Nortel Configuration and Orchestration Manager

Administration — Utilities

NN47226-600

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Contents

New in this release

The following sections detail what's new in *Nortel Configuration and Orchestration Manager Administration — Utilities* (NN47226-600) for Release COM 2.0.

Features

See the following sections for information about feature changes:

- "VLAN Manager" (page 11)
- "Trunking Manager" (page 11)
- "Security Manager" (page 12)
- "Routing Manager" (page 12)
- "Trap/Log Manager" (page 12)
- "File Inventory Manager" (page 12)
- "Virtual Routing and Forwarding Manager" (page 12)
- "Device Inventory Manager" (page 12)
- "VLAN wizard" (page 12)
- "SMLT wizard" (page 13)
- "Templates" (page 13)

VLAN Manager

VLAN Manager manages Spanning Tree Groups (STG), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), and VLANs across devices in a network. For more information about VLAN Manager, see "Configuration of VLAN Manager" (page 27).

Trunking Manager

MultiLink Trunking Manager manages MultiLink Trunks (MLT) across devices in a network. You can also use MultiLink Trunking Manager to manage Split MultiLink Trunking (SMLT). For more information about Trunking Manager, see "Using the MultiLink Trunking Manager" (page 91).

Security Manager

Security Manager allows you to manage access to device and network management functions on the Ethernet Routing Switch 8xxx series, Ethernet Routing Switch 55xx/35xx/45xx/25xx, Ethernet Switch, and Legacy BayStack devices (N-2 software versions) discovered by Configuration and Orchestration Manager (COM). For more information about Security Manager, see "Using Security Manager" (page 125).

Routing Manager

With Routing Manager, you can configure routing parameters for devices across a network discovered by COM. For more information about Routing Manager, see "Configuration of Routing Manager" (page 159).

Trap/Log Manager

The Trap/Log Manager is a manager of COM that allows you to configure and view the traps/notifications and the system log. For more information about Trap Log Manager, see "Configuration of Trap/Log Manager" (page 199).

File Inventory Manager

The file management features of File Inventory Manager allows you to upload and download files to and from network devices. You can also use File Inventory Manager to do bulk uploads or downloads to or from multiple devices. For more information about File Inventory Manager, see "Using File Inventory Manager" (page 217).

Virtual Routing and Forwarding Manager

Virtual Routing and Forwarding (VRF) Manager enables the user to manage VRF configurations across specific devices. Additionally, the user can set the current VRF configuration for each device. For more information about VRF Manager, see "Using Virtual Routing and Forwarding Manager" (page 283).

Device Inventory Manager

Device Inventory Manager allows you to add, delete, and edit devices in to the inventory. You can also import or export an inventory. For more information about Device Inventory Manager, see "Configuration of devices" (page 291).

VLAN wizard

Configuration and Orchestration Manager (COM) configuration wizards help you to configure complex network by using few steps. These wizards hide the network complexity and make multi device configuration easier and simple. For more information about using VLAN wizard, see "Configuration of wizards" (page 299)

SMLT wizard

The SMLT wizard is a simplified and workflow driven wizard. It helps in reducing the complexity. For more information about SMLT wizard, see "Configuration of wizards" (page 299).

Templates

You can create templates containing configuration attributes when you run the COM configuration wizards. While executing the wizard, you can save the wizard configurations as a template. The saved templates can be viewed in the Templates window and can be used later to easily perform the same or similar configurations. For more information about Templates, see "Configuration of Templates" (page 313).

Introduction

This document provides the information you require to configure various managers in the Configuration and Orchestration Manager (COM) 2.0.

Using the topology view

This chapter describes the topology view and the tasks that you can use it to perform.

About the topology view

The topology feature in COM performs a discovery of the devices in your network, and creates a topology map showing the discovered devices and the connections between them. You can use the topology view to:

- display a logical topology map of your network
- view link data and device connections
- view device properties data
- view real-time information from devices for the following
  - dump topology
  - learned MAC addresses
  - port status
- launch element managers for the devices
- debug or troubleshoot network problems

Using the topology view to perform a discovery is the first step in managing your network using COM. A discovery is a snapshot taken of part or all of a network. When you perform a discovery, the information collected by COM to create the topology map is also used to populate the device inventory.

The topology feature can discover devices that support the following protocols:

- 802.1ab (Link Layer Data Protocol, or LLDP)
- Nortel Discovery Protocol (NDP), formerly known as Bay Networks Autotopology Discovery Protocol, or SynOptics Network Manager Protocol (SONMP)

One of these protocols must be enabled on the device in order for COM to discover it.

In order for COM to discover the devices in a topology, you must first configure the device credentials. COM uses the SNMPv1/V2 credentials of the device to properly perform a discovery. If the device credentials are not configured, COM will use the default community strings (public and private) to attempt to discover the device. If the credentials are not configured, the audit log displays errors for these devices.

You can configure device credentials using the Device and Server credentials editor in the Unified Communication Management (UCM platform). For more information about configuring device credentials, see *Nortel Unified Communications Management Fundamentals* (NN48014-100).

Understanding the topology map

You can use the topology map to gain a high-level view of your network, or to view detailed information about devices and links in the topology.

For information about navigating the topology and displaying information on the topology map, see "Viewing discovery results" (page 21). For information about the tools and utilities that you can use to work with devices on the topology map, see "Working with devices on the topology map" (page 23).

Configuring and performing a discovery

This section provides information about the following topics:

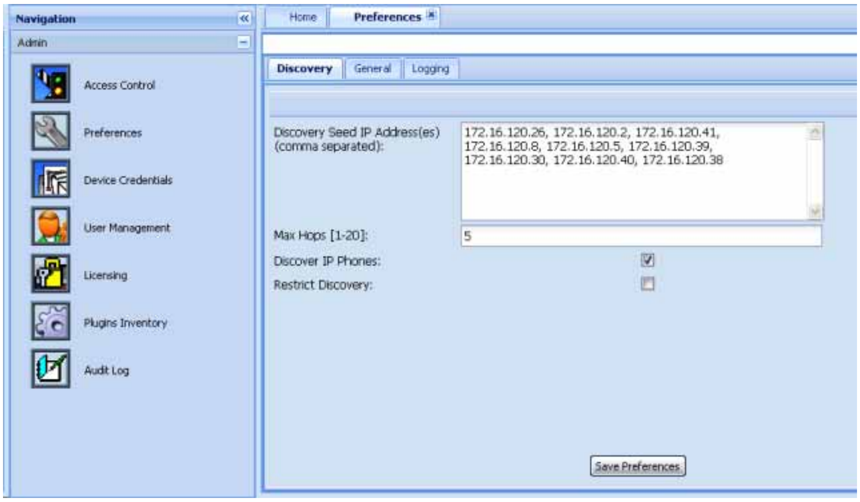
- "Configuring a network discovery" (page 18)
- "Performing a network discovery" (page 20)
- "Updating discovery information" (page 21)

Configuring a network discovery

Perform the following procedure to configure a network discovery. COM uses the information you configure to discover devices and create a topology map.

Procedure steps

Step	Action
1	From the Navigation pane, open **Admin** and then select **Preferences**. The Preferences dialog box appears in the Contents pane.



Discovery Seed IP Address(es) (comma separated): 172.16.120.26, 172.16.120.2, 172.16.120.41, 172.16.120.8, 172.16.120.5, 172.16.120.39, 172.16.120.30, 172.16.120.40, 172.16.120.38

Max Hops [1-20]: 5

Discover IP Phones: ☑

Restrict Discovery: □

Note: You can also access the preferences by navigating to the **Home** tab and clicking the **Set Discovery Preferences** icon (represented by a wrench).

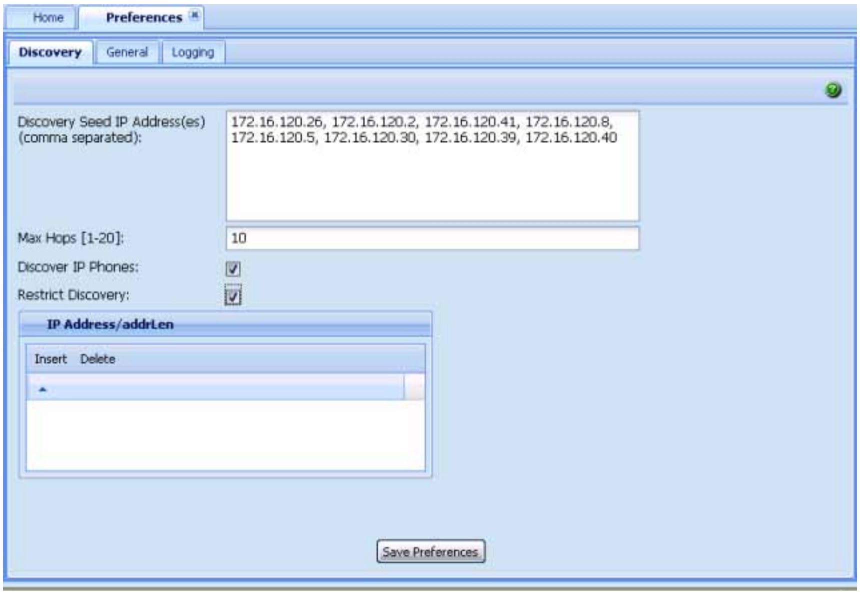
2 In the **Discovery Seeds** field, enter the IP address of one or more devices in the network.
Separate multiple IP addresses with a comma.

3 In the **Max Hops** field, enter the maximum number of hops.

4 Check the **Discover IP Phones** check box to discover the IP phones and to appear in the topology map.

5 In the **Restrict Discovery** check box, check the check box to restrict device discovery to only the devices entered in the subnets.

If Restrict Discovery check box is selected, then the IP Address/addrLen dialog box appears.



Discovery Seed IP Address(es) (comma separated): 172.16.120.26, 172.16.120.2, 172.16.120.41, 172.16.120.8, 172.16.120.5, 172.16.120.30, 172.16.120.39, 172.16.120.40

Max Hops [1-20]: 10

Discover IP Phones: ☑

Restrict Discovery: ☑

6 Click **Insert** to enter the IP addresses.

7 To delete an IP address, select the required row and click **Delete**.

8 Click **Save Preferences**.

—End—

Performing a network discovery

Before you begin, ensure that you have configured the discovery settings and entered the credentials for the devices in your network. You must enter the SNMPv1/v2 credentials for each device in order for COM to properly discover the device. If you do not configure these device credentials, COM will discover devices, but the functionality available through COM will be limited.

For information about setting device credentials, see *Nortel Unified Communications Management Fundamentals* (NN48014-100).. For information about setting discovery preferences, see "Configuring a network discovery" (page 18).

Procedure steps

Step **Action**

1 On the **Home** tab, click the **Discover Network Topology** button.

A dialog box displays, showing the progress of the discovery.

Note: If you wish to cancel the discovery process, click **Stop** on the dialog box.

2 An Info dialog box displays to confirm that the discovery is complete. Click **OK**.

—End—

Updating discovery information

Use the following procedure to refresh the topology view and update it to include new devices.

Procedure steps

Step	Action
1	On the **Home** tab, click the **Refresh Device Topology** button. An updated topology map displays.

—End—

Viewing discovery results

This section provides information about the following topics:

- "Navigating the discovery results" (page 21)
- "Displaying information on the topology map" (page 22)

Navigating the discovery results

This procedure describes how to use the topology map to perform the following tasks:

- zoom in and out
- search by device IP or by SysName
- clear the highlights

Procedure steps

Step	Action
1	Select the **Home** tab.
2	Use the buttons on the toolbar to navigate the topology map. The following table lists the options available.

—End—

Table 1
Navigation tools

Task/button	Description
Zoom-in and Zoom-out	Allows you to zoom in or out of the topology view.
Search IP Address/SysName	Allows you to search and highlight an IP address you are looking for. You can search based on: • a partial or full IP address • IPv4 format • IPv6 format Enter an IP address or a partial IP address, and then click Search. The given device with the specified IP address on the map is selected. If you enter a partial IP address, the topology selects the first occurrence of a device that matches the partial IP address, and if you continue to enter, the next one is selected. If the IP address is not found, the search button stops selecting an address.

Displaying information on the topology map

This procedure describes how to use the topology map to perform the following tasks:

- display port names
- toggle between names and addresses
- display link data

Procedure steps

Step **Action**

1 Select the **Home** tab.

2 Click the **View Device Information** button on the toolbar.

The following table lists the options available.

—End—

Table 2
Displaying topology information

Task	Description
Display port names	Select the check box to display port names on the topology map.
Toggle Addr / Name	Select the check box to toggle the name and address of the device.
Link data	Select the link details to view: • link speed • link types • link duplex • link mismatch COM displays the real-time settings for the interface attributes, and highlights the topology map based on the discovered data.

Working with devices on the topology map

This section describes how to use the topology map to perform the following tasks:

- ping devices
- view connections
- view device properties
- launch an element manager
- view a topology dump
- view learned MAC addresses
- view port status

Procedure steps

Step	Action
1	Select a device on the topology map and right-click on the device.
2	Select an option from the right-click menu. The following table lists the options available.

—End—

Table 3
Right-click options

Menu option	Description
Ping	Allows you to ping the selected device from the server.
Show connections	Displays the neighbors of a device on the topology map. It does not display live connections, only what is on the topology map.
Properties	Displays the following properties of the device: • Name • IP address • Device type • Location • Contact • Version • Uptime • Description
Launch Manager	Launches the element manager for the selected device.
Dump Topology	Displays the topology based on the real-time queries of devices.
Learned Mac Addresses	Displays the learned Mac addresses on the selected device.
Port Status	Displays the status of the port: • green—the port is in-service • red—the port is out-of-service • blue—the port is being tested

Working with multiple topologies

The Home tab on the COM interface displays one active topology at a time, but you can work with multiple topologies if needed.

To work with multiple topologies, you must export the active topology to an XML file, and then discovery a new topology. You can repeat this process as often as you need to, and can revert to a saved topology by importing it back into COM.

Use the following procedure to work with multiple topologies.

Procedure steps

Step **Action**

1 To save an existing topology, select **Devices** from the Configuration and Orchestration Manager Navigation pane.

The Devices panel appears.

2 From the **Devices** panel, click **Device Inventory** icon.

The Device Inventory Manager dialog box appears.

3 From the Device Inventory Manager toolbar, click the **Import/Export Inventory** button.

The Import/Export Inventory dialog box appears.

4 Select **Export inventory to an XML file** and click **Export**.

5 Click **Save**.

6 Set the discovery preferences and discover a new topology. The new topology becomes active on the Home tab.

7 To save the currently active topology, repeat steps 1 through 5.

8 To reload the original topology, select **Devices** from the navigation pane.

9 From the **Devices** panel, click **Device Inventory** icon.

10 From the Device Inventory Manager toolbar, click the **Import/Export Inventory** button.

11 Select **Import inventory from an XML file** and click **Browse** to navigate to the location of the file.

12 Select the file and click **Open**.

13 Click **Import**.

The Device Inventory table and the topology view are updated.

—End—

Using VLAN Manager

VLAN Manager allows you to create VLANs and configure routing and domain synchronization for them. You can also use VLAN Manager to create and manage Nortel Spanning Tree Groups (Nortel STG), as well as Multiple Spanning Tree Protocol (MSTP) and Rapid Spanning Tree Protocol (RSTP) instances.

COM organizes VLAN management according to four primary taskflows:

- **Configuration of Spanning Tree Groups**

  Creating STGs is the first step in the process of configuring VLANs. You must create an STG before you create a VLAN on Nortel devices. If you do not create anSTG, the device will use the default STG that is included in the factory configuration. There are three types of STG:

  — Nortel STG

  — RSTP

  — MSTP

- **Basic configuration of VLANs**

  Basic configuration of VLANs includes the creation and deletion of VLANs, synchronizing the VLAN name, adding members to a VLAN group, and deleting VLANs.

- **Routing**

  You can use COM to configure OSPF and VRRP routing interfaces on a VLAN.

- **Domain synchronization**

  Domain synchronization allows you to distribute the VLAN configuration of one device to other devices in your network.

This section describes using VLAN Manager to manage and view VLANs on Nortel Ethernet Switches and Nortel Ethernet Routing Switches.

Navigation

- "About VLAN Manager" (page 28)
- "Starting VLAN Manager" (page 30)
- "Using the VLAN Manager window" (page 31)
- "Creating and configuring Nortel Spanning Tree Groups" (page 35)
- "Managing Multiple Spanning Tree Protocol instances" (page 54)
- "Creating and configuring VLANs " (page 41)
- "Configuring port members" (page 58)
- "Configuring routing on a VLAN interface" (page 61)
- "Domain synchronization" (page 63)
- "Viewing STG and VLAN information" (page 73)

About VLAN Manager

VLAN Manager supports the VLAN and STG MIBs, and lets you manage VLAN and STG configurations across a single device or multiple devices. This section describes VLAN Manager conventions and features.

Navigation

- "VLAN" (page 28)
- "Spanning Tree Protocol" (page 28)
- "VLAN Manager features" (page 29)

VLAN

VLAN is a collection of ports on one or more switches that defines a broadcast domain. You can assign ports to a VLAN or you can create a policy VLAN, which determines the port membership in the VLAN based on the traffic entering that port. For example, in an IP subnet-based VLAN, the port belongs to the VLAN only if the traffic passing through the port is on the specified IP subnet.

You control path redundancy for VLANs by implementing the Spanning Tree Protocol (STP).

Spanning Tree Protocol

The Spanning Tree Protocol detects and eliminates logical loops in a bridged or switched network. When multiple paths exist, the spanning tree algorithm configures the network so that a bridge or switch uses only the most efficient path. If that path fails, the protocol automatically reconfigures the network to activate another path, thus sustaining network operations. The collection of ports in one spanning tree is called a Spanning Tree Group (STG) and a network can include multiple instances of STGs.

All the devices supported by COM support at least one STG. The Passport 1000 Series switch and the Ethernet Routing Switch 8600 modules support multiple spanning trees, thus multiple Spanning Tree Groups.

Table 4 "Maximum STGs and VLANs supported by switches" (page 29) lists the details for different switches.

Table 4
Maximum STGs and VLANs supported by switches

Switch	Maximum number of STGs	Maximum number of VLANs
Passport 1000 Series switch	25	101
Ethernet Routing Switch 1424/1612/1624/1648 switches	1	2 048
Ethernet Routing Switch 8100 modules	1	2 000
Ethernet Routing Switch 8300 modules	64	4 000
Ethernet Routing Switch 8600 modules	64	4 096
BayStack 380 3.0	1	512
BayStack 420	1	32
Ethernet Switch 410/450	1	64
Ethernet Switch 325/425	1	255
Ethernet Switch 460/470	8	256
Ethernet Routing Switch 5510, 5520, 5530, 3510 and 5600	8	256
Ethernet Routing Switch 45xx	8	256
Ethernet Routing Switch 25xx	1	256
Business Policy Switch 2000	8	256

VLAN Manager features

VLAN Manager supports six types of VLAN and three types of STG:

- VLANs:
  - port-based

- protocol-based
- subnet-based
- source MAC address-based
- sVLAN-based
- ID-based

- STGs:
  - Nortel STGs
  - RSTP
  - MSTP

VLAN Manager allows you to do the following:

- Configure and monitor VLANs and STGs across one or multiple devices.
- View and edit port membership information for the following:
  - ports not belonging to an STG
  - ports belonging to multiple STGs
  - individual routing ports and brouter ports

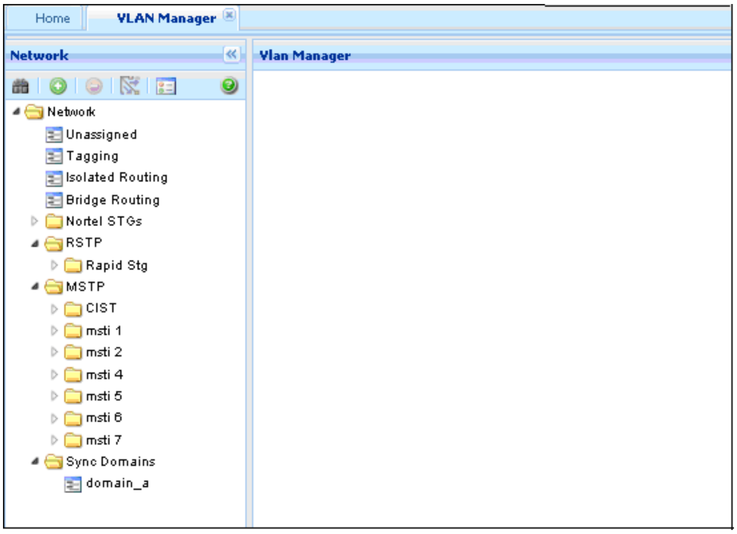
- View Spanning Tree configuration information in the COM topology map, such as the ports that are blocking or forwarding. You can also see which device is the root of the Spanning Tree configuration. For more information, see "Highlighting STGs and VLANs on the topology map" (page 73).

Starting VLAN Manager

Perform the following procedure to start the VLAN Manager.

Procedure steps

Step	Action
1	In the COM Navigation pane, expand the managers and click on the **VLAN manager**. The VLAN manager is launch and appears in the content pane.

