasks (tasks that do affect elements), authorization is based on the default permission that is assigned to your account. That is, whether the element is in one of your assigned scopes and whether you meet the minimum security level for that scope.

For more information on user authorization, see the *Cisco Prime Network 3.8 Administrator Guide*.

The following tables identify the tasks that you can perform:

- Table 3-1 identifies the tasks that you can perform if a selected element **is not in** one of your assigned scopes.

- Table 3-2 identifies the tasks that you can perform if a selected element **is in** one of your assigned scopes.

By default, users with the Administrator role have access to all managed elements. To change the Administrator user scope, see the topic on device scopes in the *Cisco Prime Network 3.8 Administrator Guide*.

Table 3-1   Default Permission/Security Level Required for Prime Network Vision Functions - Element Not in User's Scope

Task	Viewer	Operator	OperatorPlus	Configurator	Administrator
View maps	X	X	X	X	X
View network element properties	—	—	—	—	X
View network element properties in logical and physical inventory	—	—	—	—	X
View port status and properties	—	—	—	—	X
View VNE properties	—	—	—	—	X
Open the Port Utilization Graph	—	—	—	—	X
Enable and disable port alarms	—	—	—	—	X[1]
View tickets in inventory window	—	—	—	—	X
View network events in inventory window	—	—	—	—	X
View provisioning events in inventory window	—	—	—	—	X

Table 3-2   Default Permission/Security Level Required for Prime Network Vision Functions - Element in User's Scope

Task	Viewer	Operator	OperatorPlus	Configurator	Administrator
View maps	X	X	X	X	X
View network element properties	X	X	X	X	X
View network element properties in logical and physical inventory	X	X	X	X	X
View port status and properties	—	X	X	X	X
View VNE properties	X	X	X	X	X
Open the Port Utilization Graph	X	X	X	X	X
Enable and disable port alarms	—	—	—	X[1]	X[1]
View tickets in inventory window	X	X	X	X	X
View network events in inventory window	X	X	X	X	X
View provisioning events in inventory window	X	X	X	X	X

1. To enable and disable port alarms on a device, the Administrator scope level must also be configured for that device.

Information Available in Element Icons

Element icons in Prime Network Vision maps display different amounts of information according to their size as shown in Table 2-3. Table 3-3 identifies the information that is available for different types of elements for the four icons sizes.

Table 3-3   Information Displayed in Element Icons by Size

Element Type	Icon Size			
	Tiny (Dot)	Normal	Large	Huge
Aggregation	Color representing the associated alarm severity	Name	Name in card title	Name in card title
Bridge	Color representing the associated alarm severity	Name	• Name in card title and body • Number of Ethernet flow points	• Name in card title and body • Number of Ethernet flow points
EFP cross-connect	Color representing the associated alarm severity	Name	Name in card title	Name in card title
Ethernet flow point	Color representing the associated alarm severity	Name	• Name in card title • Type, such as Trunk, Access, Dot1Q Tunnel, and so on • Match criteria	• Name in card title • Type, such as Trunk, Access, Dot1Q Tunnel, and so on • Match criteria
Ethernet service	Color representing the associated alarm severity	Name	• Name in card title • Number of edge EFPs	• Name in card title • Number of edge EFPs

Table 3-3   Information Displayed in Element Icons by Size (continued)

Element Type	Icon Size			
	Tiny (Dot)	Normal	Large	Huge
EVC	Color representing the associated alarm severity	Name	• Name in card title • Number of instances of domains (VPLS, EoMPLS, bridge, or cross-connect) with a maximum of three lines	• Name in card title • Number of instances of domains (VPLS, EoMPLS, bridge, or cross-connect) with a maximum of four lines
LSP Endpoint (Working or Protected)	Color representing the associated alarm severity	Name	• Name in card title • Bandwidth	• Name in card title • Bandwidth • Attach Business Tag button • Properties button
LSP Midpoint	Color	Name	• Name in card title • Forward bandwidth • Reverse bandwidth • Reverse in and out labels	• Name in card title • Forward bandwidth • Reverse bandwidth • Reverse in and out labels • Attach Business Tag button • Inventory button • Properties button
MPLS-TP Tunnel	Color representing the associated alarm severity	Name	Name in card title and body	• Name in card title and body • Attach Business Tag button • Properties button
MPLS-TP Tunnel Endpoint	Color representing the associated alarm severity	Name	• Name in card title and body • Tunnel identifier	• Name in card title and body • Tunnel identifier • Attach Business Tag button • Inventory button • Properties button
Network element	Color representing the associated alarm severity	Name	• Name in card title • Element model • IP address • Software version	• Name in card title • Element model • IP address • Software version • Inventory button • Filter Tickets button • Attach Business Tag button
Pseudowire	Color representing the associated alarm severity	Name	Name in card title and body	• Name in card title and body • Attach Business Tag button • Properties button

Table 3-3   Information Displayed in Element Icons by Size (continued)

Element Type	Icon Size			
	Tiny (Dot)	Normal	Large	Huge
Pseudowire edge	Color representing the associated alarm severity	Name	• Name in card title • Local IP address • Peer IP address	• Name in card title • Local IP address • Peer IP address • Attach Business Tag button • Inventory button • Properties button
VLAN	Color representing the associated alarm severity	Name	Name in card title and body	• Name in card title • Name in card body • Number of switching entities • Number of edge EFPs
VPLS	Color representing the associated alarm severity	Name	• Name in card title • Number of access EFPs • Number of access pseudowires • Number of VPLS forwards	• Name in card title • Number of access EFPs • Number of access pseudowires • Number of VPLS forwards
VPLS Forward	Color representing the associated alarm severity	Name	• Name in card title • VPN identifier • Number of core pseudowires	• Name in card title • VPN identifier • Number of core pseudowires
VPN	Color representing the associated alarm severity	Name	Name in card title and body	• Name in card title and body • Attach Business Tag button • Properties button

Related Topics

- Viewing the Properties of a Network Element, page 3-6
- Viewing and Modifying VNE Properties, page 3-11
- Opening the Inventory Window, page 3-14

Viewing the Properties of a Network Element

You can view the general information about a selected network element in the Prime Network Vision map view and view more detailed information by viewing the Properties window for the selected element.

To view network element properties:

Step 1   To view general information about a network element, do either of the following:

- Zoom in to view the required information:

    1. Position your mouse cursor on or near the required element.

    2. Use the mouse scroll wheel to zoom in or out.

- Resize the element icon as follows:

    1. Click the required element in the Prime Network Vision map. The element displays a gray outline to indicate that it is selected.

    2. Position the cursor on the gray outline and, while pressing the left mouse button, drag the mouse to resize the element in the map.

As the element size increases, additional information is displayed. For network elements, the available information is the following:

- IP address
- Model, such as Cisco 7606
- Software version

Step 2   To view more detailed information, open the Properties or inventory window for the element in any of the following ways:

- Right-click the element in the navigation pane, map view, or list view, and choose **Properties**.
- Select the element in the map view or list view, and choose **Node > Properties**.
- Double-click an element in the navigation pane or map view.
- If the element icon is at the largest size, click the **Inventory** icon.
- Select the element in the map view or list view, and choose **Node > Inventory**.

Depending on your selection, either the Properties window or inventory window is displayed with the inventory window providing slightly more information than the Properties window. Figure 3-1 shows the Properties window.

Figure 3-1   Properties Window

Table 3-4 describes the information displayed in both the Properties and inventory windows.

Table 3-4 **Properties and Inventory Windows**

Field	Description
General Tab	
Element icon	Icon representing the element in Prime Network Vision and displaying the current color associated with the element operational health. For more information on severity colors, see Prime Network Vision Status Indicators, page 2-30.
	The icon might include a badge that indicates an alarm or another item of interest associated with the element. For more information about badges, see Network Element Badges, page 3-9.
Element Name	Name assigned to the element for ease of identification.
Communication State	Ability of the VNE to reach the network element, according to the health of the element. For more information about communication states, see the *Cisco Prime Network 3.8 Administrator Guide*.
Investigation State	Level of network element discovery that has been performed or is being performed by the VNE. For more information about investigation states, see the *Cisco Prime Network 3.8 Administrator Guide*.
Vendor	Vendor name, as defined in the device MIB.
Product	Product name of the element, as defined in the device MIB; for example, Router.
Device Series	Product series that the device belongs to, such as Cisco 7600 Series Routers.
Element Type	Element model, such as Cisco 7606.
Serial Number[1]	Serial number of the element.
CPU Usage[1]	Percentage of CPU currently in use by the element.
Memory Usage[1]	Amount of memory currently in use by the element.
IP Address	IP address used for managing the element.
System Name	Name of the device, as defined in the device MIB.
Up Since	Date and time the element was last reset.
Contact	Email address of the person responsible for the element.
Location	Physical location of the element, as defined in the device MIB.
DRAM Usage[1]	Percentage of available DRAM currently in use by the element.
Flash Device Size[1]	Amount of flash memory available on the element.
NVRAM Size[1]	Amount of NVRAM available on the element.
Software Version	Software version running on the element.
Software Description	Description of the system taken from the element.
Processor DRAM[1]	Amount of DRAM currently in use by the element's processor.
Sending Alarms[1]	Whether or not the element is configured for sending alarms: True or False.

Table 3-4   Properties and Inventory Windows (continued)

Field	Description
Buttons	
VNE Details	Opens the Properties dialog box, where you can edit the VNE's properties, perform maintenance, configure polling rates, and identify IP addresses for which SNMP syslog and trap events are to be generated.
	For more information, see:
	• Viewing and Modifying VNE Properties, page 3-11
	• *Cisco Prime Network 3.8 Administrator Guide*
VNE Status	Opens the Communication Details window, which displays the status of the device protocols and whether the device is sending traps and syslogs. For more information, see Viewing VNE Communication Status, page 3-12.

1.   Displayed only in the inventory window.

Related Topics

- Viewing the Properties of a Network Element, page 3-6
- Opening the Inventory Window, page 3-14
- Viewing the Physical Properties of a Device, page 3-21

Network Element Badges

Network elements and links can also display badges that are technology-specific, such as a Protected LSP or an STP root. Table 3-5 describes some of the badges that are available in Prime Network Vision. For more information, see the related topics.

Table 3-5   Network Element Badges

Icon	Name	Description	Related Topic
	Access gateway	An MST or REP access gateway is associated with the element.	Viewing Access Gateway Properties, page 12-18
	Blocking	The element associated with this badge has a REP alternate port.	Viewing REP Information in VLAN Domain Views and VLAN Overlays, page 12-62
	Clock service	A clocking service is running on the associated element.	Applying a Network Clock Service Overlay, page 18-49
	Lock	The associated network LSP is in lockout state.	Viewing MPLS-TP Tunnel Properties, page 17-7

Table 3-5   Network Element Badges (continued)

Icon	Name	Description	Related Topic
	Multiple links	One or more links is represented by the visual link and at least one of the links contains a badge.	Viewing REP Information in VLAN Domain Views and VLAN Overlays, page 12-62
	Reconciliation	The element with this badge is associated with a network element that does not exist. For example, the device configuration has changed and a network problem exists. Some elements can be deleted only if their components, such as EFPs, VPLS forwards, or VRFs, display the reconciliation icon.	Deleting a Business Element, page 6-8
	REP primary blocking	The element associated with this badge has a REP primary port that is also blocking.	Viewing REP Information in VLAN Domain Views and VLAN Overlays, page 12-62
	REP primary	The element associated with this badge has a REP primary port.	Viewing REP Information in VLAN Domain Views and VLAN Overlays, page 12-62
	Redundancy service	The element associated with this badge is a backup pseudowire or a protected LSP.	• Adding an MPLS-TP Tunnel, page 17-5 • Viewing Pseudowire Redundancy Service Properties, page 12-102
	STP root	The element associated with this badge is a STP root bridge or the root of an STP tree.	Viewing STP Information in VLAN Domain Views and VLAN Overlays, page 12-65

Related Topics

- Viewing the Properties of a Network Element, page 3-6

Viewing and Modifying VNE Properties

To view and optionally modify VNE properties:

Step 1 Select the required element in Prime Network Vision and open the inventory window or Properties window in one of the following ways:

- If the element icon is at the largest size, click the **Inventory** icon.
- Select an element in the map view or list view, and choose **Node > Inventory**.
- Right-click a device in the navigation pane, map view, or list view, and choose **Properties**.
- Select an element in the map view or list view, and choose **Node > Properties**.

Step 2 Click **VNE**.

Figure 3-2 shows an example of the VNE Properties window.

Figure 3-2   VNE Properties Window

If the VNE for the element has been stopped, a message is displayed at the top of the inventory window letting you know that the VNE was stopped. The message includes a Refresh button so that you can refresh the information if the VNE has restarted. If the VNE is still down when you click **Refresh**, a VNE Unreachable message is displayed and the inventory window is closed. For more information about starting VNEs, stopping VNEs, adding new VNEs to a network, or modifying the status of a VNE, see the *Cisco Prime Network 3.8 Administrator Guide*.

Step 3 Click the required tab to view or modify the desired information. For more information about these options and configuring a VNE, see the *Cisco Prime Network 3.8 Administrator Guide.*

Step 4 If you change any of the settings, click **Apply** and then **OK**.

If you do not change any of the settings, click **OK** or **Cancel**.

Related Topics

- Viewing VNE Communication Status, page 3-12
- Opening the Inventory Window, page 3-14
- Viewing the Properties of a Network Element, page 3-6

Viewing VNE Communication Status

To view the status of VNE communication:

Step 1 In Prime Network Vision, select the required element.

Step 2 Open the inventory window (**Node > Inventory**) or Properties window (**Node > Properties**) for the selected item.

Step 3 Click **VNE Status**.

The VNE Status Details window is displayed as shown in Figure 3-3.

Figure 3-3   VNE Status Details Window
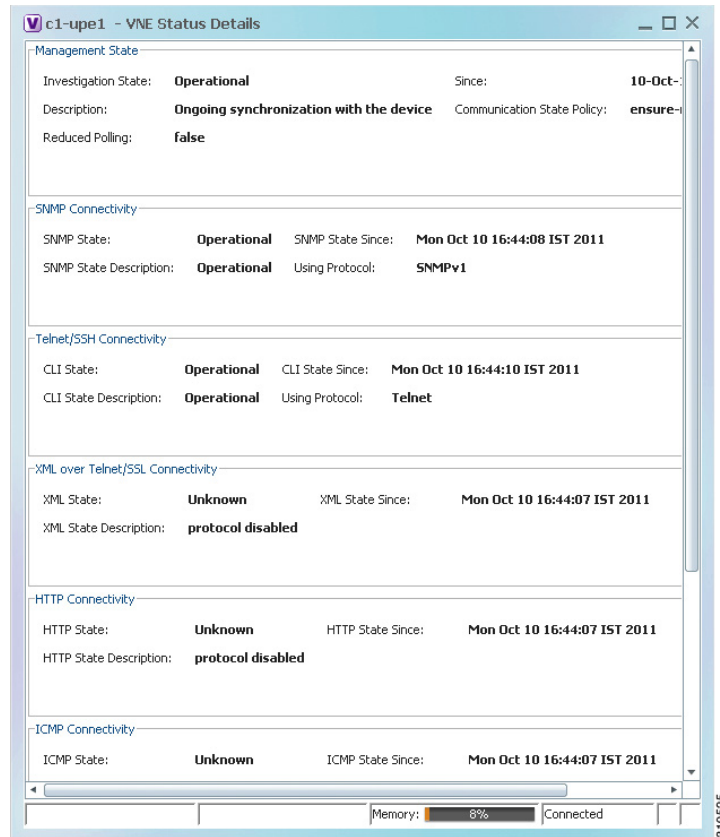
The VNE Status Details window provides information about:

- Management connectivity state
- SNMP connectivity
- Telnet/SSH connectivity
- XML over Telnet/SSH connectivity
- HTTP connectivity
- ICMP connectivity
- Syslog connectivity
- Trap connectivity

For more information about the VNE Status Details window, see the *Cisco Prime Network 3.8 Administrator Guide*.

Related Topics

- Viewing the Properties of a Network Element, page 3-6
- Viewing and Modifying VNE Properties, page 3-11
- Opening the Inventory Window, page 3-14

Updating VNE Information

Some VNEs use the reduced polling mechanism which automatically polls the device when a configuration change syslog is received and immediately updates the VNE information accordingly.

The risk of using reduced polling applies mostly to situations in which events are dropped. In those situations, changes might be detected later than they would have if regular polling were used.

If an event is dropped, the network element shows a Currently Unsynchronized investigation state. If you notice this VNE state, you can initiate polling to update the VNE information in either of the following ways:

- Right-click the element and choose **VNE Tools > Poll Now**.
- Double-click the element to open the inventory window and click **Poll Now**.

Prime Network polls the selected element and updates the VNE information.

For more information about reduced polling, see the *Cisco Prime Network 3.8 Administrator Guide*.