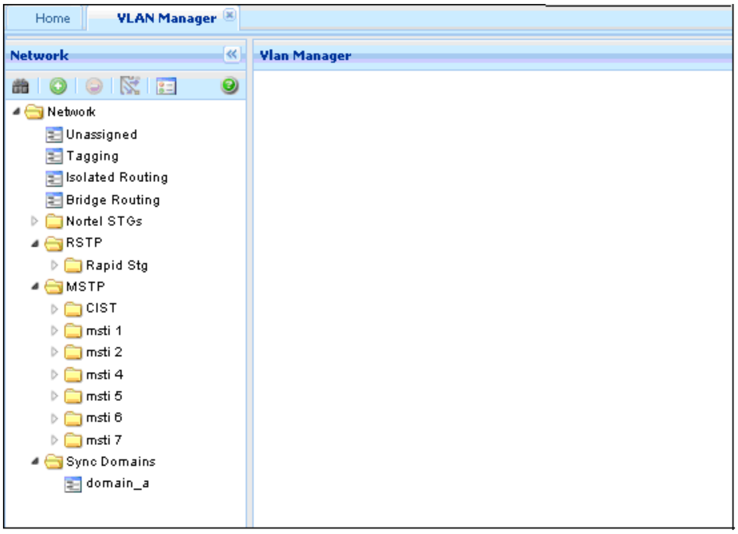


—End—

Using the VLAN Manager window

This section details the VLAN Manager interface as seen in the following figure.

"VLAN Manager window" (page 32) describes the parts of the VLAN Manager window.



VLAN Manager window

Area	Description
Navigation pane	Provides a navigation tree showing VLAN Manager network folder resources and a toolbar for working with items in the pane. For more information, see "Navigation pane" (page 32).
Contents pane	Displays information selected in the contents pane and a toolbar for working with items in the pane. For more information, see "Contents pane" (page 34).
Status bar	Displays status information, it includes discovery information, type of node highlighted, and command status. For more information, see "Status bar" (page 35).

Navigation

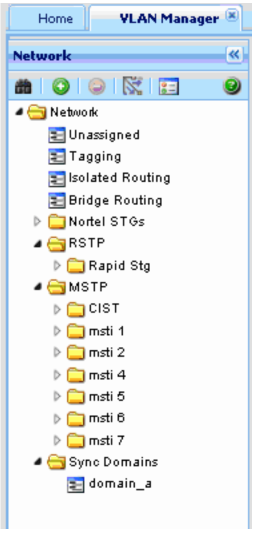
- "Navigation pane" (page 32)
- "Contents pane" (page 34)
- "Status bar" (page 35)

Navigation pane

The VLAN Manager Navigation pane, provides access to all VLAN Manager resources as shown in the Figure 1 "Navigation Pane" (page 32) figure.

To open the folder, double-click a folder, or click the pointer (>) sign to the left of the folder name. Click an item to examine detailed information in the Contents pane.

Figure 1
Navigation Pane



The following table details the VLAN Manager Navigation pane.

VLAN Manager Navigation pane

Area	Description
Network folder	Contains all of the icons and folders in the Navigation pane.
Port membership icons	Shows the types of port membership, including Unassigned, Tagging, Isolated Routing and Bridge Routing. For more information, see "Port membership" (page 58).
Nortel STG folders	Shows Spanning Tree Groups (STG) on the discovered devices. Click the pointer (>) to the left of the folder or double-click an STG folder to open and close the folder. For more information, see "Viewing Spanning Tree Groups" (page 74).
VLAN icons	Show you information about VLANs. Click one of the icons to view information about that VLAN in the contents pane.
MSTP folder	Represents Multiple Spanning Tree Protocol. Double-click the folder to view aspects of MSTP. Click one of the icons to view information about that aspect of the MSTP in the contents pane.
CIST folder	Shows you information about the MSTP Common and Internal Spanning Tree (CIST). Click one of the icons to view information about that aspect of the CIST in the contents pane.
MSTI folder	Shows you information about Multiple Spanning Tree instances (MSTI). Click one of the icons to view information about that aspect of the MSTI in the contents pane.
RSTP folder	Shows you information about the Rapid Spanning Tree Protocol (RSTP). Click one of the icons to view information about that aspect of the RSTP in the contents panel.
Sync Domains folder	Allows you to define new synchronization domains and, when opened, provides a list of the sync domains defined previously. For more information, see "Domain synchronization" (page 63).

Navigation pane toolbar

The navigation toolbar allows you to add, or delete VLANs and STGs. You can also highlight MLT constructs on the Topology Map using the Highlight on Topology button as shown in the following figure.

Figure 2
Navigation pane toolbar

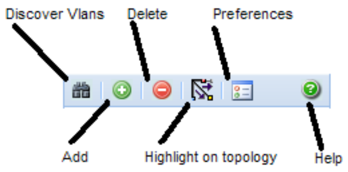


Table 5
Navigation pane toolbar fields

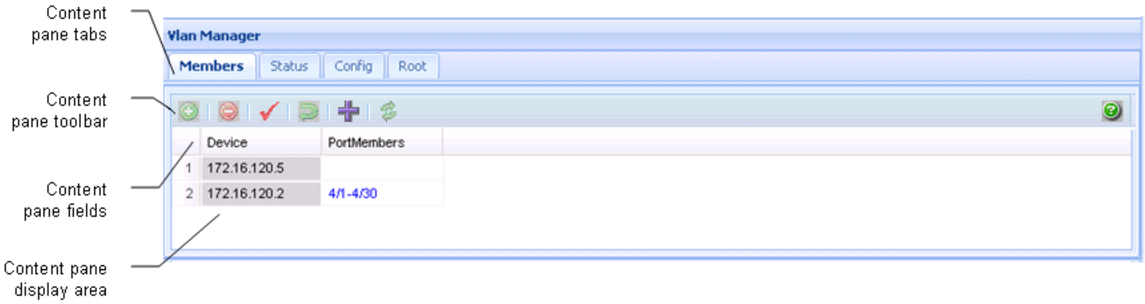
Button	Description
Discover Vlans	Allows you to manually start the Vlan discovery process.
Add	Allows you to add Vlans and STGs to the network.
Delete	Allows you to remove Vlans and STGs from the network.
Highlight on topology	Highlights devices in the content pane for the selected Vlan ot STG.
Preferences	Opens the Preferences dialog box.
Help	Launches help relative to the VLAN Manager.

Contents pane

Use the contents pane to view information on resources you select in the Navigation pane.

Click an icon In the Navigation pane to display corresponding information tables in the Contents pane.

VLAN Manager Content pane



	Device	PortMembers
1	172.16.120.5	
2	172.16.120.2	4/1-4/30

The content pane tabs appear for STGs. The content pane fields vary in accordance with the resource you select in the Navigation pane, and the content pane tab, if applicable.

Table 6
VLAN Manager Content pane toolbar

Button	Description
Add	Add a row.
Delete	Delete the selected row.
Apply changes	All the changes are applied and saves.
Revert changes	Revert back the changes.
Add VRRP	Insert

Status bar

The VLAN Manager status bar is located at the bottom of the VLAN Manager tab and contains two fields. The following table describes the VLAN Manager status bar fields.

VLAN Manager status bar fields

Field	Description
Message	Located on the left, the message field displays information about VLAN Manager operations.
Icon	Located on the right, the icon field provides a legend for different types of VLANs found in the network. For more information about VLAN icons, see "VLAN icons" (page 77).

Creating and configuring Nortel Spanning Tree Groups

The following sections topics describe how to create and modify Nortel STGs, and provide information about Nortel STG membership:

Navigation

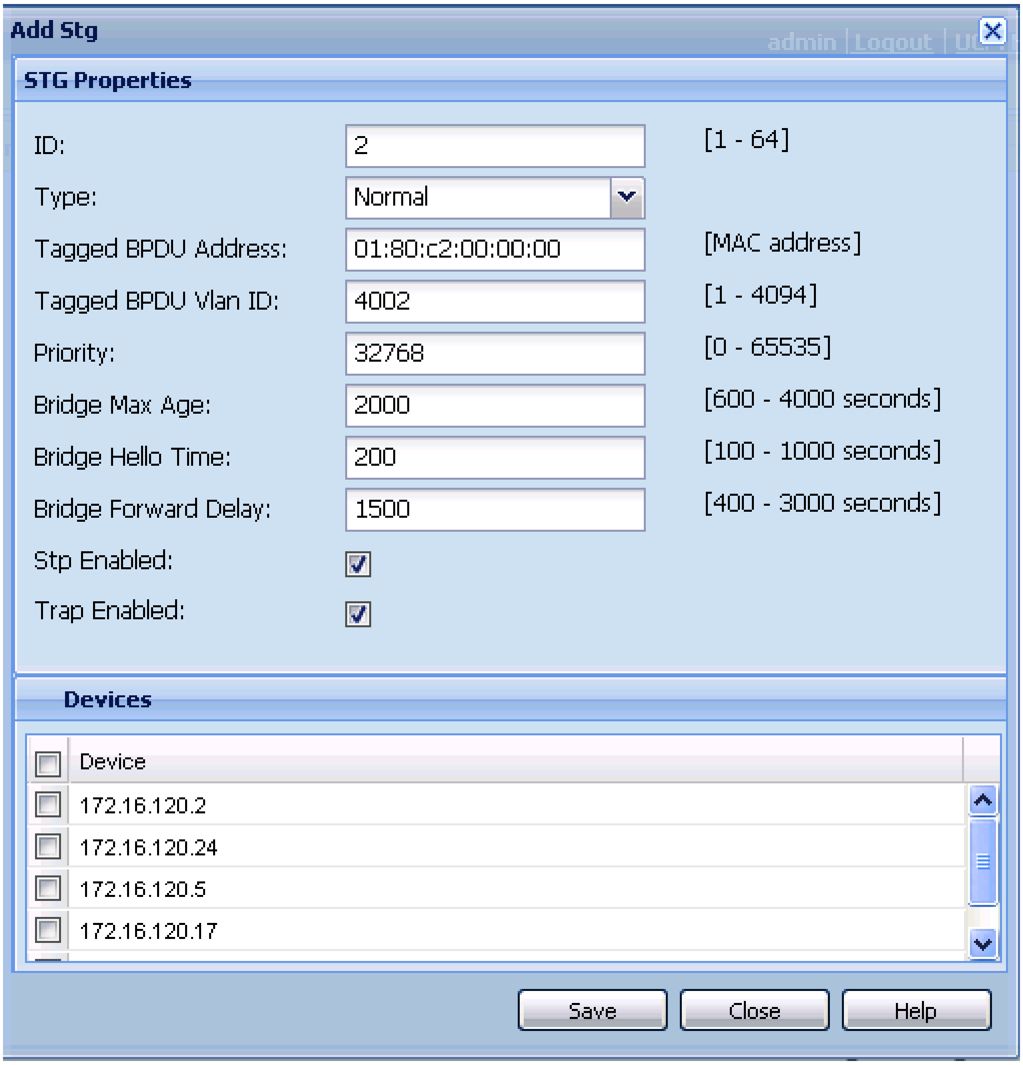
- "Creating a Nortel Spanning Tree Group" (page 35)
- "Configuring Nortel STG parameters" (page 37)
- "Editing a Nortel Spanning Tree Group" (page 39)
- "Deleting a Nortel Spanning Tree Group" (page 39)
- "Adding members to a Nortel Spanning Tree Group" (page 40)
- "Deleting members from a Nortel Spanning Tree Group" (page 40)
- "Editing Nortel Spanning Tree Group port membership" (page 41)

Creating a Nortel Spanning Tree Group

Perform the following procedure to create a new Nortel Spanning Tree Group.

Procedure steps

Step	Action
1	From the navigation tree, select the Nortel STGs folder.
2	Click **Add**. The Add STG dialog box appears.



Add Stg

STG Properties

ID:	2	[1 - 64]
Type:	Normal	
Tagged BPDU Address:	01:80:c2:00:00:00	[MAC address]
Tagged BPDU Vlan ID:	4002	[1 - 4094]
Priority:	32768	[0 - 65535]
Bridge Max Age:	2000	[600 - 4000 seconds]
Bridge Hello Time:	200	[100 - 1000 seconds]
Bridge Forward Delay:	1500	[400 - 3000 seconds]
Stp Enabled:	☑	
Trap Enabled:	☑	

Devices

□	Device
□	172.16.120.2
□	172.16.120.24
□	172.16.120.5
□	172.16.120.17

3 Insert values or select options in the option boxes appropriately.

4 Click **Save**.

—End—

Add STG dialog box fields

The following table describes the items in the Add STG dialog box.

Add STG dialog box items

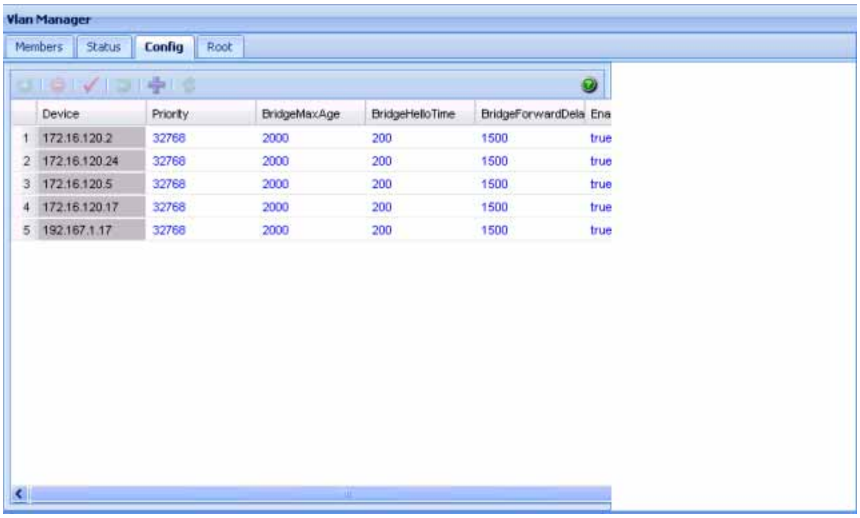
Field	Description
ID	A number between 1 and 64 that identifies the new Spanning Tree Group (STG) configured on the network.
Type	Select the type of STG, either normal or svlan.
TaggedBpdu Address	A MAC address, specifically for tagged BPDUs.
TaggedBpdu Vlan ID	The VLAN tag associated with the STG. This ID is used to tag BPDUs through a non-IEEE tagging bridge to another Nortel Ethernet Switch or Ethernet Routing Switch.
Priority	STP bridge priority, in decimal. The range is 0 (highest priority) to 65535 (lowest priority). The default is 32768.
Bridge Max Age	Value in hundredths of a second that all bridges use for MaxAge when this bridge is acting as the root. **ATTENTION** The 802.1D-1990 standard specifies that the range for this parameter is related to the value of dot1dStpBridgeHelloTime. The default is 2000 (20 seconds).
Bridge Hello Time	Value in hundredths of a second that all bridges use for Hello Time when this bridge is acting as the root. The granularity of this timer is specified by the IEEE 802.1D-1990 standard to be in increments of 1/100 of a second. The default is 200 seconds.
Bridge Forward Delay	Value in hundredths of a second that all bridges use for Forward Delay when this bridge is acting as the root. The default is 1500 (15 seconds).
Stp Enabled	Enables or disables the spanning tree algorithm for the Spanning Tree Group.
Trap Enabled	Enables SNMP traps to be sent to trace receiver every time an STP topology change occurs.
Device	Selects all the devices on the device list.
Save	Applies your settings and closes the dialog box.
Close	Discards your settings and closes the dialog box.
Help	Opens COM Online Help in a Web browser.

Configuring Nortel STG parameters

Use the Config table to view and configure Nortel STG parameters. Perform the following procedure to open the Config table.

Procedure steps

Step	Action
1	In the Navigation pane, open a Nortel STG and select **Config**.



	Device	Priority	BridgeMaxAge	BridgeHelloTime	BridgeForwardDela	Ena
1	172.16.120.2	32768	2000	200	1500	true
2	172.16.120.24	32768	2000	200	1500	true
3	172.16.120.5	32768	2000	200	1500	true
4	172.16.120.17	32768	2000	200	1500	true
5	192.167.1.17	32768	2000	200	1500	true

—End—

Job aid

The following table describes the fields in the Configuration table.

Field	Description
Device	IP address, system name, or host name of the device.
Priority	The Spanning Tree Protocol (STP) bridge priority, in decimal. The range is 0 (highest priority) to 65535 (lowest priority). The default is 32768.
BridgeMax Age	The value in hundredths of a second that all bridges use for MaxAge when this bridge is acting as the root.
BridgeHello Time	The value in hundredths of a second that all bridges use for Hello Time when this bridge is acting as the root. The granularity of this timer is specified by the IEEE 802.1D-1990 standard to be in increments of 1/100 of a second. The default is 200 (2 seconds).
BridgeForward Delay	The value in hundredths of a second that all bridges use for Forward Delay when this bridge is acting as the root. The default is 1500 (15 seconds).

Field	Description
EnableStp	Enables or disables the spanning tree algorithm for the Spanning Tree Group.
StpTrap Enable	Enables or disables SNMP traps to be sent to trace receiver every time an STP topology change occurs.
TaggedBpdu Address	A MAC address; specifically for tagged BPDUs.
TaggedBpdu VlanId	The VLAN tag associated with the Spanning Tree Group. This ID is used to tag BPDUs through a non-IEEE tagging bridge to another Ethernet Routing Switch.

Editing a Nortel Spanning Tree Group

Perform the following procedure to edit a Spanning Tree Group.

Procedure steps

Step Action

1 Select a Nortel STG folder.

2 Click **Config**.

The **Config** tab appears displaying the Nortel STG details.

3 In the Nortel STG table in the contents pane, click the item that you want to edit.

The field is highlighted, and you can edit directly in the table.

4 Type information in the text boxes, or select from a list.

The changes appear in bold.

5 On the VLAN Manager toolbar, click **Apply Changes**.

—End—

Deleting a Nortel Spanning Tree Group

Perform the following procedure to delete a Nortel Spanning Tree Group.

Procedure steps

Step Action

1 In the navigation pane, select a Nortel STG folder (except STG 1).

2 On the VLAN Manager toolbar, click **Delete**.

3 Click **+** to open the Nortel STG dialog to add members you want to delete.

4 Click **Yes** to confirm the deletion, or **No** to cancel the deletion, and return to the table view.

—End—

Adding members to a Nortel Spanning Tree Group

Perform the following procedure to add members to an existing Nortel Spanning Tree Group.

Procedure steps

Step Action

1 In the Navigation pane, under an existing Nortel STG, click the Members folder.

2 Click **+** to open the Nortel STG dialog dialog to add members you want to add.

3 Select the desired additional members from the device list.

4 Insert values or select options in the option boxes, as required.

5 Click **Save**.

The new members are added to the Nortel STG.

—End—

Deleting members from a Nortel Spanning Tree Group

Perform the following procedure to delete members from an existing Nortel Spanning Tree Group.

Procedure steps

Step Action

1 In the Navigation pane, under an existing Nortel STG, click the **Members** folder.

2 In the contents pane, select the device to remove.

3 On the VLAN Manager toolbar, click **Delete**.

4 Click **Yes** to confirm the deletion, or **No** to cancel the deletion, and return to the table view.

—End—

Editing Nortel Spanning Tree Group port membership

Perform the following procedure to edit port membership in a Nortel Spanning Tree Group.

Procedure steps

Step	Action
1	From the navigation tree, select the Nortel STG folder.
2	Click **Members**.
3	In the contents pane, the port members for each device in the Nortel STG appear.
4	To change the port membership for a device, click the associated **PortMembers** entry, and choose the ports to include.
5	On the Contents pane toolbar, click **Apply Changes**.

—End—

Creating and configuring VLANs for a Nortel STG

When you create VLANs for a Nortel STG using VLAN Manager, follow these rules:

- VLANs must have unique VLAN IDs and names.
- Trunk (tagged) ports can belong to multiple VLANs and multiple Spanning Tree Groups.
- VLANs cannot belong to multiple Spanning Tree Groups.
- An access (untagged) port can belong to one and only one port-based VLAN or it can belong to one and only one policy-based VLAN for the given protocol.
- If you enable tagging on a port that is in a VLAN, the Spanning Tree Group configuration for that port is lost.
- A frame VLAN membership is determined by the following order of precedence:
  - — VLAN ID

- — Source MAC-based VLAN
- — IP subnet-based VLAN
- — Protocol-based VLAN
- — Port-based VLAN
- — ID-based VLAN

The following sections describe how to create and configure each of the different types of VLAN supported by COM.

- "Creating a port based VLAN" (page 42)
- "Creating a subnet based VLAN" (page 44)
- "Creating a protocol based VLAN" (page 45)
- "Creating a source MAC address based VLAN" (page 47)
- "Creating a sVLAN based VLAN" (page 48)
- "Creating an ID based VLAN" (page 49)
- "Synchronizing VLAN name" (page 51)

Creating a port based VLAN

Perform the following procedure to create a port based VLAN.

Procedure steps

Step **Action**

1 From the Navigation tree, expand **Network** folder, and then select **Nortel STGs** folder.

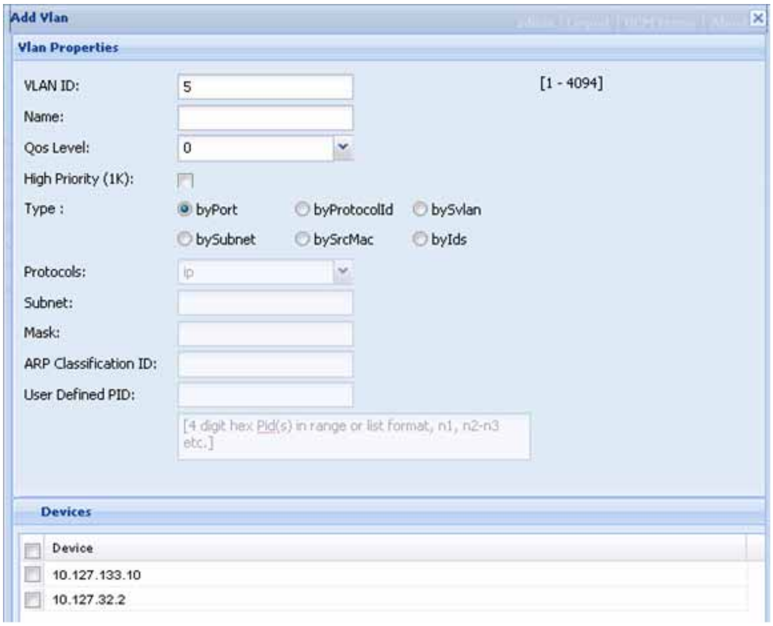
2 Select **STG**.