Opening the Inventory Window

Table 3-6 describes the tasks that you can perform from the inventory window and related topics.

Table 3-6   Tasks Available from Inventory and Related Topics

Task	Related Topic
Add or remove links.	Adding Static Links, page 5-16
Generate the Port Utilization graph for physical ports.	Generating the Port Utilization Graph, page 3-30
Manage the alarms being sent on a port.	Working with Ports, page 3-24
Open Cisco PathTracer and launch a path trace.	Using Cisco PathTracer to Diagnose Problems, page 11-1
Open the Prime Network Command Builder to create customized commands.	*Cisco Prime Network 3.8 Customization User Guide*
Open the Prime Network Soft Properties Manager to extend the amount of information displayed.	*Cisco Prime Network 3.8 Customization User Guide*
Update the VNE information.	Updating VNE Information, page 3-14
View and optionally modify VNE properties.	Viewing and Modifying VNE Properties, page 3-11
View physical and logical inventory information.	• Viewing the Physical Properties of a Device, page 3-21 • Viewing the Logical Properties of a Network Element, page 3-30
View tickets or events for a device, service, or component.	Ticket and Events Pane, page 3-20
View VNE communication details.	Viewing VNE Communication Status, page 3-12

The inventory window also allows you to view technology-specific information. For more information on viewing technology-specific information in logical inventory or physical inventory, see:

- Chapter 12, "Monitoring Carrier Ethernet Services"
- Chapter 13, "Monitoring Carrier Grade NAT Properties"
- Chapter 14, "Monitoring DWDM Properties"
- Chapter 15, "Viewing Ethernet Operations, Administration, and Maintenance Tool Properties"
- Chapter 16, "IPv6 and IPv6 VPN over MPLS"
- Chapter 17, "Monitoring MPLS Services"
- Chapter 18, "Monitoring MToP Services"
- Chapter 19, "Viewing SBC Properties"

To open the inventory window, do one of the following:

- If the element icon is at the largest size, click the **Inventory** icon.
- Double-click an item in the navigation pane or map.
- Right-click an element in the navigation pane or map and choose **Inventory**.

Figure 3-4 shows an example of an inventory window.

Figure 3-4   Inventory Window
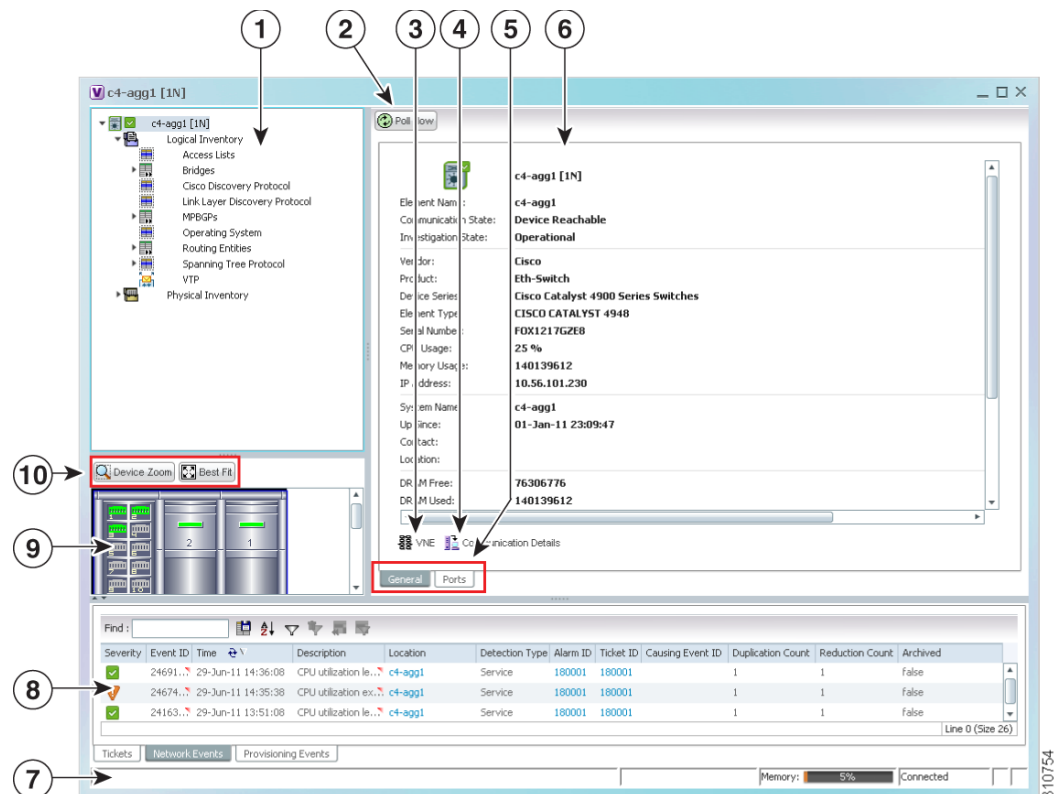
1	Navigation pane	6	Content pane
2	Poll Now button	7	Status bar
3	VNE button	8	Ticket and events pane
4	Communications Details button	9	Device view pane
5	Content pane tabs	10	Device view pane toolbar

The inventory window displays the physical and logical inventory for the selected item. For more information about the options in the inventory window, see:

- Navigation Pane, page 3-17
- Device View Pane, page 3-18
- Device View Pane Toolbar, page 3-19
- Ticket and Events Pane, page 3-20
- Content Pane, page 3-18
- Working with Ports, page 3-24
- Updating VNE Information, page 3-14
- Viewing the Properties of a Network Element, page 3-6
- Viewing VNE Communication Status, page 3-12

All areas displayed in the inventory window are correlated; this means that selecting an option in one area affects the information displayed in the other areas.

The information displayed in the inventory window varies according to the item selected in the navigation pane.

To view logical inventory information, expand the Logical Inventory branch. For more information about logical inventory information, see Viewing the Logical Properties of a Network Element, page 3-30.

To view physical inventory information, expand the Physical Inventory branch. For more information about physical inventory information, see Viewing the Physical Properties of a Device, page 3-21.

Click **Poll Now** to update the display with the current VNE information.

Click the top right corner to close the inventory window.

Related Topics

- Viewing the Properties of a Network Element, page 3-6
- Viewing and Modifying VNE Properties, page 3-11
- Device View Pane, page 3-18

Navigation Pane

The navigation pane in the inventory window displays a tree-and-branch representation of the selected device and its modules. The navigation pane contains two main branches:

- Logical Inventory—Includes logical items related to the selected element, such as access lists, ATM traffic profiles, and routing entities.
- Physical Inventory—Includes the various device components, such as chassis, cards, subslots, and so on.

When you select an item in the navigation pane, the information displayed in the content pane is updated. You can expand and collapse the branches in the navigation pane to display and hide information as needed.

The window heading and the highest level in the navigation pane display the name of the VNE given to the element as defined in Cisco Prime Network Administration. The element icon and status are displayed at the top of the navigation and content panes.

The color of the element icon reflects the element operational status. For more information about indicators of operational health and status, see:

- Prime Network Vision Status Indicators, page 2-30
- VNE Management State, page 2-31

Status Indicators

A status indicator icon appears next to the element icon for any unacknowledged tickets associated with the element. In addition, status indicator icons are displayed next to the specific logical or physical inventory branches that are associated with the ticket.

If you click a branch in the navigation pane that contains a status icon, the associated tickets and events are displayed in the tickets and events pane at the bottom of the inventory window.

Communication and Investigation State Icons

The navigation pane can also display a communication or investigation state icon next to the element icon in the navigation and content panes.

For more information about communication and investigation state icons, see VNE Management State, page 2-31.

Content Pane

The content pane contains two tabs:

- General—Contains physical or logical information specific to the item you select in the navigation pane or device view panel; for example, information about pseudowires or the chassis.

  The General tab can also display context-sensitive tabs and buttons; the buttons displayed depend on your selection in the navigation pane or device view panel. For example, if an ATM port is selected, the Show VC Table, Show Cross-Connect, or Show Encapsulation button might be displayed.

- Ports—Lists all ports on the device with their current alarm status, location, and other properties, and enables you to change their status by using a right-click menu. For more information, see Working with Ports, page 3-24.

The content pane can also display context-sensitive tabs and buttons; the buttons displayed depend on your selection in the navigation pane or device view panel. For example, if an ATM port is selected, the Show VC Table, Show Cross-Connect, or Show Encapsulation button might be displayed.

In addition, you can view the properties of a row in a table by double-clicking the row or by right-clicking the row and choosing **Properties**.

For information about tables that appear in the content pane, see Working with Prime Network Tables, page 2-58.

Related Topics

- Viewing the Physical Properties of a Device, page 3-21
- Device View Pane, page 3-18
- Device View Pane Toolbar, page 3-19

Device View Pane

The device view pane enables you to visually locate elements in the chassis and identify their status. All occupied slots in the chassis are rendered in the device view pane. If a port is down, it is shown in red in both the navigation pane and the device view pane, allowing you to quickly pinpoint the problem.

Figure 3-5 provides an example of the device view pane for a Cisco device. The circled slot in the device view pane corresponds to the circled slot in the physical inventory navigation pane. If you click a port in the device view pane (see the circled port), Prime Network Vision displays both the properties of the element and its location in the navigation pane and content pane.

Figure 3-5   *Device View Pane*
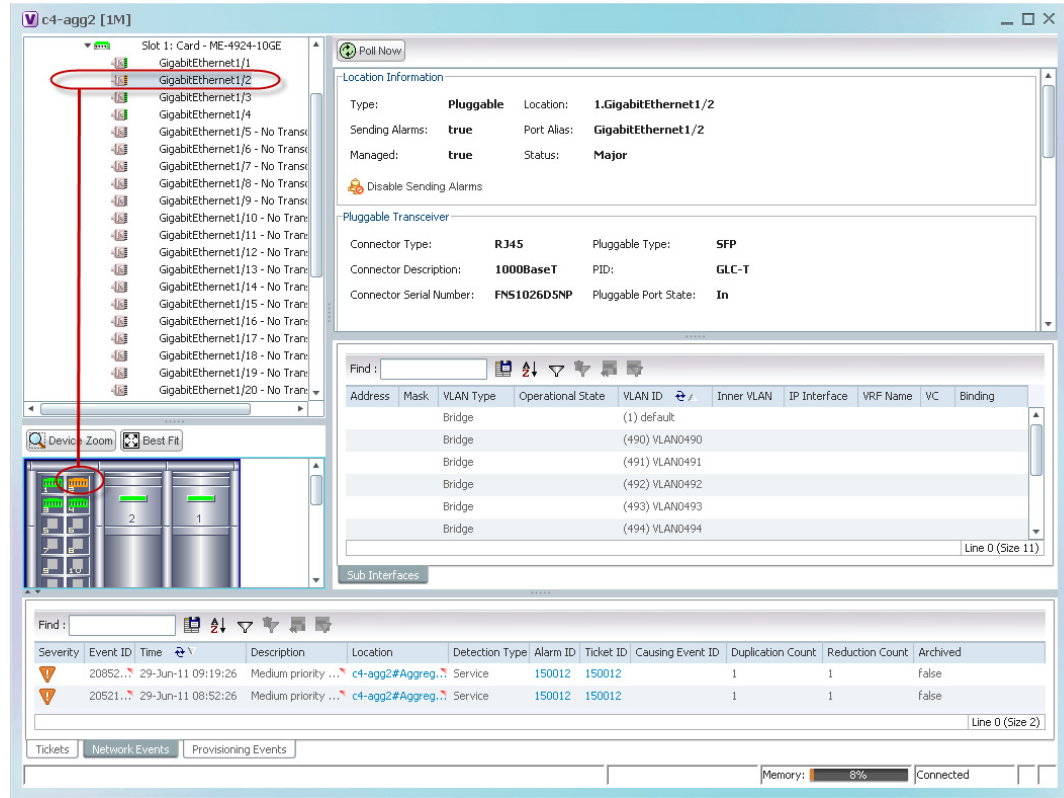
Related Topics

- Device View Pane Toolbar, page 3-19

- Ticket and Events Pane, page 3-20

- Viewing the Physical Properties of a Device, page 3-21

Device View Pane Toolbar

The following tools for working with the device view pane:

Icon	Description
Device Zoom	Displays an enhanced view of the components within the device in a browse box as you move over the device view panel with the selection tool.
Best Fit	Fits the entire view of the element in the device view panel.

Related Topics

- Viewing the Physical Properties of a Device, page 3-21

- Device View Pane, page 3-18

- Content Pane, page 3-18

Ticket and Events Pane

The ticket and events pane is displayed at the bottom of the inventory window and contains the following tabs:

- Tickets—Displays the tickets that are collected on the selected element, service, or component in the navigation pane.

  Table 2-14 on page 2-28 describes the information that is available in the Tickets tab.

- Network Events—Displays all active network events associated with tickets and alarms, and all archived events with a timestamp that falls within the specified events history size (see Selecting Prime Network Vision Options, page 2-56).

  Table 3-7 describes the information that is available in the Network Events tab.

Table 3-7   Network Events Tab in Logical Inventory

Field	Description
Severity	Icon indicating the severity of the alarm on the event
Event ID	Event identifier, assigned sequentially.
Time	Date and time when the event occurred and was logged and recorded.
Description	Description of the event.
Location	Entity that triggered the event.
Detection Type	Method by which the event was detected, such as Service or Syslog.
Alarm ID	Identifier of the alarm associated with the event.
Ticket ID	Identifier of the ticket associated with the event.
Causing Event ID	Identifier of the causing event.
Duplication Count	For network events, the duplication count is calculated by the VNE and pertains only to flapping events. The duplication count represents the number of noncleared events aggregated by the flapping event.
Reduction Count	For network events, the reduction count is calculated by the VNE and pertains only to flapping events. The reduction count represents the number of events that are aggregated by the flapping event.
Archived	Whether the event is archived: True or False.

- Provisioning Events—Available to users with the Configurator role or higher for the selected element. This tab displays provisioning events with their source in the selected element and with a timestamp that falls within the specified events history size (see Selecting Prime Network Vision Options, page 2-56).

  If Prime Network Activation is installed, all activations that occur are included in this tab.

Table 8-4 on page 8-6 describes the information that is available in the Provisioning Events tab.

> **Note** Provisioning events that are caused by workflows (AVM 66) are not displayed in this table even if the element is affected by the workflow.

When displaying network and provisioning events, Prime Network Vision monitors the history size value defined in the Events tab of the Options dialog box (**Tools > Options > Events**). The default value is six hours and can be changed in Prime Network Administration. In addition, Prime Network Vision limits the maximum number of network and provisioning events that are sent from the server to client to 15,000 each. If the number of network or provisioning events exceeds the limit specified in the Options Events tab or the 15,000 maximum limit, Prime Network Vision purges the oldest events from table. The purging mechanism runs once per minute.

> **Tip** You can display or hide the ticket and events pane by clicking the arrows displayed below the device view panel.

Related Topics

- Viewing the Physical Properties of a Device, page 3-21
- Device View Pane, page 3-18
- Content Pane, page 3-18

Viewing the Physical Properties of a Device

Each device that is managed by Prime Network is modeled in the same manner. The physical inventory reflects the physical components of the managed network element. Prime Network enables you to view physical inventory information for the following entities:

- Device
- Chassis
- Shelves
- Cards
- Subcards
- Ports, including logical ports and pluggable transceivers

Table 3-8 identifies the icons used to display physical inventory components in the navigation pane.

Table 3-8   ***Physical Inventory Icons***

Icon	Device
	Chassis
	Shelf
	Card/Subcard
	Port/Logical Port Pluggable Transceiver
	Unmanaged Port

Physical inventory is continuously updated for both status and configuration. The addition of a new card, the removal of a card, or any change to the device is reflected by the VNE and updated instantly.

If you physically remove an item that Prime Network Vision is managing, the following changes occur in physical inventory, depending on the item removed:

- Removing an item other than a pluggable transceiver results in the following changes:
  - The color of the icon in physical inventory changes to black.
  - The item's status changes to Out.

  The other properties of the removed item reflect the most recent value that was updated from the device with the following exceptions:
  - Cards—If the card was participating in a card redundancy configuration, the redundancy state changes to None.
  - Port—The operational status of the port changes to Down.

- Removing a pluggable transceiver results in the following changes:
  - The color of the pluggable transceiver icon changes to gray.
  - The pluggable transceiver status changes to Disabled.
  - In the Pluggable Transceiver panel:
    — The properties are no longer displayed.
    — The connector type changes to Unknown.
    — The pluggable port state changes to Out.

Fans and power supplies are displayed in physical inventory if they are field replaceable units (FRUs). The manner in which the fans are displayed depends on whether the fans can be separated or not:

- If the fans under the fan trays are inseparable, only the fan trays are represented.
- If the fans under the fan trays can be separated, they are shown as separate items in physical inventory.