The General tab appears in the contents pane and displays the VLAN table.

3 Select a device in the Content pane.

4 Click **Add** to insert a port based VLAN.

The Add Vlan dialog box appears.



Add Vlan

Vlan Properties

VLAN ID: 5 [1 - 4094]

Name:

Qos Level: 0

High Priority (1K): □

Type : ● byPort ○ byProtocolId ○ bySvlan ○ bySubnet ○ bySrcMac ○ byIds

Protocols: ip

Subnet:

Mask:

ARP Classification ID:

User Defined PID:

[4 digit hex Pid(s) in range or list format, n1, n2-n3 etc.]

Devices

□	Device
□	10.127.133.10
□	10.127.32.2

5 In the **VLAN ID** field, type the VLAN ID. The value can be from 1 to 4094, as long as it is not already in use.

6 In the **Name** field, type the VLAN name (optional). If no name is entered, a default is created.

7 For an Ethernet Routing Switch 8600, select the **QoS Level** .

8 For Passport 1000 Series switch, specify whether the VLAN traffic will be tagged as **High Priority (1K)**.

9 From the **Type** field, select the **byPort** type option.

Other items in the dialog box that apply to a port-based VLAN are activated.

10 Select the devices to be configured from the Device pane.

> **ATTENTION**
> Not all VLAN types are available on all devices that COM supports. Devices that do not support port-based VLANs will be absent from the device list.

11 Click **Save** to save all the changes.

—End—

Creating a subnet based VLAN

Perform the following procedure to create a subnet based VLAN.

Procedure steps

Step **Action**

1 From the Navigation tree, expand **Network** folder, and then select **Nortel STGs** folder.

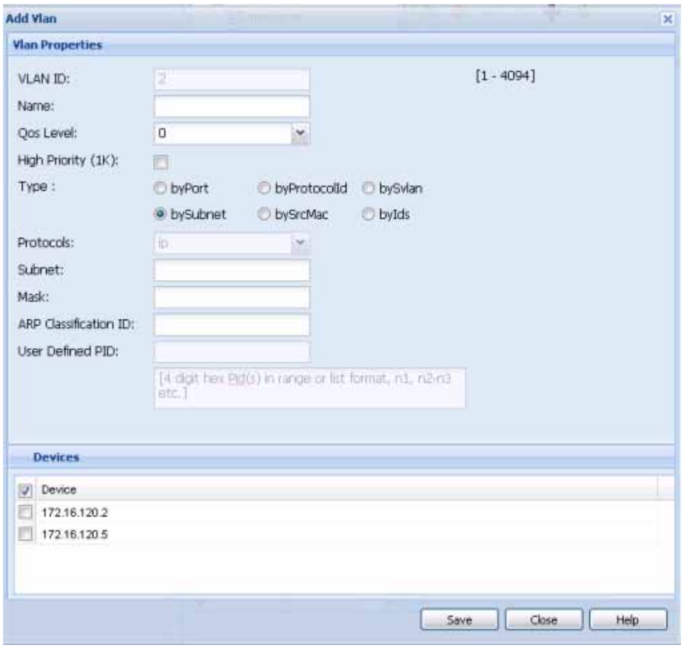
2 Select **STG**.

The General tab appears in the contents pane and displays the VLAN table.

3 Select a device in the Content pane.

4 Click **Add** to insert a subnet based VLAN.

The Add Vlan dialog box appears.



Add Vlan

Vlan Properties

VLAN ID: 2 [1 - 4094]

Name:

Qos Level: 0

High Priority (1K): □

Type : ○ byPort ○ byProtocolId ○ bySvlan ● bySubnet ○ bySrcMac ○ byIds

Protocols: ip

Subnet:

Mask:

ARP Classification ID:

User Defined PID:

[4 digit hex Pid(s) in range or list format, n1, n2-n3 etc.]

Devices

☑ Device

□ 172.16.120.2

□ 172.16.120.5

5 In the **VLAN ID** field, type the VLAN ID. The value can be from 1 to 4094, as long as it is not already in use.

6 In the **Name** field, type the VLAN name (optional). If no name is entered, a default is created.

7 For an Ethernet Routing Switch 8600, select the **QoS Level** .

8 For Passport 1000 Series switch, specify whether the VLAN traffic will be tagged as **High Priority (1K)**.

9 From the **Type** field, select the **bySubnet** type option.

Other items in the dialog box that apply to a subnet-based VLAN are activated.

10 In the **Subnet** field, type the source IP subnet address.

11 In the **Mask** field, type the IP subnet mask.

12 In the **ARP-Classification-Id** field, type the ARP classification ID.

> **ATTENTION**
>
> The value is 0, if swL2StaticVlanType is not byIpSubnet(2). The range of the object is between 1 and 4094, if swL2StaticVlanType is byIpSubnet(2). This object is useful when the first IpSubnet entry is created and it does not allow to modify.

13 Select the devices to be configured from the Device pane.

> **ATTENTION**
>
> Not all VLAN types are available on all devices that COM supports. Devices that do not support subnet-based VLANs will be absent from the device list.

14 Click **Save** to save all the changes.

—End—

Creating a protocol based VLAN

Perform the following procedure to create a protocol based VLAN.

Procedure steps

Step Action

1 From the Navigation tree, expand **Network** folder, and then select **Nortel STGs** folder.

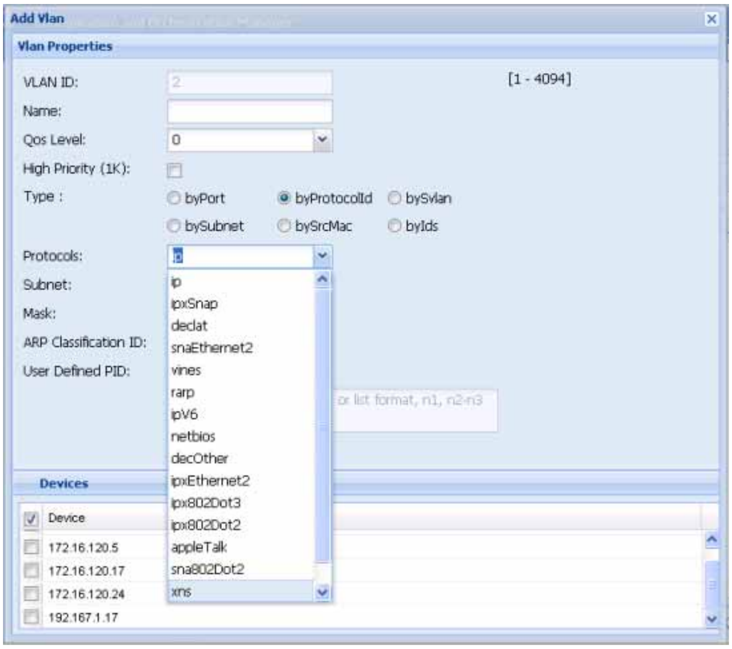
2 Select **STG**.

The General tab appears in the contents pane and displays the VLAN table.

3 Select a device in the Content pane.

4 Click **Add** to insert a protocol based VLAN.

The Add Vlan dialog box appears.



Add Vlan

Vlan Properties

VLAN ID: 2 [1 - 4094]

Name:

Qos Level: 0

High Priority (1K): □

Type : ○ byPort ● byProtocolId ○ bySvlan ○ bySubnet ○ bySrcMac ○ byIds

Protocols: ip

Subnet:

Mask:

ARP Classification ID:

User Defined PID: or list format, n1, n2-n3

Devices

☑ Device
□ 172.16.120.5
□ 172.16.120.17
□ 172.16.120.24
□ 192.167.1.17

5 In the **VLAN ID** field, type the VLAN ID. The value can be from 1 to 4094, as long as it is not already in use.

6 In the **Name** field, type the VLAN name (optional). If no name is entered, a default is created.

7 For an Ethernet Routing Switch 8600, select the **QoS Level** .

8 For Passport 1000 Series switch, specify whether the VLAN traffic will be tagged as **High Priority (1K)**.

9 From the **Type** field, select the **byProtocolId** type option.

Other items in the dialog box that apply to a protocol Id based VLAN are activated.

10 In the **Protocol** field, select the required protocol from the drop-down list.

11 Select the devices to be configured from the Device pane.

> **ATTENTION**
>
> Not all VLAN types are available on all devices that COM supports. Devices that do not support protocol Id based VLANs will be absent from the device list.

12 Click **Save** to save all the changes.

—End—

Creating a source MAC address based VLAN

Perform the following procedure to create a source MAC address based VLAN.

Procedure steps

Step	Action
1	From the Navigation tree, expand **Network** folder, and then select **Nortel STGs** folder.
2	Select **STG**. The General tab appears in the contents pane and displays the VLAN table.
3	Select a device in the Content pane.
4	Click **Add** to insert a source MAC address based VLAN. The Add Vlan dialog box appears.
5	In the **VLAN ID** field, type the VLAN ID. The value can be from 1 to 4094, as long as it is not already in use.
6	In the **Name** field, type the VLAN name (optional). If no name is entered, a default is created.
7	For an Ethernet Routing Switch 8600, select the **QoS Level** .
8	For Passport 1000 Series switch, specify whether the VLAN traffic will be tagged as **High Priority (1K)**.
9	From the **Type** field, select the **bySrcMac** type option. Other items in the dialog box that apply to a source MAC address based VLAN are activated.
10	Select the devices to be configured from the Device pane. **ATTENTION** Not all VLAN types are available on all devices that COM supports. Devices that do not support source MAC address based VLANs will be absent from the device list.
11	Click **Save** to save all the changes.

—End—

Creating a sVLAN based VLAN

Perform the following procedure to create a sVLAN based VLAN.

Procedure steps

Step **Action**

1 From the Navigation tree, expand **Network** folder, and then select **Nortel STGs** folder.

2 Select **STG**.

The General tab appears in the contents pane and displays the VLAN table.

3 Select a device in the Content pane.

4 Click **Add** to insert a sVLAN based VLAN.

The Add Vlan dialog box appears.

5 In the **VLAN ID** field, type the VLAN ID. The value can be from 1 to 4094, as long as it is not already in use.

6 In the **Name** field, type the VLAN name (optional). If no name is entered, a default is created.

7 For an Ethernet Routing Switch 8600, select the **QoS Level** .

8 For Passport 1000 Series switch, specify whether the VLAN traffic will be tagged as **High Priority (1K)**.

9 From the **Type** field, select the **bySvlan** type option.

Other items in the dialog box that apply to a Svlan-based VLAN are activated.

10 Select the devices to be configured from the Device pane.

> **ATTENTION**
>
> Not all VLAN types are available on all devices that COM supports. Devices that do not support Svlan-based VLANs will be absent from the device list.

11 Click **Save** to save all the changes.

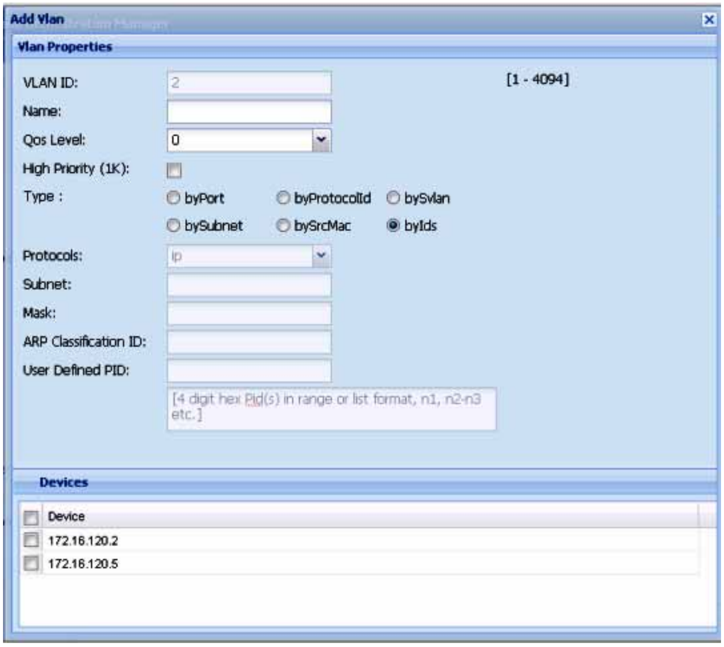
—End—

Creating an ID based VLAN

Perform the following procedure to create an ID based VLAN.

Procedure steps

Step	Action
1	From the Navigation tree, expand **Network** folder, and then select **Nortel STGs** folder.
2	Select **STG**. The General tab appears in the contents pane and displays the VLAN table.
3	Select a device in the Content pane.
4	Click **Add** to insert an ID based VLAN. The Add Vlan dialog box appears.



Add Vlan

Vlan Properties

VLAN ID: 2 [1 - 4094]

Name:

Qos Level: 0

High Priority (1K): □

Type : ○ byPort ○ byProtocolId ○ bySvlan ○ bySubnet ○ bySrcMac ● byIds

Protocols: ip

Subnet:

Mask:

ARP Classification ID:

User Defined PID:

[4 digit hex Pid(s) in range or list format, n1, n2-n3 etc.]

Devices

□	Device
□	172.16.120.2
□	172.16.120.5

5	In the **VLAN ID** field, type the VLAN ID. The value can be from 1 to 4094, as long as it is not already in use.

6 In the **Name** field, type the VLAN name (optional). If no name is entered, a default is created.

7 For an Ethernet Routing Switch 8600, select the **QoS Level** .

8 For Passport 1000 Series switch, specify whether the VLAN traffic will be tagged as **High Priority (1K)**.

9 From the **Type** field, select the **byIds** type option.

Other items in the dialog box that apply to a ID based VLAN are activated.

10 Select the devices to be configured from the Device pane.

> **ATTENTION**
> Not all VLAN types are available on all devices that COM supports. Devices that do not support ID based VLANs will be absent from the device list.

11 Click **Save** to save all the changes.

—End—

Job aid

The following table describes the fields in the Add Vlan dialog box.

Field	Description
VLAN ID	The VLAN ID.
Name	VLAN name
QosLevel	In an Ethernet Routing Switch 8000 Series, you can set the Quality of Service (QoS) level for traffic in the VLAN to a level between 0 and 7.
HighPriority	In a Passport 1000 Series switch, you can select HighPriority mode for all traffic in the VLAN.
Type	Type by which you want to add the device. Options: • by port • by subnet • by protocol • by source MAC Address • by SVLANs • by ID

Field	Description
Protocols	Type of protocol.
Subnet	The source IP subnet address.
Mask	The IP subnet mask.
ARP Classification ID	The ARP classification ID.
User Defined PID	The user defined PID.
Devices	List of devices.

Synchronizing VLAN name

Perform the following procedure to synchronize the VLAN name.

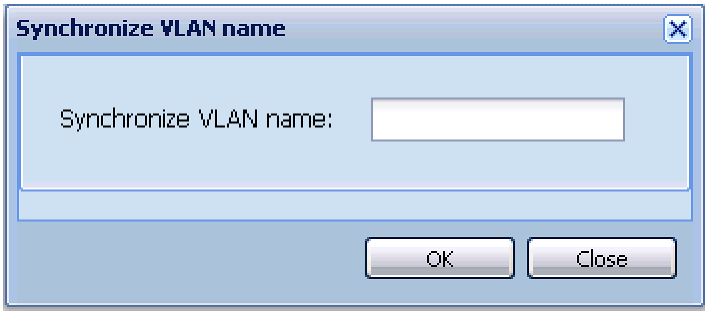
Procedure steps

Step Action

1 From the Navigation tree, select **Default (1)**.

2 Click **Synchronize VLAN Name** button on the content pane toolbar.

The Synchronize VLAN name dialog box appears.



3 In the **Synchronize VLAN name** field, type the VLAN name.

4 Click **OK**.

—End—

Managing Rapid Spanning Tree Protocol

The following sections topics describe how to edit Rapid Spanning Tree Protocol (RSTP) instances and provide information about RSTP membership:

- "Configuring RSTP properties" (page 52)

Configuring RSTP properties

Perform the following procedure to configure RSTP properties.

Procedure steps

Step	Action
1	From the navigation tree, select the **RSTP** folder.
2	Select the **Rapid STG** folder and select the **Config** item.
3	In the contents pane, click the item that you want to edit. The field is highlighted, and you can edit directly in the table.
4	Type information in the text boxes, or select from a list. The changes appear in bold.
5	On the VLAN Manager toolbar, click **Apply Changes**.

—End—

Creating and configuring VLANs for Rapid Spanning Tree Protocol

The following sections topics describe how to create and configure VLANs for Rapid Spanning Tree Protocol (RSTP) instances:

- "Adding a VLAN to the Rapid Spanning Tree" (page 52)
- "Deleting a VLAN from the Rapid Spanning Tree" (page 53)
- "Adding members to a VLAN group in Rapid Spanning Tree" (page 53)

Adding a VLAN to the Rapid Spanning Tree

Perform the following procedure to add a VLAN for RSTP.

Procedure steps

Step	Action
1	From the navigation tree, select the **RSTP** folder.
2	Select the **Rapid STG** folder and do one of the following: a. From the VLAN Manager menu bar, choose **Edit > Insert.** b. On the VLAN Manager toolbar, click **Insert**. The New VLAN dialog box appears.
3	Insert values or select options in the option boxes.
4	Click **Ok**.

—End—

Deleting a VLAN from the Rapid Spanning Tree

Perform the following procedure to delete a VLAN from RSTP.

Procedure steps

Step **Action**

1 In the navigation pane, select a VLAN from the **Rapid STG** folder and do one of the following:

a. From the VLAN Manager menu bar, choose **Edit > Delete**.

b. On the VLAN Manager toolbar, click **Delete**.

The Delete dialog box appears.

2 Click **Yes** to confirm the deletion of the VLAN.

—End—

Adding members to a VLAN group in Rapid Spanning Tree

Perform the following procedure to add members to a VLAN group in RSTP.

Procedure steps

Step **Action**

1 From the navigation pane, under a Rapid STG group, select the VLAN to which you want to add a member.

2 Do one of the following:

a. From the VLAN Manager menu bar, choose **Edit > Insert**.

b. On the VLAN Manager toolbar, click **Insert**.

The Add VLAN dialog box appears.

3 Select the additional members from the device list.

4 Insert the values or select the options as required.

5 Click **OK**.

—End—

Managing Multiple Spanning Tree Protocol instances

The following sections topics describe how to add and delete Multiple Spanning Tree Protocol (MSTP) instances and provide information about MSTP membership:

Navigation

- "Adding an MSTI in Multiple Spanning Tree" (page 54)
- "Deleting an MSTI" (page 54)
- "Adding port members" (page 55)
- "Editing MSTP properties" (page 55)

Adding an MSTI in Multiple Spanning Tree

Perform the following procedure to add an MSTI instance.

Procedure steps

Step	Action
1	From the navigation tree, select the **MSTP** folder.
2	On the VLAN Manager toolbar, click **Add**. The **Add MSTP** dialog box appears.
3	In the **Id** field, enter the desired MSTI identifier.
4	Select the **Devices** required for the MSTP.
5	Click **Save**.

—End—

Deleting an MSTI

Perform the following procedure to delete an MSTI instance.

Procedure steps

Step	Action
1	In the Navigation pane, under the **MSTP** folder, select the MSTI instance to delete
2	On the VLAN Manager toolbar, click **Delete**.
3	Click **Yes** to confirm the deletion, or **No** to cancel the deletion, and return to the table view.

—End—

Adding port members

Perform the following procedure to add ports to an MSTI or CIST.

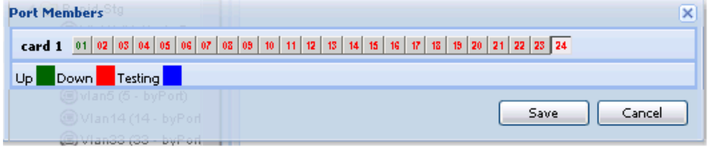
Procedure steps

Step Action

1 In the **Port Members** table, select a device in the list.

2 Click in the **PortMembers** cell for the device to which you want to add port membership.

The PortMembers dialog box appears .



3 Select the port number(s).

4 Click **Save**.

—End—

Editing MSTP properties

Perform the following procedure to edit the MSTP properties.

Procedure steps

Step Action

1 In the Navigation pane, select the **CIST** folder.

2 To edit the MSTP properties, choose the **MSTP** tab.

3 To edit the CIST properties, choose the **CIST** tab.

4 To edit the MSTI Region properties, choose the **MSTI Region** tab.

5 In the contents pane, click the item that you want to edit.

The field is highlighted, and you can edit directly in the table.

6 Type information in the text boxes, or select from a list.

The changes appear in bold.

7 On the VLAN Manager toolbar, click **Apply Changes**.

—End—

Managing VLANs for MSTP

The following sections topics describe how to create and delete VLANs for Multiple Spanning Tree Protocol (MSTP) instances, as well as hpw to add memberts to a VLAN group.