The window displayed for all the devices is similar in appearance. However, the individual sections that are displayed depends on the selected item. For example, when a port that supports pluggable transceivers is selected, the Pluggable Transceiver section is displayed. This section provides information such as the port connector's type and serial number, as well as an indication whether a transceiver is currently plugged in.

Figure 3-6 shows an example of a selection in physical inventory and the available buttons.

Figure 3-6   Physical Inventory Example

1	Poll Now button	Poll the VNE and update the information as needed.
		For more information, see Updating VNE Information, page 3-14.
2	Show VC Table button	Displays virtual circuit (VC) information for the selected port.
		For more information, see Viewing ATM VPI and VCI Properties, page 18-10.
3	Show Cross Connect button	Displays cross-connect information for incoming and outgoing ports.
		For more information, see Viewing ATM Virtual Connection Cross-Connects, page 18-6.
4	Show Encapsulation button	Displays encapsulation information for incoming and outgoing traffic for the selected item.
		For more information, see Viewing Encapsulation Information, page 18-11.
5	Disable Sending Alarms button	Enables you to manage the alarms on a port.
		For more information, see Working with Ports, page 3-24.
6	Port Utilization Graph button	Displays the selected port traffic statistics: Rx/Tx Rate and Rx/Tx Rate History.
		For more information, see Generating the Port Utilization Graph, page 3-30.
—	Show DLCI Table button (not displayed)	Displays data-link connection identifier (DCLI) information for the selected port.

The buttons that are displayed in the physical inventory content pane depend on the selected port.

For information about configuring topology from a port, see Adding Static Links, page 5-16.

For a detailed description of device properties, see Viewing the Properties of a Network Element, page 3-6.

Related Topics

- Ticket and Events Pane, page 3-20
- Working with Ports, page 3-24
- Viewing the Physical Properties of a Device, page 3-21

Working with Ports

The following topics describe some of the options available for working with ports:

- Viewing Port Status and Properties, page 3-25
- Viewing a Port Configuration, page 3-26
- Disabling Alarms, page 3-28

- Enabling Alarms, page 3-29
- Generating the Port Utilization Graph, page 3-30

Viewing Port Status and Properties

Prime Network Vision displays all ports on a device in the Ports tab in the inventory window.

This information is available to users with an Operator or higher role on the selected device. Users with a Configurator or higher role can modify the status of a single port or a selected group of ports as described in the following sections:

- Disabling Alarms, page 3-28
- Enabling Alarms, page 3-29

You can export the port list from Prime Network Vision by using the Export to CSV option in the toolbar.

Figure 3-7 shows an example of the Ports tab in the inventory window.

Figure 3-7   Ports Tab in the Inventory Window

Table 3-9 describes the information that is displayed in the Ports tab.

Table 3-9   Ports Tab in the Inventory Window

Field	Description
Location	Location of the port in the device, using the format *slot.module/port*, such as 1.GigabitEthernet1/14.
Type	Port type, such as RJ45 or Pluggable.
Sending Alarms	Whether or not the port is configured for sending alarms: True or False.
Pluggable Transceiver	For the Pluggable port type, indicates that the port can hold a pluggable transceiver.
Port Alias	Name used in the device CLI or EMS for the port.
Managed	Whether or not the port is managed: True or False.
Status	Port status, such as OK, Major, or Disabled.

Viewing a Port Configuration

In addition to viewing logical inventory information from the logical inventory branch, you can view services provisioned on physical ports by clicking a physical port in the physical inventory branch. Information that is displayed includes:

- Physical layer information.
- Layer 2 information, such as ATM and Ethernet.
- Subinterfaces used by a VRF.

To view a port's configuration:

Step 1   In Cisco Prime Network Vision, double-click the required device.

Step 2   In the inventory window, choose **Physical Inventory > Chassis >** *Slot* **>** *Subslot* **>** *Port*.

Figure 3-8 shows an example of the information (including the subinterfaces) displayed when a port is selected in the physical inventory branch of the inventory window.

Figure 3-8   Port Information in the Inventory Window
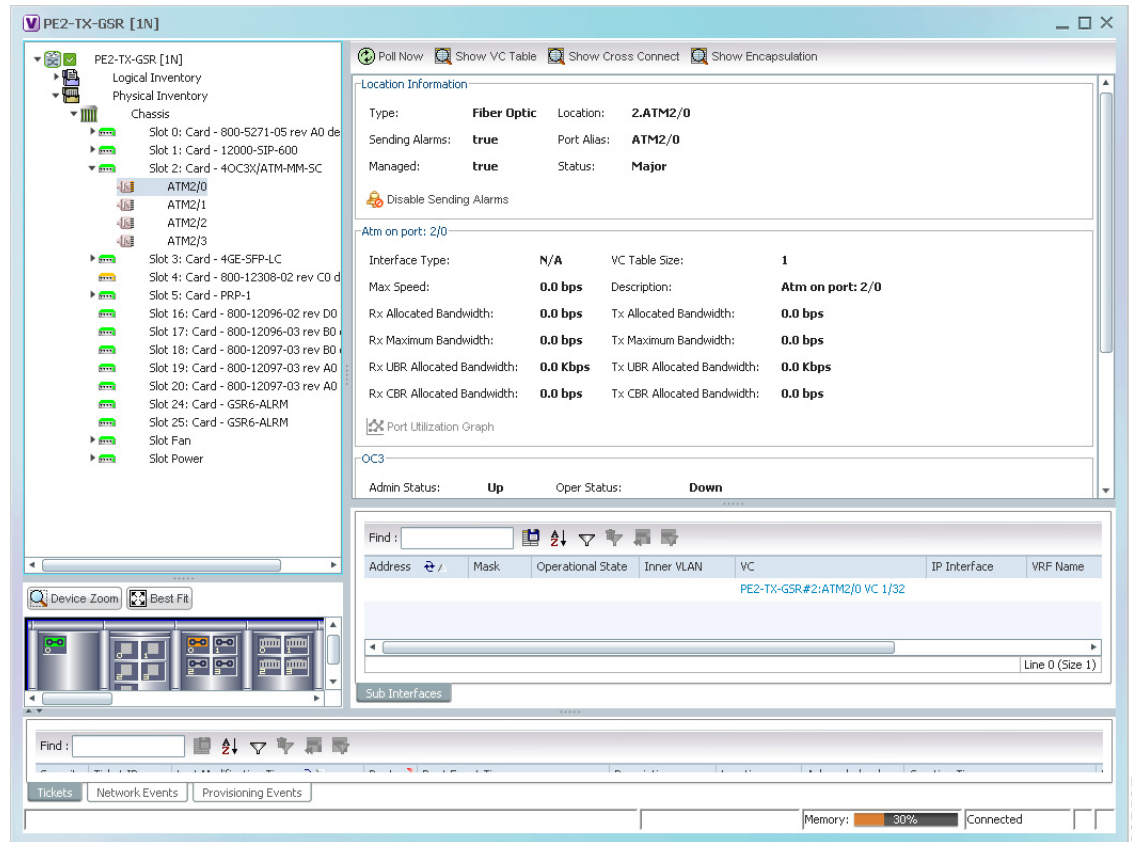
The subinterface is a logical interface defined in the device; all of its parameters can be part of its configuration. Table 3-10 describes the information that can be displayed in the Subinterfaces table. Not all fields appear in all Subinterfaces tables.

Table 3-10   Subinterfaces Table

Field	Description
Address	IP address defined in the subinterface.
Mask	Subnet mask.
VLAN Type	Type of VLAN, such as Bridge or IEEE 802.1Q.
	Double-click the entry to view the Port IP VLAN Properties window containing:
	• VLAN type
	• VLAN identifier
	• Operational status
	• A brief description of the VLAN
Operational State	Operational state of the subinterface.
VLAN ID	VLAN identifier.
Inner VLAN	CE-VLAN identifier.

Table 3-10   Subinterfaces Table (continued)

Field	Description
IP Interface	IP interface, hyperlinked to the VRF properties in the inventory window.
VRF Name	Name of the VRF.
Is MPLS	Whether this is an MPLS interface: True or False.
VC	Virtual connection (VC) configured on the interface, hyperlinked to the VC Table window. For more information about VC properties, see Viewing ATM Virtual Connection Cross-Connects, page 18-6.
Tunnel Edge	Hyperlinked entry to the specific tunnel edge in logical inventory.
Binding	Hyperlinked entry to the specific bridge or pseudowire in logical inventory.

Related Topics

Disabling Alarms

By default, alarms are enabled on all ports. When the alarms are disabled on a port, no alarms are generated for the port and they are not displayed in the ticket and events pane.

To disable alarms on ports:

Step 1   Open the inventory window for the required device.

Step 2   To disable alarms on individual ports, do one of the following:

- In the navigation pane:
    1. Navigate to the required port.
    2. Right-click the required port and choose **Disable Sending Alarms**.
- In the content pane:
    1. Click the **Ports** tab.
    2. Right-click the required port and choose **Disable Sending Alarms**.

In response:

- The Sending Alarms field displays the value *false*, indicating that the alarm for the required port has been disabled.
- The content pane displays the Enable Sending Alarms button.

Step 3   To disable alarms on one or more ports at the same time:

    a. In the inventory window, click the **Ports** tab.

    b. In the Ports table, select the required ports. You can select multiple ports by using the Ctrl and Shift keys.

    c. Right-click one of the selected ports, and choose **Disable Sending Alarms**. In response, the Sending Alarms field displays the value *false* for the selected ports.

Related Topics

- Ticket and Events Pane, page 3-20

- Working with Ports, page 3-24

- Viewing the Physical Properties of a Device, page 3-21

Enabling Alarms

You can enable the alarms on a port at any time.

To enable alarms:

Step 1   Open the inventory window for the required device.

Step 2   To enable alarms on individual ports, do one of the following:

- In the navigation pane:

  1. Navigate to the required port.

  2. Right-click the required port and choose **Enable Sending Alarms**.

- In the content pane:

  1. Click the **Ports** tab.

  2. Right-click the required port and choose **Enable Sending Alarms**.

In response:

- The Sending Alarms field displays the value *true*, indicating that the alarm for the required port has been enabled.

- The content pane displays the Disable Sending Alarms button.

Step 3   To enable alarms on one or more ports at the same time:

    a. In the inventory window, click the **Ports** tab.

    b. In the Ports table, select the required ports. You can select multiple ports by using the Ctrl and Shift keys.

    c. Right-click one of the selected ports, and choose **Enable Sending Alarms**. In response, the Sending Alarms field displays the value *true* for the selected ports.

Related Topics

- Ticket and Events Pane, page 3-20
- Working with Ports, page 3-24
- Viewing the Physical Properties of a Device, page 3-21

Generating the Port Utilization Graph

Prime Network Vision enables you to view the Rx/Tx Rate and Rx/Tx Rate History of a port.

✎

Note
- Port utilization graphs are for physical ports only.
- Port utilization graphs are not available for ATM, E1/T1, or ATM IMA interfaces that are included in an IMA group.

To view port utilization statistics:

Step 1   Open the inventory window and select the required port in physical inventory.

Step 2   In the Ethernet CSMA/CD section, click **Port Utilization Graph**.

The following information is displayed in the Port Statistics dialog box:

- Rx Rate—The reception rate as a percentage.
- Rx Rate History—The reception rate history is displayed as a graph.
- Tx Rate—The transmission rate as a percentage.
- Tx Rate History—The transmission rate history is displayed as a graph.

Step 3   Click ✕ to close the Port Statistics dialog box.

Related Topics

- Ticket and Events Pane, page 3-20
- Working with Ports, page 3-24
- Viewing the Physical Properties of a Device, page 3-21

Viewing the Logical Properties of a Network Element

Prime Network Vision enables you to view logical inventory information. Prime Network Vision maintains logical inventory for each network element. The logical inventory reflects dynamic data such as configuration data, forwarding, and service-related components that affect traffic handling in the element.

The information displayed in the inventory window changes according to the type of element and branch selected in the navigation pane.

Related Topics

- Logical Inventory Window, page 3-31
- Logical Inventory Navigation Pane Branches, page 3-32
- Logical Inventory Content Pane Tabs, page 3-36

Logical Inventory Window

Logical inventory information is displayed in the inventory window as shown in Figure 3-9.

Figure 3-9   Logical Inventory Information Displayed in the Inventory Window

![pencil icon]
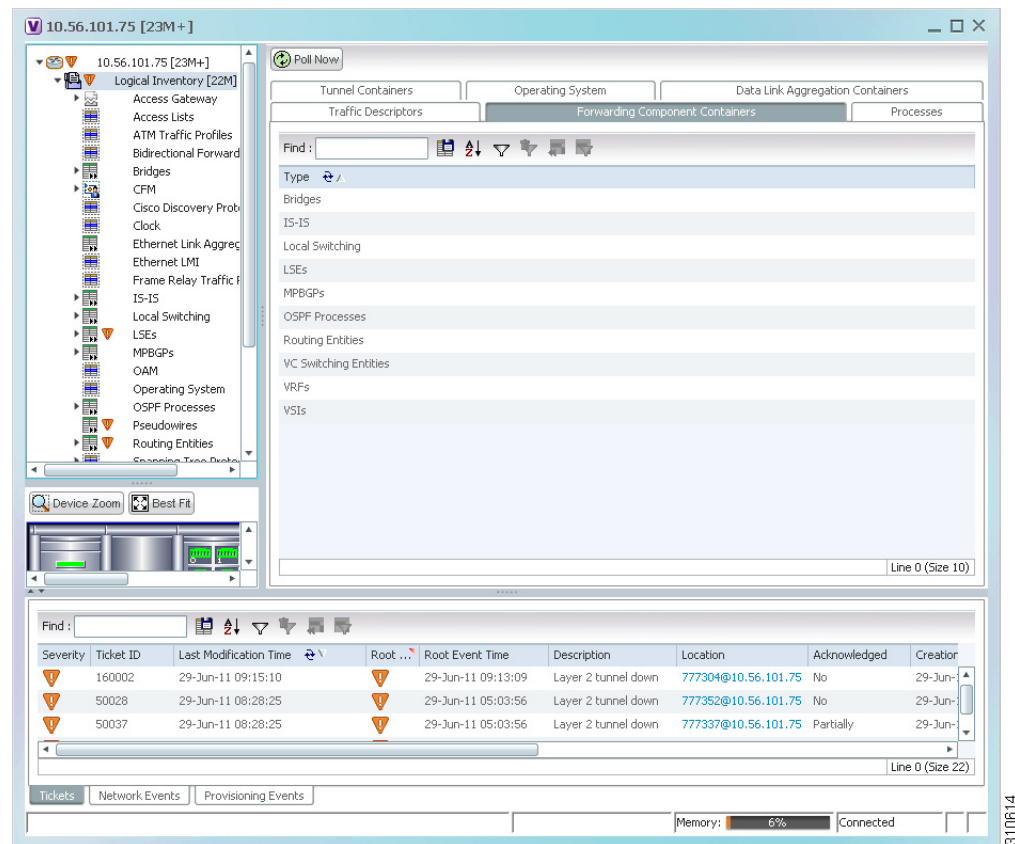
Note   For more information about opening the inventory window, see Opening the Inventory Window, page 3-14.

Related Topics

- Viewing the Logical Properties of a Network Element, page 3-30
- Logical Inventory Navigation Pane Branches, page 3-32
- Logical Inventory Content Pane Tabs, page 3-36

Logical Inventory Navigation Pane Branches

Table 3-11 describes the branches that appear in the logical inventory navigation pane.

Table 3-11   Logical Inventory Navigation Pane Branches

This branch...	Provides information about...
6rd	IPv6 rapid development (6rd) tunnels
Access Gateway	Multiple Spanning Tree (MST) and Resilient Ethernet Protocol (REP) access gateways (AGs)
Access Lists	Access lists
ATM Traffic Profiles	Traffic profiles for ATM
Bidirectional Forwarding Detection	Bidirectional Forwarding Detection
BridgeILans	Provider Backbone Bridge (PPB)
Bridges	Configured VLANs
Carrier Grade NAT	Carrier Grade Name Address Translation (NAT)
CFM	Connectivity Fault Management (CFM)
Cisco Discovery Protocol	Cisco Discovery Protocol (CDP)
Clock	Network clock service, clock recovery, and Precision Time Protocol (PTP) configuration
Context Name	Context that is configured on devices that support multiple virtual contexts
Ethernet Link Aggregation	Ethernet aggregation groups
Ethernet LMI	Ethernet Local Management Interface (LMI)
Frame Relay Traffic Profiles	Traffic profiles for Frame Relay
GRE Tunnels	Generic routing encapsulation (GRE) tunneling protocol for IP tunnels
ICCP Redundancy	Inter-Chassis Communication Protocol (ICCP) redundancy groups
IMA Groups	Inverse Multiplexing over ATM (IMA) groups
IP SLA Responder	Cisco IOS Service Level Agreements (SLAs)
IS-IS	Intermediate System-to-Intermediate System (IS-IS) protocol
Link Layer Discovery Protocol	Link Layer Discovery Protocol (LLDP)
Local Switching	Local switching
LSEs	Local switching for MPLS interfaces
MLPPP	Multilink Point-to-Point (MLPPP) configurations
Modular OS	Modular operating systems for Cisco IOX XR devices
MPBGPs	Properties associated with provider edge (PE) network elements. The Multiprotocol Border Gateway Protocols (MP-BGPs) inventory folder contains information such as BGP identifier, local and remote Autonomous System (AS), VRF name, cross-VRF routing, and so on.