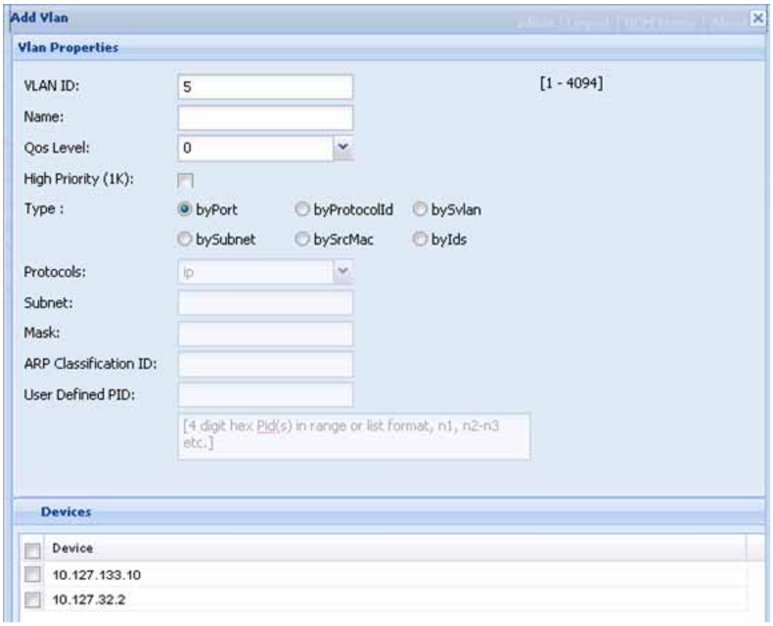
- "Adding a VLAN in Multiple Spanning Tree" (page 56)
- "Deleting a VLAN in Multiple Spanning Tree" (page 57)
- "Adding members to a VLAN group in Multiple Spanning Tree" (page 58)

Adding a VLAN in Multiple Spanning Tree

Perform the following procedure to add a VLAN to the CIST or MSTI.

Procedure steps

Step	Action
1	From the navigation tree, select the **MSTP** folder.
2	Select the **CIST** folder or an **MSTI** folder.
3	On the VLAN Manager toolbar, click **Add**. The **Add VLAN** dialog box appears.



Add Vlan

Vlan Properties

VLAN ID: 5 [1 - 4094]

Name:

Qos Level: 0

High Priority (1K): □

Type : ● byPort ○ byProtocolId ○ bySvlan ○ bySubnet ○ bySrcMac ○ byIds

Protocols: ip

Subnet:

Mask:

ARP Classification ID:

User Defined PID:

[4 digit hex Pid(s) in range or list format, n1, n2-n3 etc.]

Devices

□	Device
□	10.127.133.10
□	10.127.32.2

4 Insert values or select options in the option boxes.

5 Click **Save**.

—End—

Deleting a VLAN in Multiple Spanning Tree

Perform the following procedure to delete a VLAN in Multiple Spanning Tree.

Procedure steps

Step Action

1 In the Navigation pane, under the **CIST** or **MSTI** folder, select the VLAN to delete.

2 On the VLAN Manager toolbar, click **Delete**.

3 Click **Yes** to confirm the deletion, or **No** to cancel the deletion, and return to the table view.

—End—

Adding members to a VLAN in Multiple Spanning Tree

Perform the following procedure to add members to a VLAN in Multiple Spanning Tree.

Procedure steps

Step	Action
1	From the Navigation pane, under an STG group, select the VLAN to which you want to add a member.
2	On the VLAN Manager toolbar, click **Add**. The Add VLAN dialog box appears.
3	Select the additional members from the device list.
4	Insert the values or select the options as required.
5	Click **Save**.

—End—

Configuring port members

This section provides information about the port membership types supported in COM, and how to use VLAN Manager to configure them. For information about how to view port membership, including viewing unassigned ports, see "Viewing port membership information" (page 82)

This section contains the following topics:

- "Port membership types" (page 58)
- "Adding port members" (page 59)
- "Adding tagged ports" (page 59)

Port membership types

In the Navigation pane, the four tables represent the various port memberships described in the following table.

Port membership types and STGs

Port type	Description
Unassigned	A port that does not belong to any STG. If no devices in the network contain unassigned ports, a table does not appear in the contents pane. For more information, see "Viewing the unassigned ports" (page 83).

Port type	Description
Tagging	A port that has tagging enabled and can belong to multiple STGs. If a tagged frame is received on a tagged port, with a VLAN ID specified in the tag, the switch directs it to that VLAN, if it is present. For more information, see "Viewing tagged ports" (page 84).
Isolated Routing Port (IRP)	A port that can only route IP packets and does not belong to any STG or VLAN. For more information, see "Viewing isolated router ports" (page 84).
Bridge Routing (brouter ports)	A port that can route IP packets as well as bridge all non routable traffic. The routing interface is not subjected to the Spanning Tree Protocol. For more information, see "Viewing bridge routing ports" (page 85).

Adding port members

Perform the following procedure to add port members.

Procedure steps

Step	Action
1	In the **Port Members** table, select a device in the list.
2	Click in the **PortMembers** cell for the device to which you want to add port membership.
3	Select the port number(s).
4	Click **Save**.

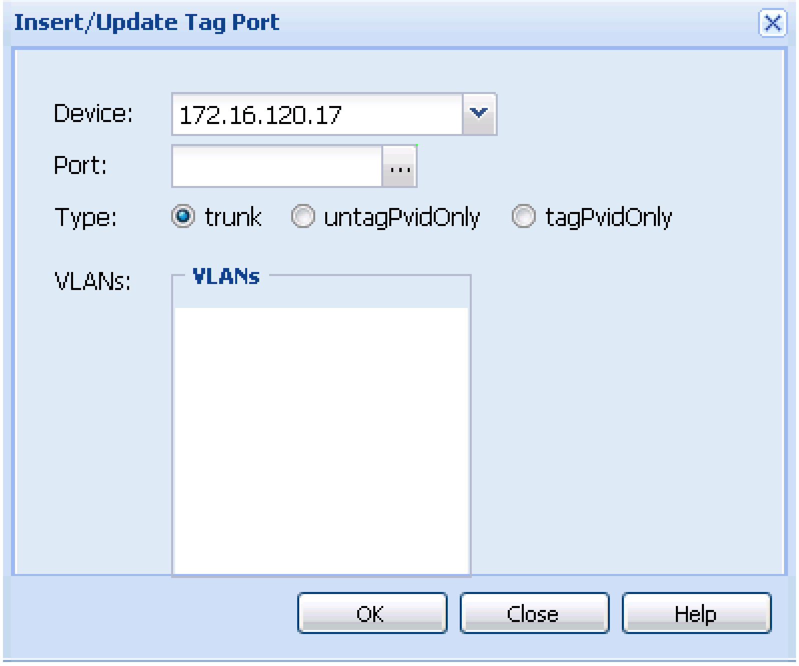
—End—

Adding tagged ports

Perform the following procedure to add tagged ports.

Procedure steps

Step	Action
1	In the Navigation pane, select **Tagging**. The Tagging Ports table appears in the contents pane.
2	Click **Add**. The Insert/Update Tag Port dialog box appears.



Insert/Update Tag Port

Device: 172.16.120.17

Port:

Type: ● trunk ○ untagPvidOnly ○ tagPvidOnly

VLANs: VLANs

3 Select the **Device** address you want to add.

4 Click the **Port** ellipsis button. The ports for the selected device appears.

5 Select the port you want to use.

6 Click **Save**. The ports dialog box closes.

7 Select the VLAN available on the selected device.

8 Click **OK**. An Operation Result dialog box appears when the addition is complete.

9 Click **OK**. The Operation Result dialog box closes and the added port is visible in the Content pane.

—End—

Job aid

The following table describes the fields in the Tagging Ports table.

Field	Description
Device	IP address, system name, or host name of the device.
Port	Port on which tagging is enabled.

Field	Description
Type	Type of port: trunk or untagPvidOnly or tagPvidOnly.
VlanIds	VLAN IDs of which the port is a member.

Configuring routing on a VLAN interface

VLAN Manager allows you to configure certain routing interfaces. For more information, see the following topics:.

- "Enabling OSPF on a VLAN interface" (page 61)
- "Inserting a VRRP interface on a VLAN" (page 62)

Enabling OSPF on a VLAN interface

You can use VLAN Manager to enable and disable OSPF routing on a VLAN interface.

Perform the following procedure to enable OSPF routing on a VLAN interface.

Procedure steps

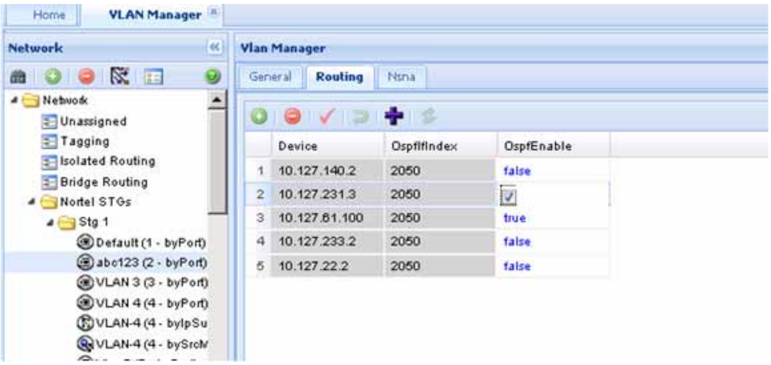
Step Action

1 In the Navigation pane, select a VLAN.

The General tab appears in the contents pane and displays the VLAN table.

2 Click the **Routing** tab.

The Routing tab appears in the contents pane.



	Device	OspfIfIndex	OspfEnable
1	10.127.140.2	2050	false
2	10.127.231.3	2050	☑
3	10.127.61.100	2050	true
4	10.127.233.2	2050	false
5	10.127.22.2	2050	false

3 In the **OspfEnable** field, choose **true** to enable OSPF on this VLAN.

4 Click **Apply Changes**.

—End—

Inserting a VRRP interface on a VLAN

You can use VLAN Manager to insert a VRRP routing interface for a VLAN. Before inserting the VRRP interface, ensure the VLAN has an assigned IP address for routing. Perform the following procedure to insert a VRRP interface on a VLAN.

Procedure steps

Step **Action**

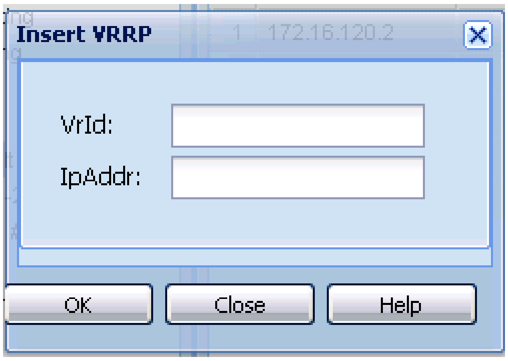
1 In the Navigation pane, select a VLAN.

The General tab appears in the contents pane and displays the VLAN table.

2 Select a device that supports VRRP.

3 Click **Add Vrrp** button (+ sign).

The Insert VRRP dialog box appears.



4 In the **VrId** and **IpAddr** field, enter the Virtual Router ID and IP address for the VRRP interface.

5 Click **Ok**.

The new VRRP interface appears in Routing Manager under the VRRP Interfaces folder.

—End—

Domain synchronization

Domain synchronization allows you to distribute the VLAN configuration from one device, called the server node, to other devices in your network. Domain synchronization synchronizes the VLANs between the same spanning tree mode devices.

With domain synchronization you can:

- select any subset of devices to be part of the synchronization domain (sync domain)
- synchronize to any subset of the VLANs of the server node
- add new server node VLANs
- delete or modify existing server node VLANs

To apply domain synchronization to your network, first gain familiarity with the domain synchronization interfaces and then perform the appropriate procedures. The following list provides links to the information you require:

- "Domain synchronization interfaces" (page 63)
  - — "Sync Domain interface" (page 64)
  - — "New server node VLAN interface" (page 66)
  - — "IP Address and Net Mask interfaces" (page 67)
- "Domain synchronization procedures" (page 68)
  - — "Creating a sync domain" (page 68)
  - — "Adding a VLAN to a sync domain server node" (page 69)
  - — "Modifying a sync domain" (page 71)
  - — "Modifying a sync domain server node VLAN" (page 71)
  - — "Deleting a sync domain" (page 72)
  - — "Deleting a server node VLAN" (page 73)

Domain synchronization interfaces

There are three domain synchronization interfaces to become familiar with before performing the related procedures:

- "Sync Domain interface" (page 64)

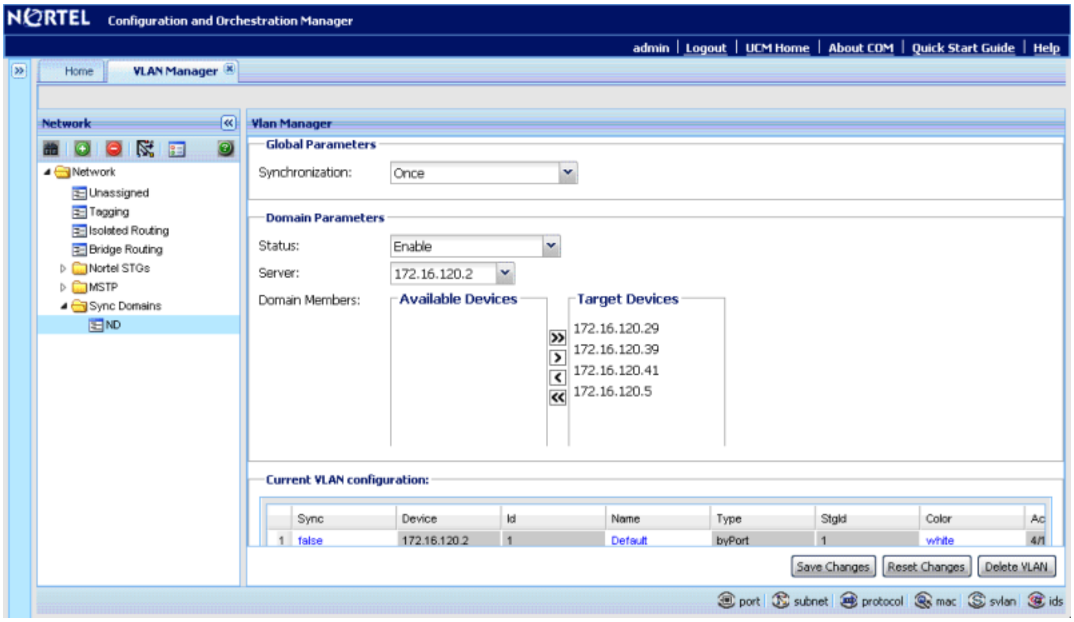
  Use the Sync Domain interface to define a new sync domain or to modify an existing sync domain.
- "New server node VLAN interface" (page 66)

  Use the New VLAN interface to add a new VLAN to the server node.
- "IP Address and Net Mask interfaces" (page 67)

Use the IP Address and Net Mask interfaces to review and change the IP addresses and network masks of domain members.

Sync Domain interface

The figure below shows the Sync Domain interface which you use to define a new sync domain or modify an existing sync domain. The table that follows the figure describes the elements of the interface. Relevant procedures follow the table.



Synchronization: Once

Status: Enable

Server: 172.16.120.2

Domain Members:

Target Devices: 172.16.120.29, 172.16.120.39, 172.16.120.41, 172.16.120.5

	Sync	Device	Id	Name	Type	StgId	Color	Ac
1	false	172.16.120.2	1	Default	byPort	1	white	4/1

Table 7
Sync Domain interface elements

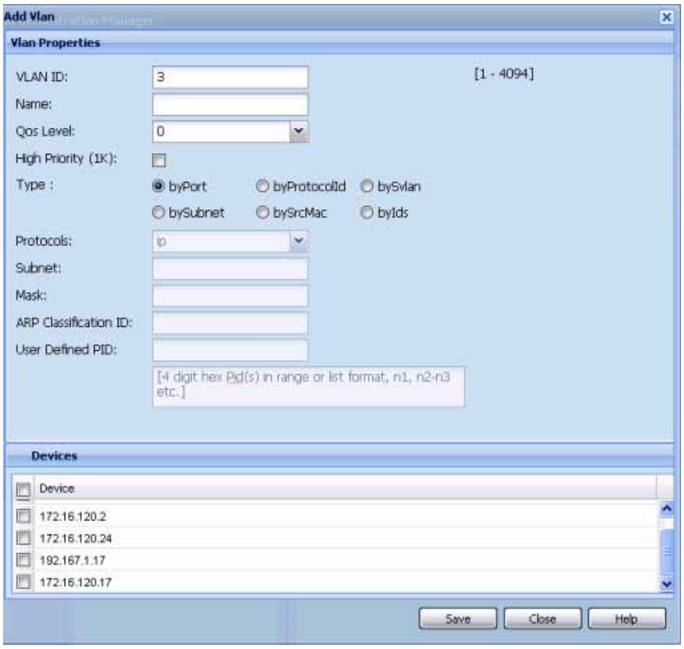
Field	Description
Sync Domain name	The name of a sync domain can include any printable character to a maximum of 32 characters.
Global Parameters	Global parameters apply to all sync domains.
Synchronization	Synchronization is a global parameter. There are two synchronization options: • Once Synchronization occurs when you save the domain by clicking **Save Changes**. • Configuration change in VM Synchronization occurs if any server node configurations are changed in VLAN Manager.
Domain Parameters	Domain parameters only apply to the specific sync domain whose Sync Domain interface is open.

Field	Description
Status	**Enable** activates the sync domain. Synchronization does not occur when the status is **Disable**, regardless of the global parameters.
Server Node	The VLAN configurations of the server node provide the synchronization source. You select the server node from a list of all devices in your network that are discovered by VLAN Manager.
Domain Members	Domain members are the devices whose VLANs are synchronized to the server node. You select these target devices from a list of available devices. The list is generated by filtering the devices discovered by VLAN Manager using the server node's spanning tree mode.
Current VLAN Configuration	A table where each row is dedicated to one server node VLAN. The columns of the table display VLAN attributes.
Current VLAN Configuration table, Sync	The Sync attribute is unique to domain synchronization. The VLAN configuration is distributed to domain members only when Sync is **True**, regardless of any other synchronization settings. Sync is **False** for all VLANs when the sync domain is created.
Current VLAN Configuration table, IP Address	The IP address of the server node is displayed. For information on the IP addresses used for domain members, see "IP Address and Net Mask interfaces" (page 67).
Current VLAN Configuration table, Net Mask	The network mask of the server node VLAN is displayed. For information on the network masks for domain members, see "IP Address and Net Mask interfaces" (page 67).
Current VLAN Configuration table, Other columns	These are standard VLAN attributes.
Save Changes	Pressing **Save Changes** saves any changes you have made to the sync domain definition or to server node VLAN configurations. If **Once** is selected as a synchronization option, then domain members are synchronized now. Domain members are also synchronized if you changed any server node VLAN configurations.
Reset Changes	Pressing **Reset Changes** removes all changes made since the last **Save Changes**.
View Log	Click **View Log** to view the sync domain log file, syncDomains.log.
Help	Pressing **Help** invokes on-line help for the Sync Domain interface.

New server node VLAN interface

The figure below shows the New VLAN interface which you use to add a new VLAN to the server node. The table that follows the figure describes the elements of the interface. Relevant procedures follow the table.

New server node VLAN interface



Add Vlan

Vlan Properties

VLAN ID: 3 [1 - 4094]

Name:

Qos Level: 0

High Priority (1K): □

Type : ● byPort ○ byProtocolId ○ bySvlan ○ bySubnet ○ bySrcMac ○ byIds

Protocols: ip

Subnet:

Mask:

ARP Classification ID:

User Defined PID:

[4 digit hex Pid(s) in range or list format, n1, n2-n3 etc.]

Devices

□	Device
□	172.16.120.2
□	172.16.120.24
□	192.167.1.17
□	172.16.120.17

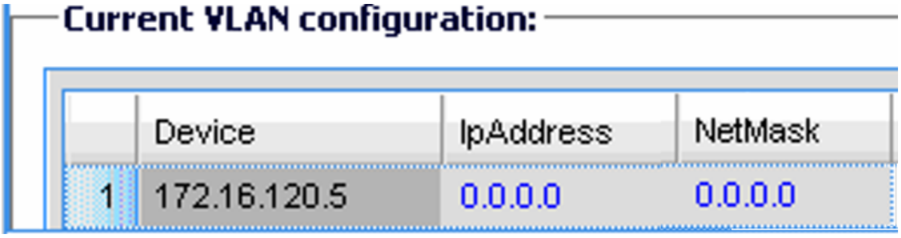
Element	Description
VLAN Id	This is the identity of the VLAN. VLAN Manager fills this with the next available number but you can change it. The VLAN Id ranges from 1 to 4094.
Name	You enter a name for the VLAN.
QOS Level	You can select from levels 0 through 7.
High Priority (1K)	You can chose to activate this, or leave unselected.
Type	You can choose byPort or byProtocolId. If byProtocolId is chosen, then you can change the default ProtocolId from ip to one of 15 other options.
Subnet, Mask, ARP-Classi-fication -Id, UsrDefined PId	One or more of these fields may be enabled, depending on the ProtocolId.
IP Address	You enter the IP address of the VLAN.
Net Mask	You enter the network mask of the VLAN.

Element	Description
Save	Press this button to create the new VLAN. The New VLAN interface closes and the VLAN appears in the Current VLAN Configuration table on the Sync Domain interface.
Close	Press Close to cancel any changes you have made and close the interface.
Help	This button invokes online help for the New VLAN interface.

IP Address and Net Mask interfaces

When a sync domain is created, all VLANs of the server node are listed in the Sync Domain interface. The IP address and network mask of each of these VLANs is provided in the Current VLAN Configuration table (see Table 7 "Sync Domain interface elements" (page 64) for details).

VLAN Manager generates IP addresses and network masks for domain member VLANs from the IP address and network mask of the server node VLAN. You access these generated values by double-clicking the IP address or network mask cell of the Current VLAN Configuration table. You can use these interfaces to review and change the IP addresses and network masks of domain members.



Current VLAN configuration:

	Device	IpAddress	NetMask
1	172.16.120.5	0.0.0.0	0.0.0.0

IP Address interface

VLAN Manager generates IP addresses for domain member VLANs by incrementing the IP address of the server node VLAN, as shown in the figure of the **IP Address** interface, above.

If the IP address is black, the IP address is available at the device. If the IP address is red, the IP address is not available. You can enter IP addresses manually; VLAN Manager looks for available IP addresses at the devices and assigns those IP addresses. If an IP address is not available, the entry defaults to 0.0.0.0.

Save changes: When you press **Save changes**, any changes you have made are saved and the interface closes.

Reset changes: When you press **Reset changes**, any changes you have made are discarded and the interface closes.

Net Mask interface

VLAN Manager generates network masks for domain member VLANs by duplicating the network mask of the server node VLAN, as shown in the figure of the **Net Mask** interface, above.

If the network mask is black, the mask is available at the device. If the network mask is red, the network mask is not available. You can enter network masks manually. If a network mask is not available, the entry defaults to 0.0.0.0.

Save changes and **Reset changes** for the Net Mask interface are the same as described for the IP Address interface.

> **ATTENTION**
> If the IP address and a network mask are not available at the device, the VLAN is synchronized except for the IP address and network mask.

Domain synchronization procedures

You can create any number of sync domains. In addition to creating sync domains, you can add a new VLAN to the server node, modify the settings for an existing sync domain, change the attributes of an existing VLAN, and delete a sync domain or a server node VLAN. The domain synchronization procedures are:

- "Creating a sync domain" (page 68)
- "Adding a VLAN to a sync domain server node" (page 69)
- "Modifying a sync domain" (page 71)
- "Modifying a sync domain server node VLAN" (page 71)
- "Deleting a sync domain" (page 72)
- "Deleting a server node VLAN" (page 73)

Creating a sync domain

Perform this procedure to create a new sync domain. This procedure does not provide instructions for adding a new VLAN to the server node; those instructions are provided by "Adding a VLAN to a sync domain server node" (page 69).

Prerequisites

- Familiarity with the Sync Domain interface is required for this procedure. See "Sync Domain interface" (page 64) for more details.

Procedure steps

Step	Action
1	Start VLAN Manager.
2	Select (single click) **Sync Domains**.
3	From the toolbar, click the plus (+) sign. The New Sync Domain dialog box appears.
4	In the Domain Name field, type a name for the new sync domain.
5	Click **Save**. The Sync Domain interface appears.
6	In the **Global Parameters** region, select the required synchronization option.
7	In the **Domain Parameters** region, select **Enable**.
8	From the **Server** list, click the down arrow to expand the list and select the node you want as the server node.
9	To add devices to the domain, do one of the following: • To add one device, select it from the **Available devices** list and click **>>** to move it to the **Target devices** list. • To add several devices, hold down the Ctrl key, click on each device in the **Available devices** list, release the Ctrl key, and click **>>** to move the devices to the **Target devices** list. • To add a contiguous block of devices, hold down the Shift key, click on the first device in the **Available devices** list, click on the last device, release the Shift key, and click **>>** to move the devices to the **Target devices** list.
10	In the **Current VLAN Configuration** table, click the **Sync** entry to change it to **True** for each VLAN that you want to act as a synchronization source.
11	Click **Save Changes**.

—End—

Adding a VLAN to a sync domain server node

Perform the following procedure to add a VLAN to the server node of a sync domain.

Prerequisites

- Familiarity with the New VLAN interface is required for this procedure. See "New server node VLAN interface" (page 66) for more details.

Procedure steps

Step	Action
1	Start VLAN Manager.
2	Expand **Sync Domains**.
3	Select the sync domain to which you want to add a VLAN.
4	From the toolbar, click the plus (+) sign. The New VLAN interface appears.
5	For **STG Id**, click the down arrow to the right of the **STG Id** field and select the required STG Id from the list.
6	Edit the **Id** field if the assigned number does not meet your requirements.
7	In the **Name** field, type a name for the VLAN.
8	Select the **QOS Level**.
9	For **Type**, if you require byProtocolId, then: • In the **Type** area, select **byProtocolId**. • In the **ProtocolId** area, select the required **ProtocolId** . • If Subnet, Mask, ARP-Classification-Id, or UsrDefinedPId are enabled, change as required.
10	In the **IP Address** field, type the IP address of the VLAN.
11	In the **Net Mask** field, type the net mask of the VLAN.
12	Click **Save**. The New VLAN interface closes and the new VLAN appears in the Current VLAN Configuration table.
13	From the Sync Domain interface, click **Save Changes**. The SyncDomain Operation Description interface appears.

—End—

Modifying a sync domain

Perform the following procedure to modify an existing sync domain. This procedure does not provide instructions for modifying a server node VLAN; those instructions are provided by "Modifying a sync domain server node VLAN" (page 71).

Prerequisites

- Familiarity with "Creating a sync domain" (page 68) is required for this procedure.

Procedure steps

Step	Action
1	Start VLAN Manager.
2	Expand **Sync Domains**.
3	Select the required sync domain.
4	Modify the **Global Parameters** as required. Global parameters apply to all sync domains.
5	Change the **Status** and **Server** as required.
6	For **Domain Members**, use **>** and **>>** to add members to the domain and use **<** and **<<** to remove members from the domain.
7	In the **Current VLAN Configuration** table, change the **Sync** entry as required: **True** to synchronize domain members to the VLAN, **False** to remove the VLAN from the sync domain.
8	Click **Save Changes**.

—End—

Modifying a sync domain server node VLAN

Perform the following procedure to modify a VLAN of a device that is acting as a server node for a sync domain.

Prerequisites

- Familiarity with the IP Address and Net Mask interfaces is required for this procedure. See "IP Address and Net Mask interfaces" (page 67) for details.

Procedure steps

Step **Action**

1 Start VLAN Manager.

2 Expand **Sync Domains**.

3 Select the required sync domain.

Refer to the **Current VLAN Configuration** table for the remainder of this procedure.

4 To add (**True**) or remove (**False**) the VLAN from the sync domain, toggle the **Sync** field as required.

5 To change the name of the VLAN, edit the **Name** cell.

6 To change the port members, double-click the **PortMembers** cell and click a port number to select or deselect the port.

A port is selected when the port number is depressed.

7 To change IP addresses, double-click the **IP Address** cell to open the IP Address interface.

8 Modify the IP addresses as required.

9 Click **OK** to save your changes and close the IP Address interface.

10 To change network masks, double-click the **Net Mask** cell to open the Net Mask interface.

11 Modify the network masks as required.

12 Click **OK** to save your changes and close the Net Mask interface.

13 Click **Save Changes**.

The SyncDomain Operation Description interface appears.

—End—

Deleting a sync domain

Perform the following procedure to delete a sync domain.

Procedure steps

Step **Action**

1 Start VLAN Manager.

2 Expand **Sync Domains**.

3 Select the required sync domain.

4 From the toolbar, click the (***X***) sign or click **Delete VLAN**.

5 Click **Save changes** when asked to confirm the action.

—End—

Deleting a server node VLAN

Perform the following procedure to delete a server node VLAN.

Procedure steps

Step **Action**

1 Start VLAN Manager.

2 Expand **Sync Domains**.

3 Select the required sync domain.

4 In the **Current VLAN Configuration** table, select any cell of the VLAN you want to delete.

5 From the toolbar, click the ex (X) sign or click **Delete VLAN**.

6 Click **Save changes** when asked to confirm the action.

The VLAN is deleted from the server node. If the sync domain is enabled, the VLAN is also deleted from all domain member devices.

—End—

Viewing STG and VLAN information

You can use VLAN Manager to monitor the status of STGs and VLANs in the network, as well as view information about ports. This section provides information about the following topics:

- "Viewing STG information" (page 73)
- "Viewing VLAN information" (page 77)
- "Viewing port membership information" (page 82)

Viewing STG information

This section provides information about the following topics:

- "Viewing Spanning Tree Groups" (page 74)
- "Viewing STG status" (page 74)

- "Viewing STG root status" (page 76)

Viewing Spanning Tree Groups

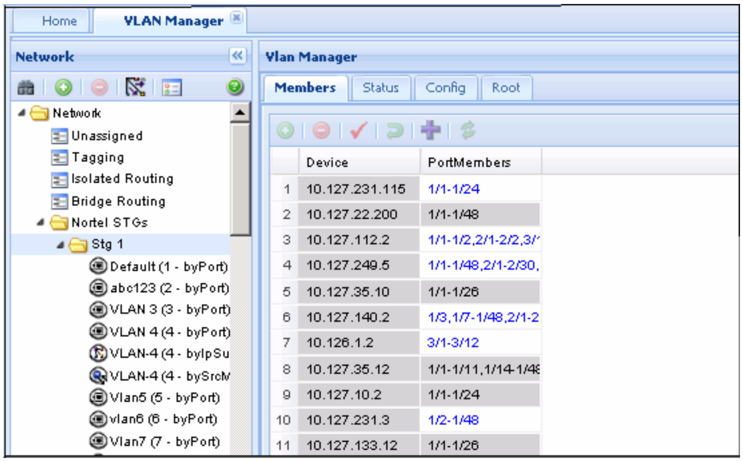
All devices supported by COM support the IEEE 802.1D Spanning Tree Protocol and at least one instance of a Spanning Tree Group.

Perform the following procedure to view an STG.

Procedure steps

Step **Action**

1 Open the folder for the STG you want to view.



	Device	PortMembers
1	10.127.231.115	1/1-1/24
2	10.127.22.200	1/1-1/48
3	10.127.112.2	1/1-1/2,2/1-2/2,3/
4	10.127.249.5	1/1-1/48,2/1-2/30,
5	10.127.35.10	1/1-1/26
6	10.127.140.2	1/3,1/7-1/48,2/1-2
7	10.126.1.2	3/1-3/12
8	10.127.35.12	1/1-1/11,1/14-1/48
9	10.127.10.2	1/1-1/24
10	10.127.231.3	1/2-1/48
11	10.127.133.12	1/1-1/26

—End—

Viewing STG status

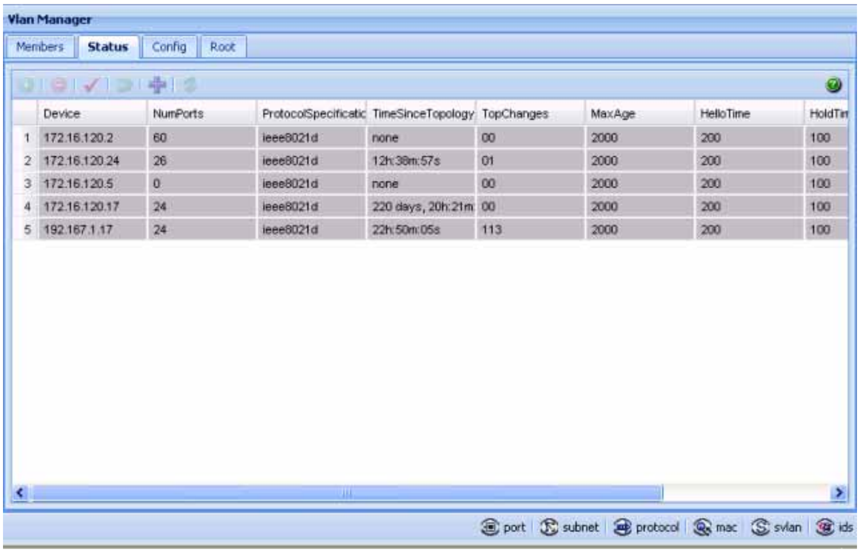
Use the read-only Status table to view the status of the Spanning Tree Protocol for the selected STG that is associated with the network. Perform the following procedure to open the Status table.

Procedure steps

Step **Action**

1 In the Navigation pane, open an STG and select **Status**.

The Status table appears in contents pane.



	Device	NumPorts	ProtocolSpecificatic	TimeSinceTopology	TopChanges	MaxAge	HelloTime	HoldTir
1	172.16.120.2	60	ieee8021d	none	00	2000	200	100
2	172.16.120.24	26	ieee8021d	12h:38m:57s	01	2000	200	100
3	172.16.120.5	0	ieee8021d	none	00	2000	200	100
4	172.16.120.17	24	ieee8021d	220 days, 20h:21m	00	2000	200	100
5	192.167.1.17	24	ieee8021d	22h:50m:05s	113	2000	200	100

—End—

Job aid The following table describes the fields in the Status table.

Field	Description
Device	IP address of the bridge.
NumPorts	Number of ports controlled by this bridging entity.
Protocol Specification	An indication of which version of the Spanning Tree Protocol (STP) is operating. The IEEE 802.1d implementations display ieee8021d.
TimeSince Topology Change	Time in hundredths of a second since the last time a topology change was detected by the bridge entity or STG.
TopChanges	The number of topology changes detected by this bridge since the management entity was last reset or initialized.
MaxAge	Maximum age of STP information learned from the network on any port before it is discarded, in units of hundredths of a second. This is the actual value that the bridge is currently using. The default value is 2000 (20 seconds).
HelloTime	Amount of time in hundredths of a second between transmission of configuration bridge protocol data units (BPDUs) by this device on any port when it is the root of the spanning tree. The default value is 200 (2 seconds).

Field	Description
HoldTime	Time interval in hundredths of a second during which no more than two configuration BPDUs are transmitted by this device. The default value is 100 (1 second).
ForwardDelay	Time interval in hundredths of a second that controls how fast a port changes its spanning state when moving toward the Forwarding state. This value determines how long the port stays in each of the Listening and Learning states, which precede the Forwarding state. This value is also used when a topology change is detected and is under way, to age all dynamic entries in the Forwarding Database. The default value is 1500 (15 seconds).

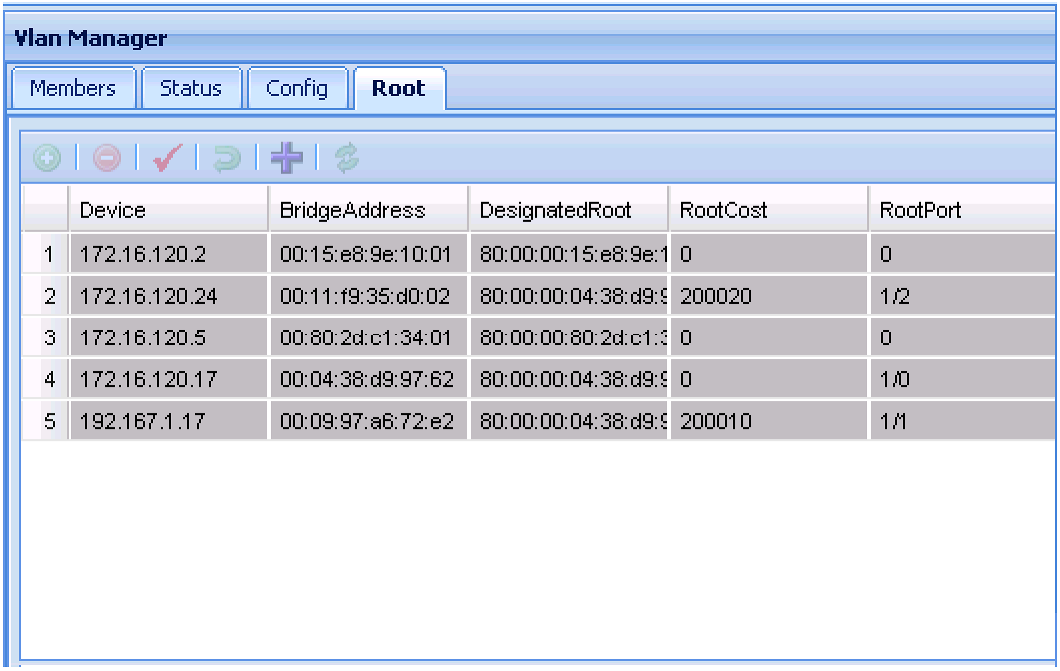
Viewing STG root status

Use the read-only Root table to view information about the device acting as root within a selected STG. Perform the following procedure to view the root table.

Procedure steps

Step **Action**

1 In the Navigation pane, open an STG and select **Root**.



	Device	BridgeAddress	DesignatedRoot	RootCost	RootPort
1	172.16.120.2	00:15:e8:9e:10:01	80:00:00:15:e8:9e:1	0	0
2	172.16.120.24	00:11:f9:35:d0:02	80:00:00:04:38:d9:9	200020	1/2
3	172.16.120.5	00:80:2d:c1:34:01	80:00:00:80:2d:c1:3	0	0
4	172.16.120.17	00:04:38:d9:97:62	80:00:00:04:38:d9:9	0	1/0
5	192.167.1.17	00:09:97:a6:72:e2	80:00:00:04:38:d9:9	200010	1/1

—End—

Job aid The following table describes the fields in the Root table.

Field	Description
Device	IP address of a device in the STG.
Bridge Address	MAC address used by this bridge when it must be identified in a unique fashion.
Designated Root	Bridge identifier of the root of the spanning tree as determined by the Spanning Tree Protocol (as executed by this device). This value is used as the Root Identifier parameter in all configuration BPDUs originated by this device.
RootCost	Cost of the path to the root as seen from this bridge.
RootPort	Port number of the port that offers the lowest cost path from this bridge to the root bridge.

Viewing VLAN information

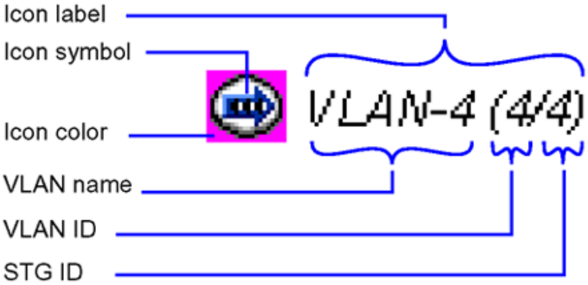
This section provides information about the following topics:

- "VLAN icons" (page 77)
- "Parts of VLAN icon" (page 77)
- "Viewing the Default VLAN" (page 79)
- "Updating VLAN discovery information" (page 81)

VLAN icons

The VLAN icons in the Navigation pane, represent the VLANs that are part of an STG. The following figure "VLAN Icon elements" (page 77) shows elements of VLAN icons.

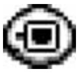
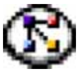
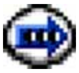
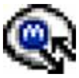
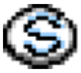
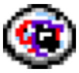
VLAN Icon elements



Parts of VLAN icon

The following table "Parts of a VLAN icon" (page 78) describes the elements of a VLAN icon.

Parts of a VLAN icon

<table>
<tr><th>Part</th><th colspan="2">Description</th></tr>
<tr><td rowspan="8">Icon symbol</td><td colspan="2">Shows the type of VLAN.</td></tr>
<tr><th>Symbol</th><th>Description</th></tr>
<tr><td></td><td>Port based-a VLAN in which the ports are explicitly assigned to the VLAN.</td></tr>
<tr><td></td><td>Subnet based-a VLAN in which ports are dynamically added to the VLAN based on source IP subnet.</td></tr>
<tr><td></td><td>Protocol based–a VLAN in which ports are dynamically added to the VLAN based on a network protocol.</td></tr>
<tr><td></td><td>MAC SA based–a VLAN in which ports are dynamically added to the VLAN based on the source MAC address.</td></tr>
<tr><td></td><td>Stacked VLAN— a VLAN in which packets are transparently tunneled through the sVLAN domain by adding a 4-byte header to each packet.</td></tr>
<tr><td></td><td>ID-based VLAN—a VLAN in which ports are dynamically added to the VLAN based on the VLAN ID.</td></tr>
</table>

<table>
<tr><th>Part</th><th colspan="2">Description</th></tr>
<tr><td rowspan="6">Icon label</td><td colspan="2">Shows information about the VLAN.</td></tr>
<tr><td><b>Label part</b></td><td><b>Description</b></td></tr>
<tr><td>VLAN name</td><td>The name of the VLAN.</td></tr>
<tr><td>VLAN ID</td><td>The ID number of the VLAN.</td></tr>
<tr><td>STG ID</td><td>The ID of the STG to which the VLAN belongs.</td></tr>
<tr><td>Typeface (italic or normal)</td><td>An italic icon label indicates that an IP address has been defined for the VLAN, and that the VLAN is routable.</td></tr>
</table>

Viewing the Default VLAN

The following devices are factory configured with all ports contained in a port-based VLAN called the default VLAN:

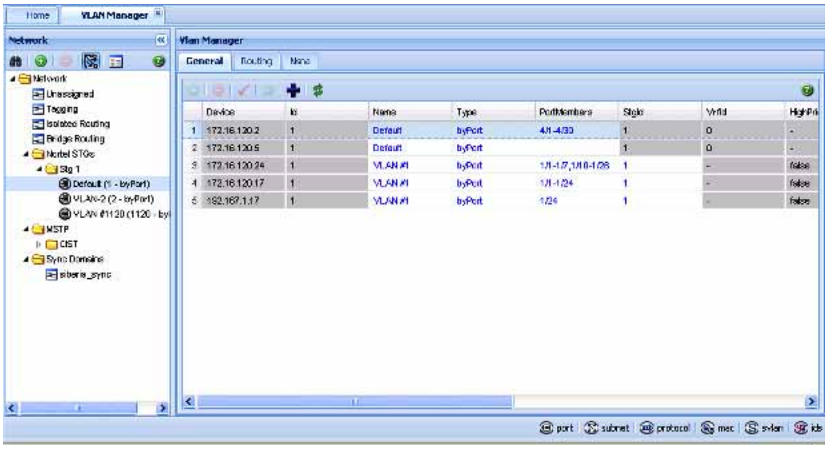
- Ethernet Routing Switch 8000 Series
- Passport (legacy) 1050/1100/1150/1200/1250 switches
- Ethernet Routing Switches 1424/1648/1612/1624
- BayStack 380/420
- Ethernet Switches 350/410/450/460/470
- Business Policy Switch 2000
- Ethernet Routing Switches 55xx/45xx/25xx/35xx

The VLAN ID of the default VLAN is always 1/1, and it is always a port-based VLAN. You cannot delete the default VLAN, although you can remove ports from it.