Table 3-11   Logical Inventory Navigation Pane Branches (continued)

This branch...	Provides information about...
MPLS-TP	MPLS Transport Profile (MPLS-TP).
OAM	Link operations, administration, and maintenance (OAM).
Operating System	Operating systems for Cisco IOS devices.
OSPF Processes	OSPF processes, such as the Shortest Path First (SPF) timer settings, OSPF neighbors, and OSPF interfaces.
Pseudowires	Pseudowire end-to-end emulation (PW3E) tunnels.
Resilient Ethernet Protocol	Resilient Ethernet Protocol (REP).
Routing Entities	Routing table entries and IP interfaces.
Session Border Controller	Session Border Controller (SBC) configuration.
Spanning Tree Protocol	Spanning Tree Protocol (STP) and Multiple Spanning Tree Protocol (MSTP) configurations.
Traffic Engineering Tunnels	Traffic engineering (TE) tunnels.
Tunnel Traffic Descriptors	Tunnel traffic descriptors associated with the element.
VC Switching Entities	Cross-connects and VC traffic.
VRFs	Virtual Routing and Forwarding (VRF).
VSIs	Virtual Switch Interface (VSI) instance names, associated pseudowire information, virtual circuit IDs, and so on.
VTP	VLAN Trunk Protocol (VTP) domain names, modes, version numbers, and so on.

Related Topics

- Viewing the Logical Properties of a Network Element, page 3-30
- Logical Inventory Navigation Pane Icons, page 3-34
- Logical Inventory Content Pane Tabs, page 3-36

Logical Inventory Navigation Pane Icons

Each branch in the logical inventory navigation pane is represented by an icon and, if appropriate, includes an icon indicating

Table 3-12 describes the icons used in the logical inventory navigation pane.

Table 3-12   Logical Inventory Navigation Pane Icons

Icon	Logical Inventory Item	
	Access Lists ATM Traffic Profiles Bidirectional Forwarding Detection (BFD) Cisco Discovery Protocol (CDP) Clock Ethernet LMI Frame Relay Traffic Profiles IP SLA Responder Link Layer Discovery Protocol (LLDP)	Modular OS OAM Operating System Pseudowire Clock Recovery PTP Service Resilient Ethernet Protocol (REP) Session Border Controller Spanning Tree Protocol Tunnel Traffic Descriptors
	ARP Entity Bridges Ethernet Link Aggregation GRE Tunnels ICCP Redundancy Container IMA Groups IS-IS Local Switching LSEs MLPPP	MP-BGPs Multiple Spanning Tree protocol (MST) instance OSPF Processes Pseudowires Routing Entities Traffic Engineering Tunnels VC Switching Entities VRFs VSIs
	Carrier Grade NAT service VRF	
	Bridge	
	Connectivity Fault Management (CFM)	
	CFM Maintenance Association	

Table 3-12   *Logical Inventory Navigation Pane Icons (continued)*

Icon	Logical Inventory Item
	CFM Maintenance Domain
	Context, for devices that support multiple contexts
	Cross-VRF
	Encapsulation
	ICCP Redundancy group
	Inverse Multiplexing over ATM (IMA) group
	Label switching
	Layer 2 Tunnel Protocol (TP) peer
	Logical inventory
	Virtual Switch Interface (VSI)
	VLAN Trunk Protocol (VTP)

Related Topics

- Logical Inventory Content Pane Tabs, page 3-36
- Viewing the Physical Properties of a Device

Logical Inventory Content Pane Tabs

Table 3-13 describes the tabs that are displayed in the logical inventory content pane when you select **Logical Inventory**, depending on the device configuration.

Note   Prime Network Vision does not display the tabs in Table 3-13 for devices that support multiple contexts. Instead, when you select **Logical Inventory** for a device that contains multiple contexts, Prime Network Vision displays a Contexts table that lists the contexts configured on the device.

Table 3-13   Logical Inventory Content Pane Tabs

Tab	Description
Data Link Aggregation Containers	Lists the data link aggregations configured on the selected entity, such as Ethernet link aggregations.
Encapsulation Aggregation Containers	Lists the encapsulation aggregations configured on the selected entity.
Forwarding Component Containers	Lists the context profiles for which logical inventory information can be displayed, such as routing entities and bridges.
Operating System	Provides information about the operating system on the selected entity.
Physical Layer Aggregation Containers	Lists aggregations configured at the physical layer for the selected entity, such as IMA groups.
Processes	Lists the processes running on the selected entity, such as Clock or CDP.
Traffic Descriptors	Lists the profiles for which logical inventory information can be displayed, such as Frame Relay traffic profiles and Address Resolution Protocol (ARP) entities.
Tunnel Containers	Lists the types of tunnels that are configured on the selected entity, such as pseudowires or GRE tunnels.

Related Topics

- Viewing the Properties of a Network Element, page 3-6
- Viewing the Physical Properties of a Device, page 3-21
- Viewing the Logical Properties of a Network Element, page 3-30

Viewing Device Operating System Information

Prime Network Vision discovers and automatically displays operating system information for Cisco IOS, Cisco IOS XR, and Cisco IOS XE devices in logical inventory. For other devices, choose the element name at the top of the inventory window navigation pane.

To view operating system information for Cisco IOS, Cisco IOS XR, or Cisco IOS XE devices:

Step 1 In Prime Network Vision, double-click the required device.

Step 2 For a Cisco IOS device, view information about the operating system in one of the following ways:

- In the inventory window, choose **Logical Inventory > Operating System**.

  Table 3-14 describes the information that is displayed for the Cisco IOS operating system.
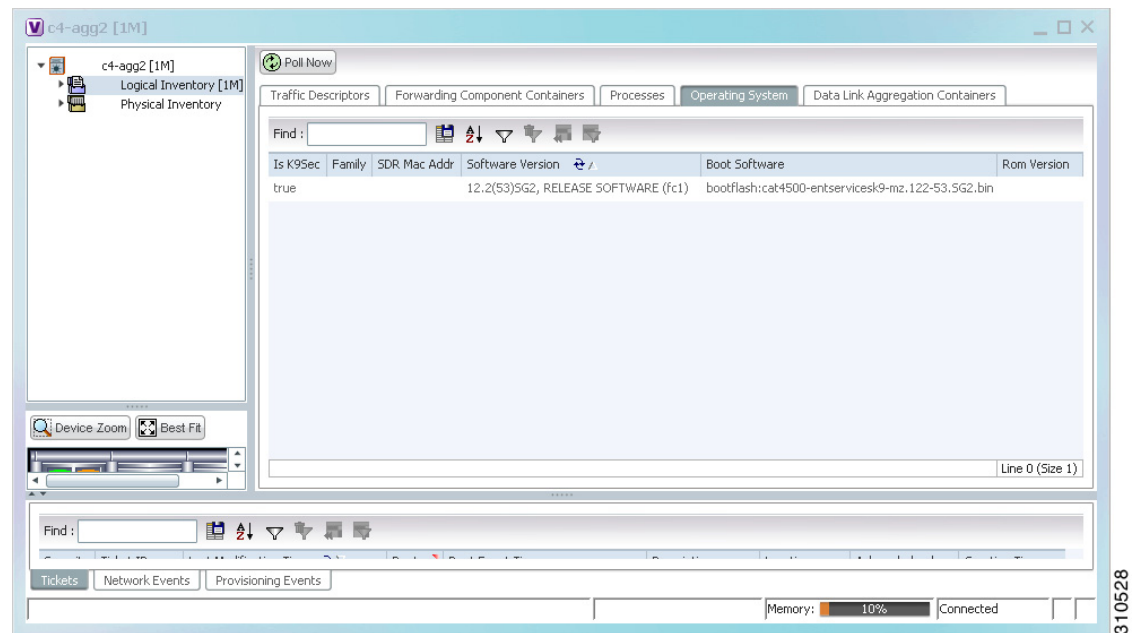
Table 3-14   Operating System Information in Logical Inventory

Field	Description
Boot Software	Cisco IOS system image information.
Is K9Sec	Whether or not the K9 security feature is enabled on the operating system: True or False
ROM Version	Cisco IOS bootstrap software version, such as 12.2(33r)SRC3.
OS Version	Cisco IOS software version, such as 12.2(33)SRE, Release Software (fc1).