Perform the following procedure to view the Default Ports table.

Procedure steps

Step	Action
1	From the navigation tree, select **Default(1)**. The General tab appears in the contents pane and displays the Default VLAN table.



	Device	Id	Name	Type	PortMembers	StgId	VrfId	HighPri
1	172.16.120.2	1	Default	byPort	4/1-4/30	1	0	-
2	172.16.120.5	1	Default	byPort		1	0	-
3	172.16.120.24	1	VLAN #1	byPort	1/1-1/7,1/10-1/26	1	-	false
4	172.16.120.17	1	VLAN #1	byPort	1/1-1/24	1	-	false
5	192.167.1.17	1	VLAN #1	byPort	1/24	1	-	false

—End—

Job aid The following table describes the fields in the Default VLAN table.

Field	Description
Device	IP address, system name, or host name of the device.
ID	The VLAN ID.
Name	VLAN name
Type	Type by which you want to add the device. Options: by port, by subnet, by protocol, by source MAC Address, by SVLANs, and by ID.
Port Members	Ports that are assigned to the VLAN.
StgId	The STG ID. With Ethernet Switches 460 and 470, you can modify STG membership by modifying the value in the StgId field to the desired STG. When you apply the changes, the selected VLAN is removed from the old STG group and moved to the new STG group. If the new STG group already has an existing VLAN with the same ID, the members are combined into the same VLAN. If the VLAN does not already belong to the STG group, the new VLAN ID is added to the STG.
VrfId	The VRF ID.
HighPriority	In a Passport 1000 Series switch, you can select HighPriority mode for all traffic in the VLAN.
QosLevel	In an Ethernet Routing Switch 8000 Series, you can set the Quality of Service (QoS) level for traffic in the VLAN to a level between 0 and 7.

Field	Description
TosLevel	You can set the Type of Service level for traffic between 0 and 7.
IfIndex	Logical interface index assigned to the VLAN. This value can be in one of the following ranges: • Passport (legacy) 1050/1100/1150/1200/1250 switch: 257 to 512 • Ethernet Routing Switch 8000 Series: 2049 to 4096 **ATTENTION** This field does not apply to Ethernet Switch, Legacy BayStack, or Business Policy Switch 2000 switches.
IpAddress	IP address, if any, assigned to the VLAN for routing.
NetMask	Subnet mask associated with the VLAN IP address.

Updating VLAN discovery information

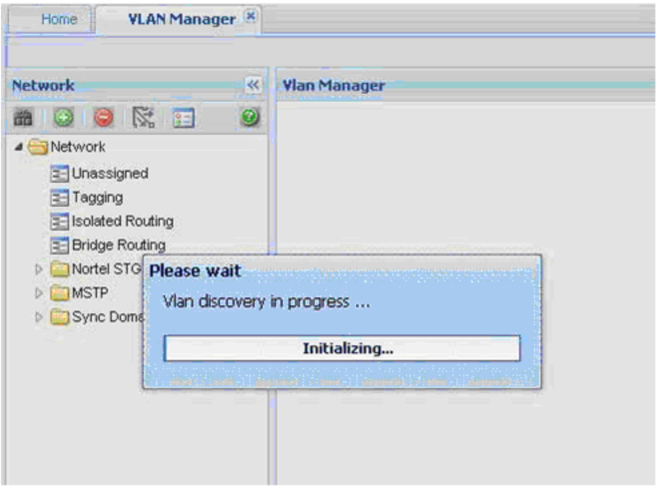
VLAN discovery polls VLAN and STG configuration from supported network devices and shows this information in the VLAN Manager window. You can use this feature to load any updated information that took effect since you opened VLAN Manager.

Perform the following procedure to discover VLAN devices.

VLAN discovery runs when the VLAN Manager opens. You can also run VLAN discovery by manually running a Vlan discovery.

Procedure steps

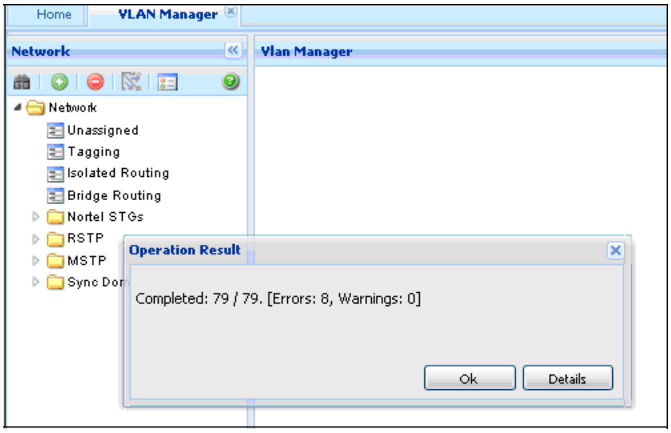
Step	Action
1	Click **Discover Vlans** on the Navigation pane, toolbar. An Operation Result information box appears when the discovery is complete.



Please wait

Vlan discovery in progress ...

Initializing...



Operation Result

Completed: 79 / 79. [Errors: 8, Warnings: 0]

2 Click **OK** to close the Operation Result information box.

—End—

Viewing port membership information

You can use VLAN Manager to monitor the status of ports in a VLAN. VLAN Manager allows you to view the following information:

- Ports in the network that are configured as unassigned, tagging, or Isolated Routing Ports (IRPs) and brouter ports
- Ports that are assigned to a particular Spanning Tree Group (STG)
- Ports that are in the forwarding and blocking states and device that has the root of an STG
- Ports that are members of a VLAN or multiple VLANs.

This section contains describes how to perform the following tasks:

- "Viewing the unassigned ports" (page 83)
- "Viewing tagged ports" (page 84)
- "Viewing isolated router ports" (page 84)
- "Viewing bridge routing ports" (page 85)
- "Viewing port members of an STG" (page 86)
- "Viewing VLAN Port Members in MSTP" (page 87)

Viewing the unassigned ports

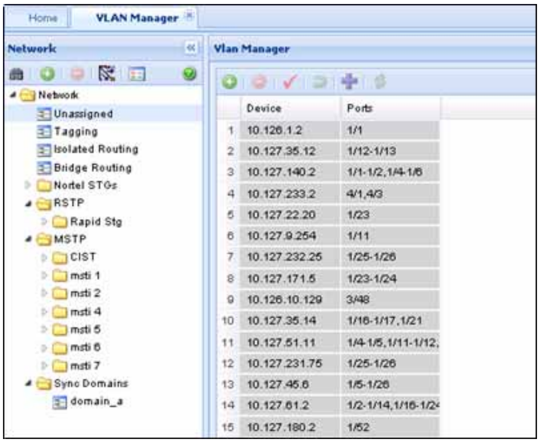
Perform the following procedure to view the unassigned ports.

Procedure steps

Step **Action**

1 In the Navigation pane, click **Unassigned**.

The Unassigned Ports table appears in the contents pane.



	Device	Ports
1	10.126.1.2	1/1
2	10.127.35.12	1/12-1/13
3	10.127.140.2	1/1-1/2,1/4-1/6
4	10.127.233.2	4/1,4/3
5	10.127.22.20	1/23
6	10.127.9.254	1/11
7	10.127.232.25	1/25-1/26
8	10.127.171.5	1/23-1/24
9	10.126.10.129	3/48
10	10.127.35.14	1/16-1/17,1/21
11	10.127.51.11	1/4-1/5,1/11-1/12,
12	10.127.231.75	1/25-1/26
13	10.127.45.6	1/5-1/26
14	10.127.61.2	1/2-1/14,1/16-1/2
15	10.127.180.2	1/52

—End—

Job aid The following table describes the Unassigned Ports table fields.

Field	Description
Device	IP address, system name, or host name of the device.
Ports	Ports not currently assigned to an STG.

Viewing tagged ports

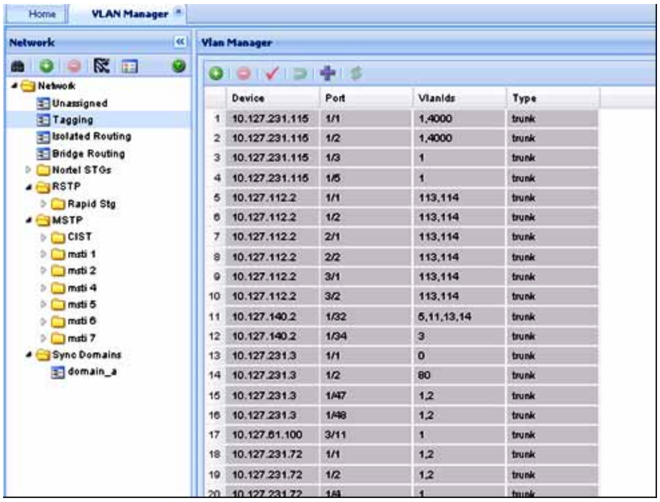
Perform the following procedure to view tagged ports.

Procedure steps

Step	Action

1 In the Navigation pane, select **Tagging**.

The Tagging Ports table appears in the contents pane.



	Device	Port	VlanIds	Type
1	10.127.231.115	1/1	1,4000	trunk
2	10.127.231.116	1/2	1,4000	trunk
3	10.127.231.115	1/3	1	trunk
4	10.127.231.115	1/6	1	trunk
5	10.127.112.2	1/1	113,114	trunk
6	10.127.112.2	1/2	113,114	trunk
7	10.127.112.2	2/1	113,114	trunk
8	10.127.112.2	2/2	113,114	trunk
9	10.127.112.2	3/1	113,114	trunk
10	10.127.112.2	3/2	113,114	trunk
11	10.127.140.2	1/32	5,11,13,14	trunk
12	10.127.140.2	1/34	3	trunk
13	10.127.231.3	1/1	0	trunk
14	10.127.231.3	1/2	80	trunk
15	10.127.231.3	1/47	1,2	trunk
16	10.127.231.3	1/48	1,2	trunk
17	10.127.61.100	3/11	1	trunk
18	10.127.231.72	1/1	1,2	trunk
19	10.127.231.72	1/2	1,2	trunk
20	10.127.231.72	1/4	1	trunk

—End—

Job aid The following table describes the fields in the Tagging Ports table.

Field	Description
Device	IP address, system name, or host name of the device.
Port	Port on which tagging is enabled.
VlanIds	VLAN IDs of which the port is a member.
Type	Type of port: access port or trunk port

Viewing isolated router ports

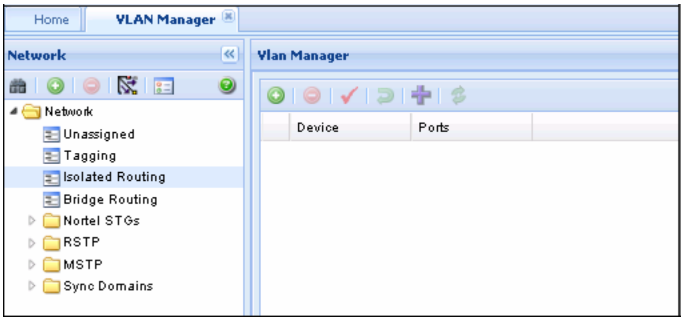
Perform the following procedure to view isolated router ports.

Procedure steps

Step	Action

1 In the Navigation pane, select **Isolated Routing**.

The Isolated Routing Ports table appears in the contents pane.



—End—

Job aid The following table describes the fields in the Isolated Routing Ports table.

Field	Descriptions
Device	IP address, system name, or host name of the device.
Ports	Ports that route only IP packets.

Viewing bridge routing ports

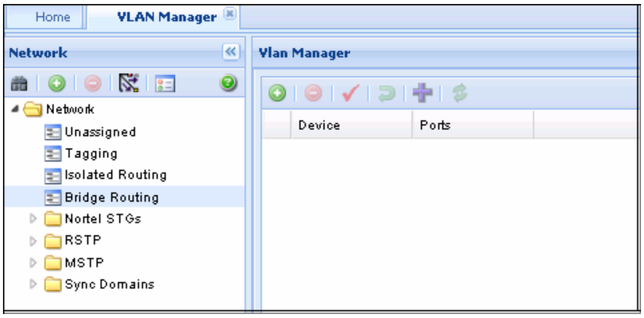
Perform this procedure to view bridge routing (brouter) ports on Passport 1000 Series switches and Ethernet Routing Switch 8000 Series.

Procedure steps

Step Action

1 In the Navigation pane, click **Bridge Routing**.

The Bridge Routing Ports table appears in the contents pane.



—End—

Job aid The following table describes the fields in the Bridge Routing Ports table.

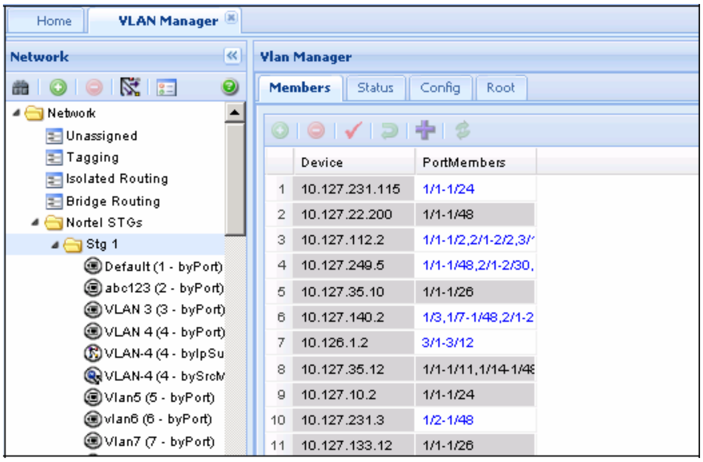
Field	Descriptions
Device	IP address, system name, or host name of the device.
Ports	Port numbers of the port on which frames are received.

Viewing port members of an STG

Use the Port Members table to view the ports that are members of the specified STG. Perform the following procedure to open the Port Members table.

Procedure steps

Step	Action
1	In the Navigation pane, click an STG, and then select **Members** from the tab in the content pane.



	Device	PortMembers
1	10.127.231.115	1/1-1/24
2	10.127.22.200	1/1-1/48
3	10.127.112.2	1/1-1/2,2/1-2/2,3/
4	10.127.249.5	1/1-1/48,2/1-2/30,
5	10.127.35.10	1/1-1/26
6	10.127.140.2	1/3,1/7-1/48,2/1-2
7	10.126.1.2	3/1-3/12
8	10.127.35.12	1/1-1/11,1/14-1/4
9	10.127.10.2	1/1-1/24
10	10.127.231.3	1/2-1/48
11	10.127.133.12	1/1-1/26

—End—

Job aid The following table describes the member table fields.

Field	Description
Device	IP address, system name, or host name of the device.
Port Members	Ports on the device that are members of the STG.

Viewing VLAN Port Members in MSTP

Use the Port Members table to view the ports that are members of the specified MSTI or CIST instance.

Perform the following procedure to open the Port Members table.

Procedure steps

Step	Action
1	From the navigation tree, select the **MSTP** folder.
2	Select the **CIST** folder or an **MSTI** folder.
3	Select a VLAN. The Members table appears in the contents pane.

—End—

Highlighting information on the topology map

You can view VLAN information by highlighting it on the topology map. Highlighting information on the topology map is helpful in monitoring and troubleshooting VLANs in your network. This section provides information about the following topics:

- "Viewing VLAN members on the topology map" (page 87)
- "Viewing STG port members on the topology map" (page 88)
- "Viewing STG root configuration on the topology map" (page 88)
-

Viewing VLAN members on the topology map

Perform the following procedure to highlight the members of a VLAN on the topology map.

Procedure steps

Step	Action
1	In the Navigation pane, choose a VLAN. The Ports table appears in the VLAN Manager contents pane.

2	On the VLAN Manager menu bar, click **Highligh on Topology**. The highlighted topology view appears in the COM contents pane.

—End—

Viewing STG port members on the topology map

When you select an STG in the VLAN Manager Navigation pane, you can view the devices and ports associated with that STG in the COM network topology map. This view can assist you in troubleshooting by identifying which ports are already members of the STG selected.

Perform the following procedure to highlight the STG ports on the topology map.

Procedure steps

Step	Action
1	In the VLAN Manager Navigation pane, choose an **STG Members** icon. The STG Members table appears in the VLAN Manager contents pane.
2	On the VLAN Manager menu bar, click **Highligh on Topology**. The devices containing STG ports are highlighted with a color and the device IP address.

—End—

Viewing STG root configuration on the topology map

You can get a quick view of which device is the root of the Spanning Tree Group and which ports are in the forwarding and blocking state by selecting the STG root icon.

Perform the following procedure to highlight the STG root configuration on the topology map.

Procedure steps

Step	Action
1	In the Navigation pane, select an **STG Root**. The Root table appears in the contents pane.
2	On the VLAN Manager menu bar, click **Highligh on Topology**.

The highlighted topology view appears in the COM contents pane with the root displayed.

—End—

Using the MultiLink Trunking Manager

Multi-Link Trunking (MLT) allows the physical links between multiple ports to be treated as a single logical link so that they logically act like a single port with the aggregated bandwidth. Grouping multiple ports into one logical link allows you to achieve higher aggregate throughput on a switch-to-switch or server-to-server application. It also allows you to load balance the traffic across all available links.

With MLT, all the physical ports in the link aggregation group must reside on the same switch. The Split MultiLink Trunking (SMLT) protocol does not have this limitation. SMLT allows the physical ports to be split between two switches. The two switches between which the SMLT is split are known as aggregation switches and form a logical cluster which appears to the other end of the SMLT link as a single switch.

The split may be at one or at both ends of the MLT, allowing you to configure any of the following topologies:

- SMLT square—Both ends of the link are split, and there is no cross-connect between diagonally opposite aggregation switches.
- SMLT mesh— Each aggregation switch has a SMLT connection with both aggregation switches in the other pair.
- SMLT triangle— A topology in which only one end is split. In an SMLT triangle, the end of the link which is not split does not need to support SMLT. This allows non-Nortel devices to benefit from SMLT, as long as they support 802.3ad static mode.

The Inter-Switch Trunk (IST) is an important part of the operation of the SMLT. The IST is an MLT connection between the aggregation switches that allows the exchange of information about traffic forwarding and about the status of individual SMLT links.

This section describes how to use MultiLink Trunking Manager to configure MLTs, SMLTs, and ISTs.

Navigation

About MultiLink Trunking Manager

The MultiLink Trunking Manager in COM allows you to create and manage MLTs across devices in a network. You can also use MultiLink Trunking Manager to manage Split MultiLink Trunking (SMLT) and to configure ISTs.

The following sections describe Multilink trunk types and features:

- "MultiLink Trunks in different switch types" (page 92)
- "MultiLink Trunking Manager features" (page 93)

MultiLink Trunks in different switch types

The following table lists the number of MLTs available with each supported switch type.

Maximum number of MLTs supported in different switches

Switch	Maximum number of MLTs
Passport 1000 Series switch	8
Ethernet Routing Switches 1424T/1648/1612/1624	6
Ethernet Routing Switch 8100	6
Ethernet Routing Switch 8600	128 in R-mode
BayStack 350/380/410/420/450/460/470	6
Business Policy Switch 2000	6
Ethernet Switch 325/425/460/470	6
Ethernet Routing Switch 5510, 5520, 5530	32
OM 1000	1
Ethernet Routing Switch 45xx, 25xx, 3510	6
Ethernet Routing Switch 5600	32
Ethernet Routing Switch 8300	32

MultiLink Trunking Manager features

MultiLink Trunking Manager supports devices that implement the Vlan and STG MIB groups.

MultiLink Trunking Manager allows you to:

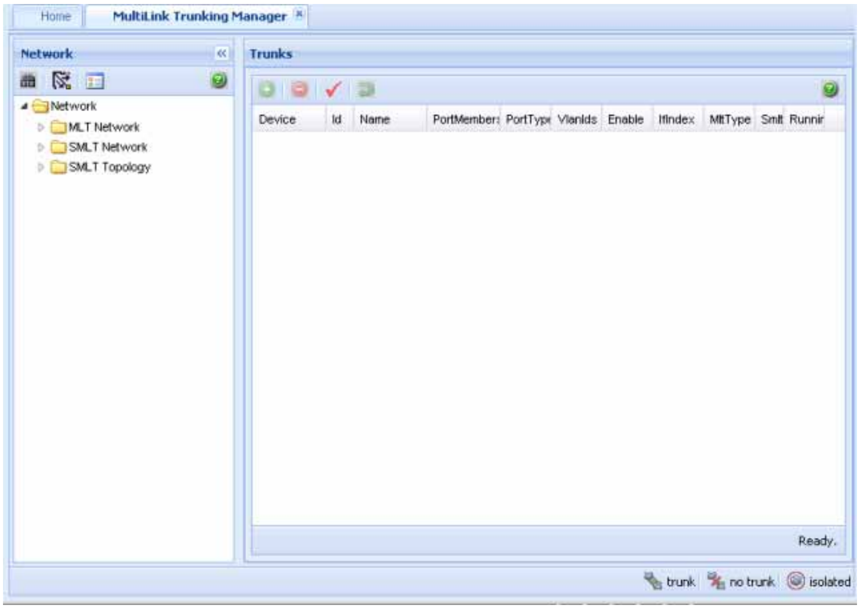
- Create, delete, or modify MLTs/SMLTs across one or two devices.
- Configure an MLT/SMLT either before or after you physically connect the ports.
- View MLT/SMLT configuration information such as port and MLT membership.
- View MLT/SMLT links and ports in the network topology map.

Starting the MultiLink Trunking Manager

Perform the following procedure to start a MultiLink Trunking Manager.

Procedure steps

Step	Action
1	From the Configuration and Orchestration Manager window Navigation pane, click **Managers**. The list of managers appears on the left side of the window.
2	Click the **Multilink Trunking Manager** icon in the navigation tree. The MultiLink Trunking Manager is launched and displayed in the content pane.

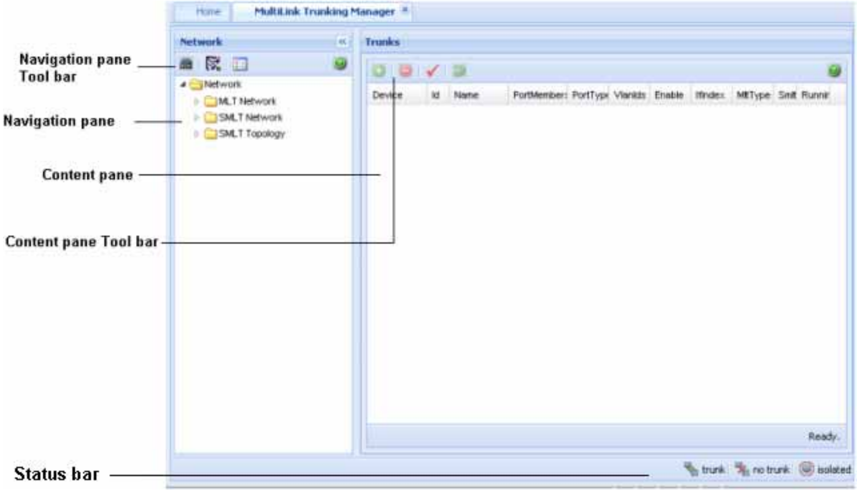


—End—

Using the MultiLink Trunking Manager window

The MultiLink Trunking Manager window contains the parts identified in the following figure.

MultiLink Trunking Manager window



The following table describes the parts of the MultiLink Trunking Manager window.

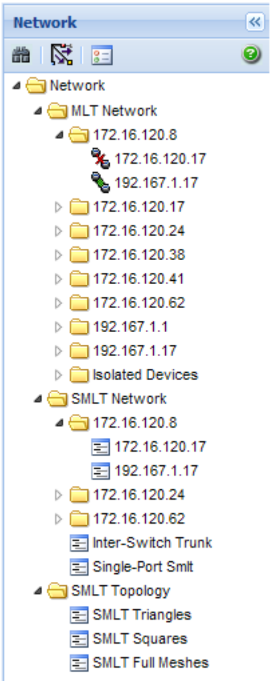
MultiLink Trunking Manager window parts

Part	Description
Navigation pane	Provides a navigation tree showing MultiLink Trunking Manager network folder resources.
Navigation pane tool bar	Provides tools for MultiLink Trunking Manager.
Contents pane	Displays MultiLink Trunking Manager tables.
Contents pane toolbar	Provides quick access to commonly used MultiLink Trunking Manager commands. These commands apply only to the Content pane table.

Navigation pane

The MultiLink Trunking Manager navigation pane provides access to devices based on the type of multilink trunking, or SMLT. The Navigation pane has a Network folder. All the devices are identified by their IP address, as discovered by COM. Adjacent devices are listed in the device folder.

The following figure shows the Navigation pane.



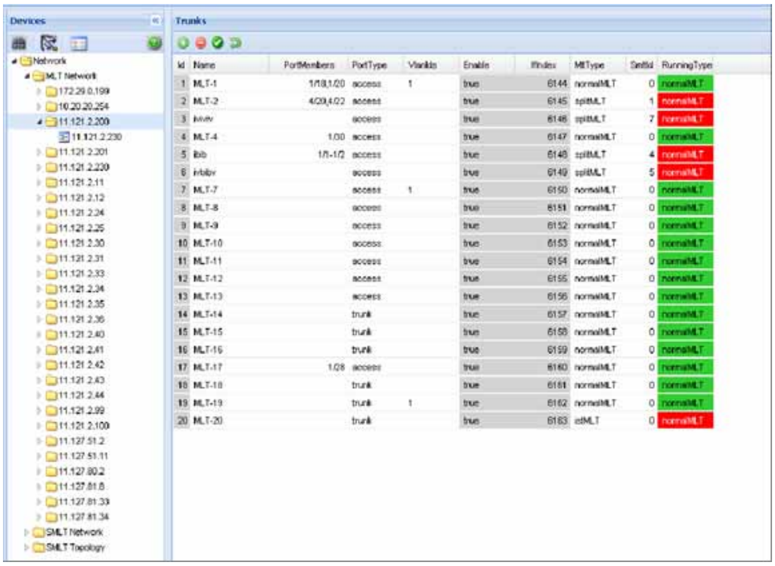
The Network folder has the following resources available in it.

- "MLT Network folder" (page 95)
- "SMLT Network folder" (page 96)
- "SMLT Topology folder" (page 98)

MLT Network folder

The MLT Network folder displays all the configured trunks of the devices. When you click on the nodes on the navigation pane inside the MLT Network folder, the contents pane displays all the configured tasks of the device. When you click on the child nodes which is connected to the parent devices, only the trunks connecting to the parent device appear. The following figure and table shows the MLT Network folder and its contents.

Figure 3
MLT Network



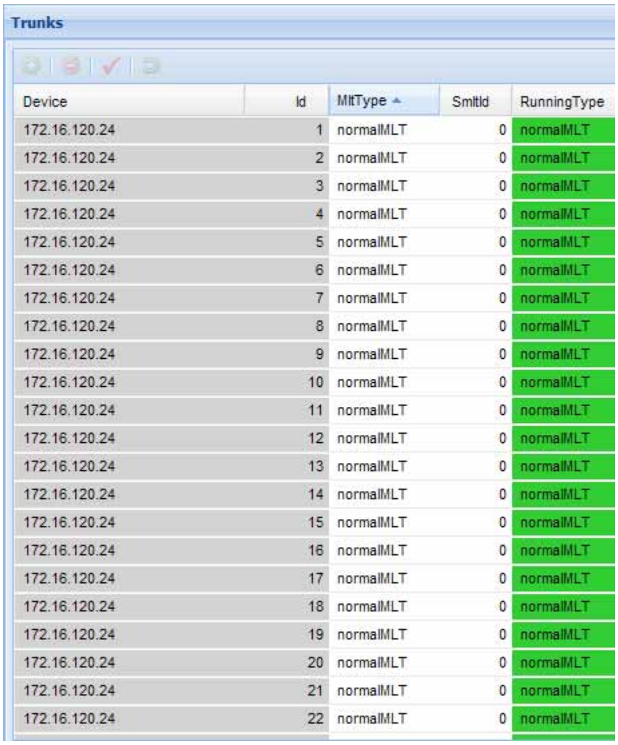
Id	Name	PortMembers	PortType	VlanIds	Enable	IfIndex	MltType	SmltId	RunningType
1	MLT-1	1/18,1/20	access	1	true	6144	normalMLT	0	normalMLT
2	MLT-2	4/20,4/22	access		true	6145	splitMLT	1	normalMLT
3	ivwv		access		true	6146	splitMLT	7	normalMLT
4	MLT-4	1/30	access		true	6147	normalMLT	0	normalMLT
5	ibib	1/1-1/2	access		true	6148	splitMLT	4	normalMLT
6	ivbibv		access		true	6149	splitMLT	5	normalMLT
7	MLT-7		access	1	true	6150	normalMLT	0	normalMLT
8	MLT-8		access		true	6151	normalMLT	0	normalMLT
9	MLT-9		access		true	6152	normalMLT	0	normalMLT
10	MLT-10		access		true	6153	normalMLT	0	normalMLT
11	MLT-11		access		true	6154	normalMLT	0	normalMLT
12	MLT-12		access		true	6155	normalMLT	0	normalMLT
13	MLT-13		access		true	6156	normalMLT	0	normalMLT
14	MLT-14		trunk		true	6157	normalMLT	0	normalMLT
15	MLT-15		trunk		true	6158	normalMLT	0	normalMLT
16	MLT-16		trunk		true	6159	normalMLT	0	normalMLT
17	MLT-17	1/28	access		true	6160	normalMLT	0	normalMLT
18	MLT-18		trunk		true	6161	normalMLT	0	normalMLT
19	MLT-19		trunk	1	true	6162	normalMLT	0	normalMLT
20	MLT-20		trunk		true	6163	istMLT	0	normalMLT

SMLT Network folder

The SMLT Network folder contains only the devices that are SMLT capable, and their child nodes. The Inter-Switch Trunks (IST) contains a list of devices that have an SLT trunk configured. The Single-SMLT (SSMLT) contains a list of devices that have a single port SMLT trunk configured.

The following figure shows the SMLT Network folder and its contents.

Figure 4
SMLT Network

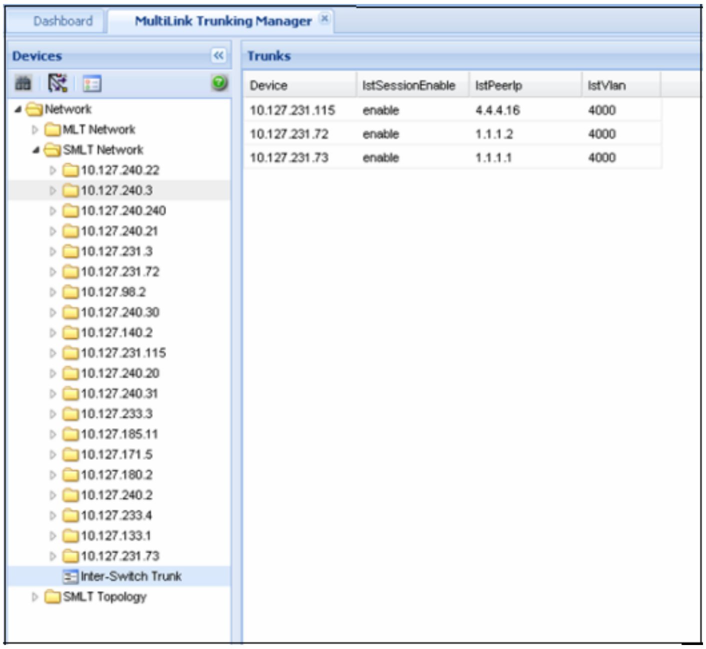


Trunks

Device	Id	MltType	SmltId	RunningType
172.16.120.24	1	normalMLT	0	normalMLT
172.16.120.24	2	normalMLT	0	normalMLT
172.16.120.24	3	normalMLT	0	normalMLT
172.16.120.24	4	normalMLT	0	normalMLT
172.16.120.24	5	normalMLT	0	normalMLT
172.16.120.24	6	normalMLT	0	normalMLT
172.16.120.24	7	normalMLT	0	normalMLT
172.16.120.24	8	normalMLT	0	normalMLT
172.16.120.24	9	normalMLT	0	normalMLT
172.16.120.24	10	normalMLT	0	normalMLT
172.16.120.24	11	normalMLT	0	normalMLT
172.16.120.24	12	normalMLT	0	normalMLT
172.16.120.24	13	normalMLT	0	normalMLT
172.16.120.24	14	normalMLT	0	normalMLT
172.16.120.24	15	normalMLT	0	normalMLT
172.16.120.24	16	normalMLT	0	normalMLT
172.16.120.24	17	normalMLT	0	normalMLT
172.16.120.24	18	normalMLT	0	normalMLT
172.16.120.24	19	normalMLT	0	normalMLT
172.16.120.24	20	normalMLT	0	normalMLT
172.16.120.24	21	normalMLT	0	normalMLT
172.16.120.24	22	normalMLT	0	normalMLT

The following figure shows the discovered Inter-Switch Trunks folder details.

Figure 5
SMLT Network IST



Device	IstSessionEnable	IstPeerIp	IstVlan
10.127.231.115	enable	4.4.4.16	4000
10.127.231.72	enable	1.1.1.2	4000
10.127.231.73	enable	1.1.1.1	4000

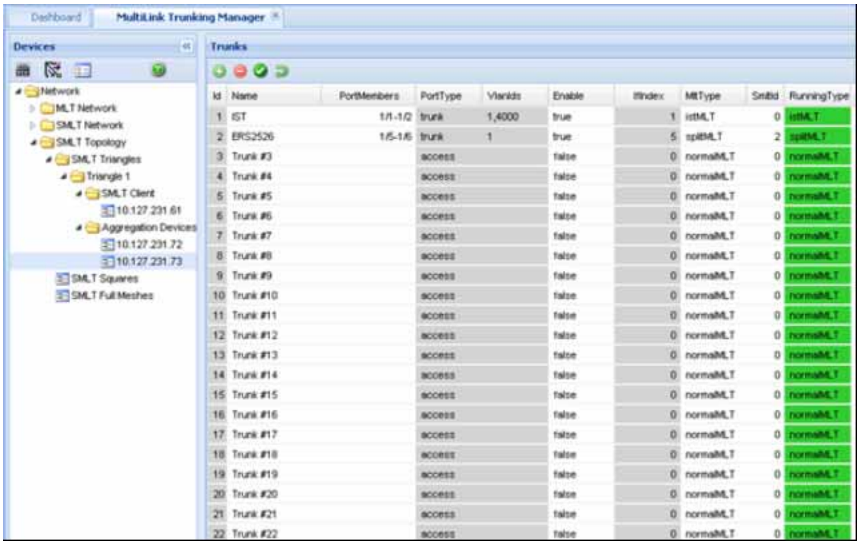
SMLT Topology folder

The SMLT Topology folder contains the following three subfolders. These folders are discovered at the time of launching the MultiLink Trunking Manager, or while performing a rediscovery of all the MLT information.

- SMLT Triangles—contains aggregation devices folder and their SMLT client folder.
- SMLT Squares—contains four core aggregation devices.
- SMLT Meshes—contains four or more core aggregation devices.

The following figures shows the SMLT topology triangle expanded, along with trunk details from one selected aggregation device folder.

Figure 6
SMLT Triangle



Id	Name	PortMembers	PortType	VlanIds	Enable	IfIndex	MltType	SmltId	RunningType
1	IST	1/1-1/2	trunk	1,4000	true	1	istMLT	0	istMLT
2	ERS2526	1/5-1/6	trunk	1	true	5	splitMLT	2	splitMLT
3	Trunk #3		access		false	0	normalMLT	0	normalMLT
4	Trunk #4		access		false	0	normalMLT	0	normalMLT
5	Trunk #5		access		false	0	normalMLT	0	normalMLT
6	Trunk #6		access		false	0	normalMLT	0	normalMLT
7	Trunk #7		access		false	0	normalMLT	0	normalMLT
8	Trunk #8		access		false	0	normalMLT	0	normalMLT
9	Trunk #9		access		false	0	normalMLT	0	normalMLT
10	Trunk #10		access		false	0	normalMLT	0	normalMLT
11	Trunk #11		access		false	0	normalMLT	0	normalMLT
12	Trunk #12		access		false	0	normalMLT	0	normalMLT
13	Trunk #13		access		false	0	normalMLT	0	normalMLT
14	Trunk #14		access		false	0	normalMLT	0	normalMLT
15	Trunk #15		access		false	0	normalMLT	0	normalMLT
16	Trunk #16		access		false	0	normalMLT	0	normalMLT
17	Trunk #17		access		false	0	normalMLT	0	normalMLT
18	Trunk #18		access		false	0	normalMLT	0	normalMLT
19	Trunk #19		access		false	0	normalMLT	0	normalMLT
20	Trunk #20		access		false	0	normalMLT	0	normalMLT
21	Trunk #21		access		false	0	normalMLT	0	normalMLT
22	Trunk #22		access		false	0	normalMLT	0	normalMLT

Figure 7
SMLT Triangle Topology

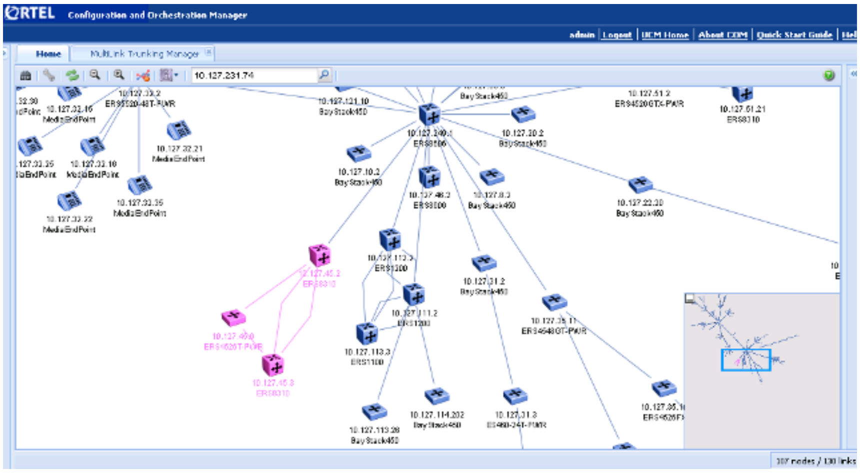
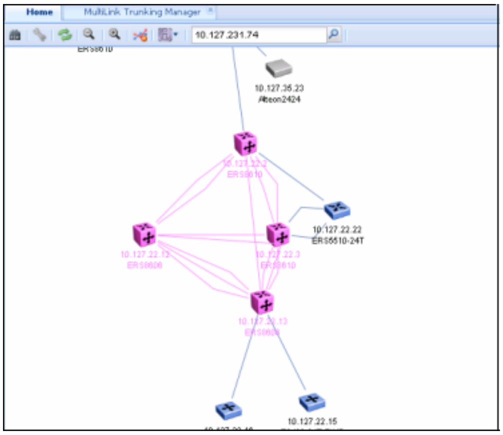


Figure 8
SMLT Full mesh Topology



Navigation pane tool bar

The Navigation pane tool bar provide tools and commands to address discovery of trunks, Preferences and topology highlights.

The following table lists the MultiLink Trunking Manager Navigation pane tool bar buttons.

Navigation pane tool bar

Tools	Toolbar button	Description
Discover MultiLink Trunks		Discovers the network and reloads MultiLink Trunking Manager with the latest information.
Highlight Topology		Highlights MLT items in the MultiLink Trunking Manager contents pane.
Preferences		Identifies specific devices for MultiLink Trunking Manager to configure and manage.
Help	?	Opens the online Help.

Contents pane

When you choose a folder in the navigation pane, its contents are shown in the contents pane.

Perform the following procedure to view the folder in the contents pane.

Procedure steps

Step **Action**

1 In the COM Navigation pane, expand **Managers**, and then click **MultiLink Trunking Manager**.

The MultiLink Trunking Manager window appears on the right side of the window.

2 In the Navigation pane of the MultiLink Trunking Manager window, select the **Network** folder.

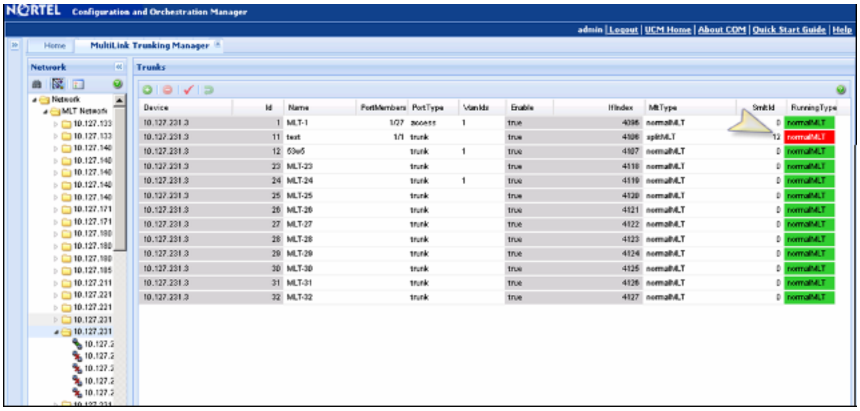
The list of devices appear in the Network folder.

3 Click on a device from the list in the **Network** folder.

The contents of the folder are displayed as a table in the contents pane, as shown in the example.

—End—

Figure 9
MultiLink Trunking Manager contents pane



Device	Id	Name	PortMembers	PortType	VlanIds	Enable	IfIndex	MltType	SmltId	RunningType
10.127.231.3	1	MLT-1	1/27	access	1	true	4096	normalMLT	0	normalMLT
10.127.231.3	11	test	1/1	trunk		true	4106	splitMLT	12	normalMLT
10.127.231.3	12	53w5		trunk	1	true	4107	normalMLT	0	normalMLT
10.127.231.3	23	MLT-23		trunk		true	4118	normalMLT	0	normalMLT
10.127.231.3	24	MLT-24		trunk	1	true	4119	normalMLT	0	normalMLT
10.127.231.3	25	MLT-25		trunk		true	4120	normalMLT	0	normalMLT
10.127.231.3	26	MLT-26		trunk		true	4121	normalMLT	0	normalMLT
10.127.231.3	27	MLT-27		trunk		true	4122	normalMLT	0	normalMLT
10.127.231.3	28	MLT-28		trunk		true	4123	normalMLT	0	normalMLT
10.127.231.3	29	MLT-29		trunk		true	4124	normalMLT	0	normalMLT
10.127.231.3	30	MLT-30		trunk		true	4125	normalMLT	0	normalMLT
10.127.231.3	31	MLT-31		trunk		true	4126	normalMLT	0	normalMLT
10.127.231.3	32	MLT-32		trunk		true	4127	normalMLT	0	normalMLT

Content pane tool bar

The Content pane tool bar provide tools to add an MLT, delete an MLT, commit the changes, and undo the changes.