- Click **Logical Inventory** and choose the **Operating System** tab.

  Figure 3-10 shows an example of the Operating System tab.

Figure 3-10   Operating System Tab in Logical Inventory

Table 3-15 describes the information that is displayed in the Operating System tab.

Table 3-15   Operating System Information in Logical Inventory

Field	Description
Is K9Sec	Whether or not the K9 security feature is enabled on the operating system: True or False
Family	Cisco family, based on the device platform, such as CRS_IOS or C12K_IOS_XR.
SDR Mac Addr	Secure Domain Router (SDR) MAC address. This field applies to Cisco IOS XR devices only.
Software Version	Cisco IOS software version, such as 12.2(33)SRC3, Release Software (fc2).
Boot Software	Cisco IOS system image information.
ROM Version	Cisco IOS bootstrap software version, such as 12.2(17r)SX3.

Step 3   For a Cisco IOS XR device, view information about the operating system in one of the following ways:

- In the inventory window, choose **Logical Inventory > Modular OS**.

    Figure 3-11 shows an example of the information that is displayed for Cisco IOS XR devices.

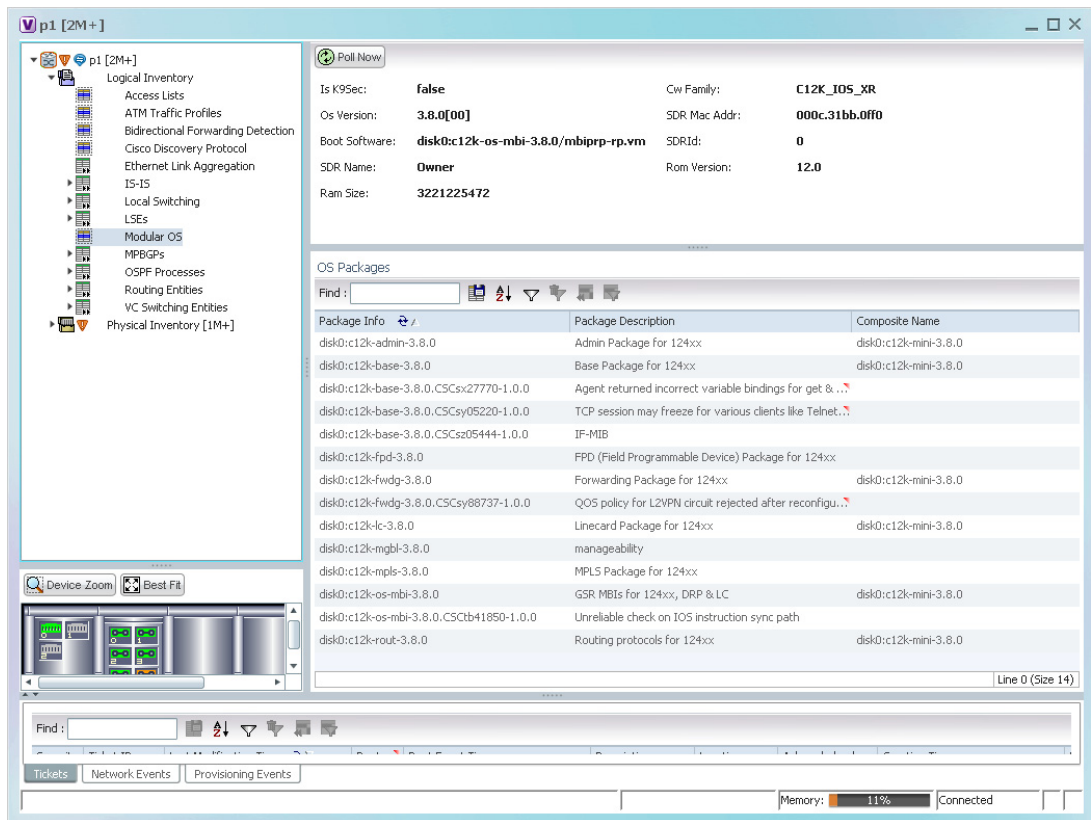*Figure 3-11   Modular OS Information in Logical Inventory*

Table 3-16 describes the information that is displayed for Cisco IOS XR system.

Table 3-16   Modular OS Information in Logical Inventory

Field	Description
Is K9Sec	Whether or not the K9 security feature is enabled on the operating system: True or False
Cw Family	Cisco family, based on the device platform, such as CRS_IOS_XR or C12K_IOS_XR.
SDR Mac Addr	Secure Domain Router (SDR) MAC address.
OS Version	Cisco IOS XR software version, such as 3.8.0[00].
Boot Software	Cisco IOS XR system image information.
SDR Name	SDR name.
SDR Id	SDR identifier.
ROM Version	Cisco IOS XR bootstrap software version, such as 1.51.
RAM Size	Size, in kilobytes, of the device processor RAM.
OS Packages Table	
Package Info	Information on the individual package and its version, such as disk0:hfr-admin-3.9.3.14
Package Description	Description of the package, such as FPD (Field Programmable Device) Package.

Composite Name	Composite package name of the package with the date and time, such as:
	
	`Tues Feb 8 20:37:07.966 UTC`
	`disk0:comp-hfr-mini-3.9.3.14`

- Click **Logical Inventory** and choose the **Operating System tab**.

  Figure 3-12 shows an example of the Operating System tab with information for a device with a modular operating system.

Figure 3-12   Modular OS Information in Operating System Tab
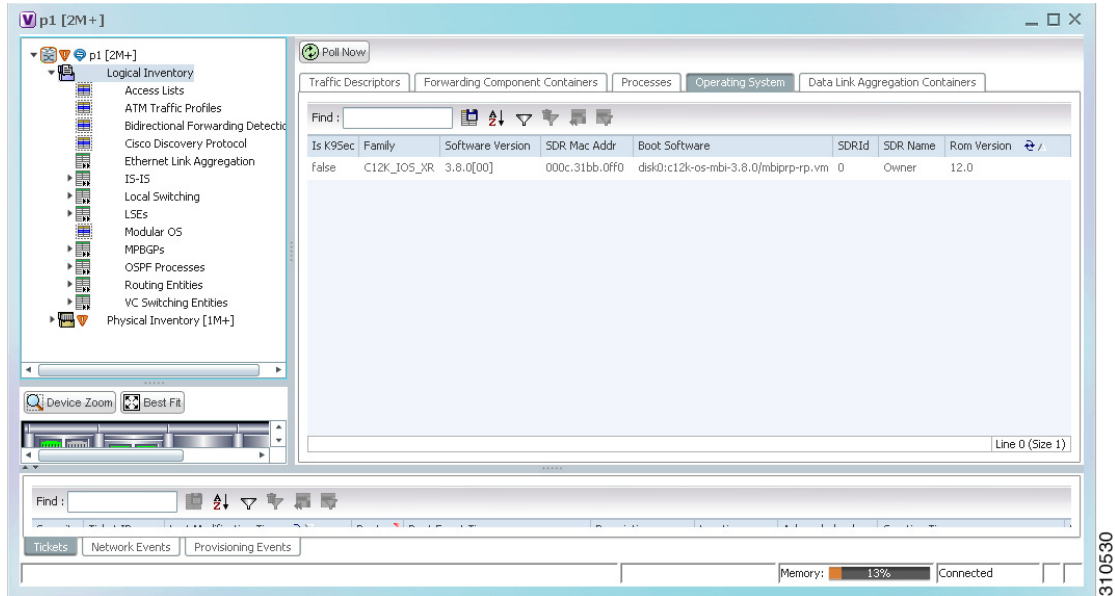

Table 3-17 describes the information that is displayed for modular operating systems in the Operating System tab.

Table 3-17   Modular OS Information in Operating System Tab

Field	Description
Is K9Sec	Whether or not the K9 security feature is enabled on the operating system: True or False
Family	Cisco family, based on the device platform, such as CRS_IOS_XR or C12K_IOS_XR.
Software Version	Cisco IOS XR software version, such as 4.0.0[Default].
SDR Mac Addr	Secure Domain Router (SDR) MAC address.
Boot Software	Cisco IOS XR system image information.
SDR ID	SDR identifier.
SDR Name	SDR name.
ROM Version	Cisco IOS XR bootstrap software version, such as 1.54.

Related Topics

- User Roles Required to Work with Prime Network Vision, page 3-2

- Viewing the Properties of a Network Element, page 3-6

- Viewing the Logical Properties of a Network Element, page 3-30