The following table lists out the tools available on Content pane tool bar.

Table 8
Content pane tool bar

Tools	Toolbar button	Description
Insert	⊕	Opens the Insert dialog box, where you insert an MLT on a selected device. For more information, see "Creating MLTs on ERS 1424/16xx and ERS 8000 devices" (page 102).
Delete	⊖	Removes a selection and displays a message box to confirm deletion of the selected MLT. For more information, see "Deleting an MLT from ERS 1424/16xx or ERS 8000" (page 108).
Apply Changes	✓	Applies any changes you have made to your MLT configuration.
Revert Changes	↩	Allows you to undo the changes you have made to your MLT configuration.
Help	?	Opens the online Help.

Managing MultiLink Trunks

This following topics describe common operations you can perform using MultiLink Trunking Manager:

- "Creating MLTs on ERS 1424/16xx and ERS 8000 devices" (page 102)
- "Viewing MLT port information" (page 107)
- "Editing a port on an MLT" (page 108)
- "Deleting an MLT from ERS 1424/16xx or ERS 8000" (page 108)
- "Editing an MLT" (page 109)

Creating MLTs on ERS 1424/16xx and ERS 8000 devices

To create an MLT on Ethernet Routing Switch 1424/16xx and Ethernet Routing Switch 8000 devices, the device must have more than one connection to another device. With MultiLink Trunking Manager, you can create an MLT on a device and then physically connect the ports, or you can connect the ports first and then configure the MLT.

ATTENTION
The procedures in this section do not apply to Ethernet Switch, Ethernet Routing Switch 55xx/35xx/45xx/25xx, or Legacy BayStack devices which are preconfigured with six MLTs. You cannot delete or add MLTs to these switches.

Insert MLT dialog box

The appearance of the Insert MLT dialog box differs depending on how you open it.

- If you select a device folder and click Insert, the single-node Insert MLT dialog box appears. For more information, see "Creating an MLT with one device for ERS 8000" (page 103).

  You can use the single-node Insert MLT dialog box to create MLT configurations even in situations where the physical connections are absent or have not been detected by COM.

The following sections describe how to create MLTs on single devices and pairs of devices:

- "Creating an MLT with one device for ERS 8000" (page 103)
- "Creating an MLT with one device for ERS 1424/16xx" (page 105)

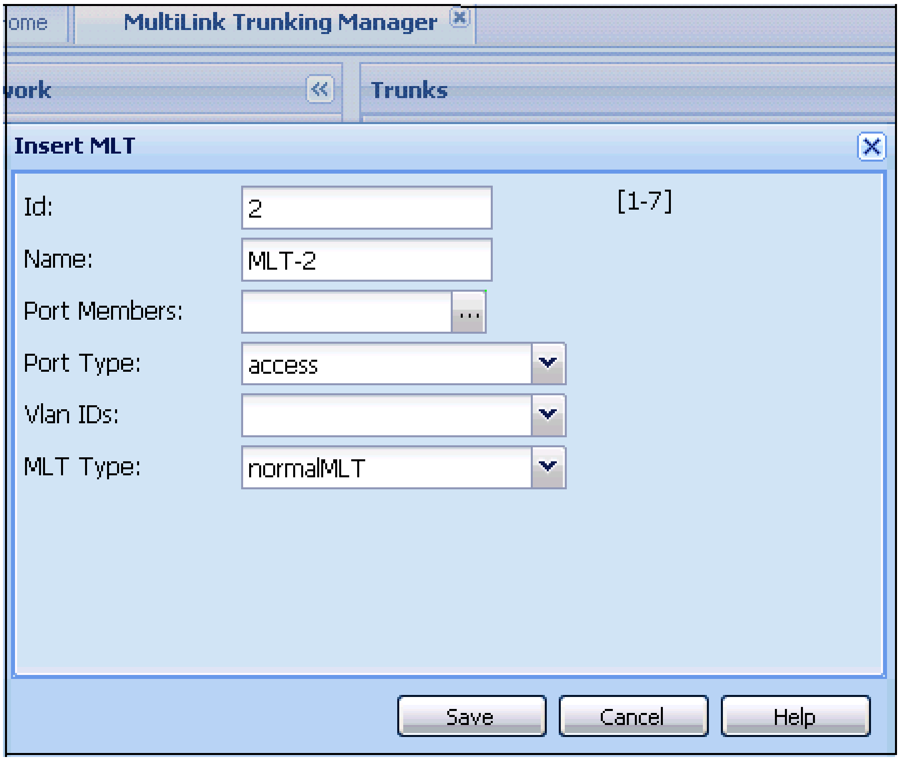
Creating an MLT with one device for ERS 8000

When you create an MLT with one device, MultiLink Trunking Manager considers only the ports that are available on the one device. After you create an MLT on one device, you must also configure and connect the ports in the second device before enabling the MLT.

To configure a new MLT with one Ethernet Routing Switch 8000 device selected:

Procedure steps

Step	Action
1	Select a device from the first (folder) level of the MultiLink Trunking Manager navigation pane. The Device table appears in the contents pane.
2	For Ethernet Routing Switch 8000 devices, On the Content Pane Toolbar, click **Add**. The Insert MLT dialog box appears.



Insert MLT

Id: 2 [1-7]

Name: MLT-2

Port Members:

Port Type: access

Vlan IDs:

MLT Type: normalMLT

3 In the **Id** field, select the Id number for the MLT.

4 In the **Name** field, type the name of the MLT.

5 In the **Port members** field, select the ports to be added to the MLT.

Inactive ports in the Ports box specify that they are not available for creating any MLTs.

6 Select the **Port type** option.

The default is **access**.

7 In the **VlanIds** field, select the VLAN IDs that belong to the MLT port.

8 For **MLT Type**, choose **normalMLT**.

The istMLT and splitMLT types, and also the SMLT Id value, are used only for split multilink trunks. For more information, see "Managing SMLT configurations" (page 109).

9 Click **Save**.

—End—

Insert MLT dialog box for ERS 8000

The following table describes the items in the Insert MLT dialog box.

Insert MLT dialog box items for ERS 8000

Item	Description
Id	Unique identifier for the MLT, which is automatically assigned by MultiLink Trunking Manager.
Name	User-defined name of the node on the MLT.
Port Members	Ports in the MLT.
Port Type	One of the following types of MLT: • Access • Trunk The default is Access.
Vlan IDs	VLAN IDs found on the device.
MLT type	One of the following types of MLT links: • normalMLT- Use for normal MLT that do not use SMLT features. • istMLT- Use for IST (inter-switch trunk) links between peer devices in SMLT configurations. • splitMLT- Use for SMLT links between peer devices and non-peer devices in SMLT configurations.
SMLT ID	Sets the SMLT ID number for IST links.

Creating an MLT with one device for ERS 1424/16xx

When you create an MLT with one device, MultiLink Trunking Manager considers only the ports that are available on the one device. After you create an MLT on one device, you must also configure and connect the ports in the second device before enabling the MLT.

Perform the following procedure to configure a new MLT with one Ethernet Routing Switch 1424/16xx device selected.

Procedure steps

Step	Action
1	Select a device from the first (folder) level of the MultiLink Trunking Manager navigation pane. The Device table appears in the contents pane.
2	For Ethernet Routing Switch 1424/16xx devices, On the Content Pane Toolbar, click **Add**.

The Insert MLT dialog box appears.

3 In the **Id** text box, select the Id number for the MLT.

4 In the **Name** text box, type the name of the MLT.

5 In the **Port Members** box, select the ports to be added to the MLT.

Inactive ports in the Ports box specify that they are not available for creating any MLTs.

6 Select the **Port type** option.

The default is **access**.

7 In the **VlanIds** field, select the VLAN IDs that belong to the MLT port.

8 For **MLT Type**, choose **normalMLT**.

The istMLT and splitMLT types, and also the SMLT Id value, are used only for split multilink trunks. For more information, see "Managing SMLT configurations" (page 109).

9 Click **Save changes**.

—End—

Insert MLT dialog box for ERS 1424/16xx

The following table describes the items in the Insert MLT dialog box.

Insert MLT dialog box for ERS 1424/16xx

Item	Description
Id	Unique identifier for the MLT, which is automatically assigned by MultiLink Trunking Manager.
Name	User-defined name of the node on the MLT.
Port Type	One of the following types of MLT: • Access • Trunk The default is Access.
Vlan IDs	VLAN IDs found on the device.

Item	Description
MLT type	One of the following types of MLT links: • normalMLT- Use for normal MLT that do not use SMLT features. • istMLT- Use for IST (inter-switch trunk) links between peer devices in SMLT configurations. • splitMLT- Use for SMLT links between peer devices and non-peer devices in SMLT configurations.
Ports	Ports in the MLT. The maximum number of ports for one trunk is four.

Viewing MLT port information

Perform the following procedure to view port information as you configure an MLT.

Procedure steps

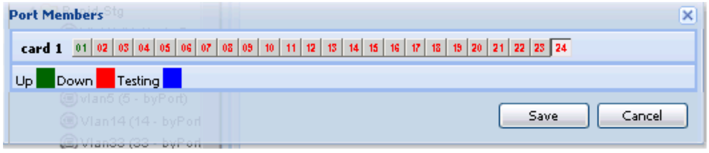
Step **Action**

1 In the navigation pane, select an MLT.

The MLT table appears in the contents pane.

2 In the table, double-click the **PortMembers** field.

The PortMembers dialog box appears.



3 In the MLT Table, click **...** to view the port information.

—End—

To open the Insert MLT dialog box, see "Creating an MLT with one device for ERS 8000" (page 103).

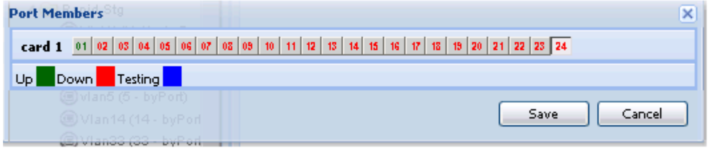
The information displayed in the dialog box includes the VLAN(s) and STG(s) to which the port belongs and the port link status. The port link status information includes whether the port is up or down and what other device/ports the port is connected to.

Editing a port on an MLT

Perform the following procedure to edit a port on an existing MLT.

Procedure steps

Step	Action
1	In the navigation pane, select an MLT. The MLT table appears in the contents pane.
2	In the table, double-click the **PortMembers** field. The PortMembers dialog box appears.



Step	Action
3	Click the port numbers that you want to add or delete from the MLT. Port numbers that appear to be pressed in are already being used, and port numbers that are dimmed are inactive.
4	Click **Save**.

—End—

Deleting an MLT from ERS 1424/16xx or ERS 8000

Perform the following procedure to delete an MLT from an Ethernet Routing Switch 1424/16xx or 8000.

Procedure steps

Step	Action
1	In the navigation pane, select a device. The MLT table appears in the content pane.
2	Select a field you want to delete in the table.
3	Click **Delete** from the Content Pane toolbar.. The Delete dialog box appears, asking you to confirm the deletion.
4	Click **Ok**.

—End—

Editing an MLT

Perform the following procedure to edit an MLT.

Procedure steps

Step	Action
1	In the navigation pane, select a device. The MLT table appears in the contents pane.
2	Double-click the field in the table.
3	Type information in the text boxes, or select from a list. Your changes are displayed in bold.
4	On the Content Pane Toolbar, click **Apply Changes**.

—End—

Managing SMLT configurations

Mission critical networks require resiliency, and as a result, must be designed with a number of redundancy features. Within the Passport 8000 Series switch, such features include CPU redundancy and link redundancy using MLT.

In order to provide device redundancy, most enterprise networks are designed with redundant connections between aggregation (core) switches and user access switches. For networks with just one aggregation switch, MLT provides redundancy and load sharing.

SMLT improves the reliability of a Layer 2 (L2) network operating between a building user access switches and the network center aggregation switch. It does so by providing loadsharing among all the links and fast failover in case of link failures.

An Interswitch Trunk (IST) operates between the aggregation switches and allows them to exchange information. This permits the rapid detection of any faults and the modification of forwarding paths.

ATTENTION

Although SMLT is primarily designed for layer 2 networks, it provides benefits for layer 3 networks as well.

To configure SMLT, you must establish three sets of configurations on the devices:

- On the two peer aggregation switches, you configure an IST (inter-switch trunk). For more information, see "Configuring IST links" (page 110).
- On the two peer aggregation switches, you configure SMLT links to the edge switch. For more information, see "Configuring SMLT links on peer devices" (page 111).
- On the nonpeer device, you configure normal MLT links to the two peer devices. For more information, see "Configuring SMLT links on non peer devices" (page 112).
- On the two peer devices, you configure the IST peers. For more information, see "Configuring IST peers" (page 112).

Configuring IST links

You can configure IST links in SMLT configurations on a single device. When you configure IST links on a single device, you must also repeat the same procedure to configure the IST links on the device at the other end of the IST.

Configuring IST links on a single device

The following procedure describes how to configure an IST link on a single device. You must also perform this procedure to configure the other end of the IST.

Perform the following procedure to configure an IST link on a single device.

Procedure steps

Step	Action
1	In the MultiLink Trunking Manager navigation pane, select a folder for one of the devices on which you want to configure the IST.
2	On the Content Pane Toolbar, click **Add**.
3	The Add MLT dialog box for a single node appears.
4	In the **Id** box, enter an ID number.
5	In the **Name** box, enter a name for the IST. Use the same name as for the other end of the IST.
6	In the **Ports** areas, select the ports that will be part of the IST.
7	For **Port Type**, select **trunk**.
8	In the **VlanId** box, select the VLAN. All ports on the SMLT configuration must belong to the same VLAN.

9 For the MLT Types, choose **istMLT**.

10 Click **Save**.

—End—

Configuring SMLT links

When you configure SMLT links, you must configure the two ends of the link separately:

- You configure a splitMLT link on the peer device. For more information, see "Configuring SMLT links on peer devices" (page 111).
- You configure a normalMLT link on the non-peer device. For more information, see "Configuring SMLT links on non peer devices" (page 112).

Configuring SMLT links on peer devices

Perform the following procedure to configure SMLT links on peer devices.

Procedure steps

Step Action

1 In the MultiLink Trunking Manager navigation pane, select a folder for the peer device on which you are configuring the link.

2 On the Content Pane Toolbar, click **Add**.
The Add MLT dialog box for a single node appears. For more information, see "Insert MLT dialog box for ERS 8000" (page 105)

3 In the **Id** box, enter a MLT ID. For SMLT links on peer devices, the MLT ID is ignored.

4 In the **Smlt Id** box, enter an SMLT ID number.

The SMLT ID for the SMLT links on both peer devices must be the same.

5 In the **Name** box, enter a name for the MLT.

6 In the **Ports** area, select the ports on the peer device that are part of the SMLT link.

7 In the **VlanIds** box, select the VLAN. All ports on the SMLT configuration must belong to the same VLAN.

8 For the **MLT Type**, choose **splitMLT**.

9 In the **SMLT Id** field, enter the SMLT Id.

10 Click **Save**.

—End—

Configuring SMLT links on non peer devices

You can configure all of the ports for both SMLT links of an SMLT configuration at the same time. For the MLT type, you choose normalMLT.

Perform the following procedure to configure SMLT links on a nonpeer device.

Procedure steps

Step	Action
1	In the MultiLink Trunking Manager navigation pane, select a folder for the non-peer device on which you are configuring the link.
2	On the Content Pane Toolbar, click **Add**. The Add MLT dialog box for a single node appears.
3	In the **Id** box, enter an MLT ID.
4	In the **Name** box, enter a name for the MLT.
5	In the **Ports** area, select all of the ports on the non-peer device that will be part of the SMLT configuration.
6	In the **VlanIds** box, select the VLAN. All ports on the SMLT configuration must belong to the same VLAN.
7	For the **MLT Type**, choose **normalMLT**.
8	Click **Save**.

—End—

Configuring IST peers

After configuring the IST links using the procedure in "Configuring IST links" (page 110), you must configure the IST peers.

Perform the following procedure to configure IST peers.

Procedure steps

Step	Action
1	In the MultiLink Trunking Manager navigation pane, open the **Smlt Network** folder.
2	In the **Smlt Network** folder, click the **Inter-Switch Trunk** folder. The contents pane shows all of the devices with inter switch trunks configured.
3	For the **IstPeerIp** of each peer device, enter the IP address associated with the VLAN on the other peer in the SMLT configuration.
4	For the **IstVlanId** of both peer devices, enter the VLAN ID of the SMLT configuration.
5	All ports in an SMLT configuration must be in the same VLAN.
6	Click **Apply**.
7	For the **IstSessionEnable** of both peer devices, click the entry to select **true**.
8	Click **Apply**.

—End—

Configuring a single port SMLT

Ports that are already configured as MLT or MLT-based SMLT cannot be configured as single port SMLT. You must first remove the split trunk and then reconfigure the ports as a single port SMLT.

Perform the following procedure to configure a single port SMLT.

Procedure steps

Step	Action
1	In the MultiLink Trunking Manager navigation pane, under the **SMLT Network** folder, select the **Single-Port Smlt** folder.
2	On the Content Pane Toolbar, click **Add**.
3	The **Add Single-Port MLT** dialog box appears.
4	In the **IP Address** field, choose a device IP from the list.

5 Enter an **SMLT Id**.

6 In the **Port** field, choose a port.

7 Click **Save**.

—End—

Job aid

The following table describes the items in the Insert SSmlt dialog box.

Item	Description
IP Address	IP address of the network device.
Smlt Id	The Split MLT ID, an integer from 1 to 512. • A read-only field with a value of 1 to 512 indicates the port single port SMLT ID assignment. • A blank field indicates the port is not configured for single port SMLT. Find an unused SMLT ID by viewing the currently-used IDs.
Port	The slot or port number on the card.

Deleting a single port SMLT

Perform the following procedure to delete a single-port SMLT.

Procedure steps

Step Action

1 In the navigation pane, select the **single-port SMLT** folder.

2 On the Content Pane Toolbar, click **Delete**.

The Delete dialog box appears, asking you to confirm the deletion.

3 Click **Yes**.

—End—

Viewing MultiLink Trunking configurations

In the MultiLink Trunking Manager navigation pane, the navigation tree shows the IP addresses of discovered devices. Icons associated with IP addresses on the branches indicate the following types of MLTs:

- Trunk—a switch that links to another device in the network and has MLT configurations.

- No trunk—a switch that links to another device in the network but does not have an active MLT configured.
- Isolated—a switch connected only to a hub.

The following sections describe how to use MultiLink Trunking Manager:

- "Viewing trunk connections" (page 115)
- "Viewing no trunk configurations" (page 116)
- "Viewing isolated devices" (page 117)
- "Viewing interswitch trunks" (page 119)
- "Viewing SMLTs" (page 119)
- "Viewing single port SMLTs" (page 120)
- "Updating information in the MultiLink Trunking Manager" (page 121)
- "Viewing devices and MLT links on the topology map" (page 122)

Viewing trunk connections

You can view the trunk connections for an MLT and configure new trunks to increase bandwidth.

Perform the following procedure to view trunk connections.

Procedure steps

Step **Action**

1 In the navigation pane, select a device that is represented by a trunk icon.

The Trunk table appears in the contents pane.

—End—

Job aid

The following table describes the fields in the Trunk table.

Field	Description
Device	IP address, system name, or host name of the device.
Id	Number of the MLT (assigned by MultiLink Trunking Manager).
Name	Allows you to enter a name for the MLT.

Field	Description
PortMembers	Ports that are assigned to the MLT.
PortType	Type of port on the MLT (access or trunk).
VlanIds	VLAN to which the ports belong.
Enable	Indicates whether the MLT is enabled (true) or disabled (false).
IfIndex	Interface index, a number from 96 to 4097, that identifies the MLT to the software.
MltType	One of the following types of MLT links: • normalMLT—used for normal MLT that do not use SMLT features. • istMLT—used for IST (Inter-Switch Trunk) links between peer devices in SMLT configurations. • splitMLT—used for SMLT links between peer devices and non-peer devices in SMLT configurations.
SmltId	Shows the SMLT ID number for split MLTs.
RunningType	Read only field displaying the MLT operational type: • normalMLT • istMLT • splitMLT

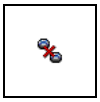
Viewing no trunk configurations

No trunk configurations are links between two devices that are not MLTs. To have an MLT or trunk connection, there must be more than one connection between two devices. Often No trunk configurations are single links between two devices.

Perform the following procedure to view No trunk configurations.

Procedure steps

Step	Action
1	In the MultiLink Trunking Manager navigation pane, select a device IP address above the IP address represented by a no trunk icon.



—End—

Job aid

The following table describes the fields in the No Trunk table.

Fields	Description
Device	IP address, system name, or host name of the device.
Id	Number of the MLT.
Name	Name given to the MLT.
PortMembers	Ports that are assigned to the MLT.
PortType	Type of port on the MLT (access or trunk).
VlanIds	VLAN(s) to which the ports belong.
Enable	Whether the MLT is enabled (true) or disabled (false).
IfIndex	Interface index, a number that identifies the MLT to the software. The range is: • 512–519 for Passport (legacy) 1050, 1150, 1200, and 1250 devices • 4096–4127 for Ethernet Routing Switch 8000 family devices
MltType	For SMLT configurations, shows one of the following types of MLT links: • normalMLT—used for normal MLT that do not use SMLT features. • istMLT—used for IST (inter-switch trunk) links between peer devices in SMLT configurations. • splitMLT—used for SMLT links between peer devices and nonpeer devices in SMLT configurations.
SmltId	Shows the SMLT ID number for split multilink trunk links.
RunningType	Read only field displaying the MLT operational type: • normalMLT • istMLT • splitMLT

Viewing isolated devices

Isolated devices have one or more connections to a hub or bus, but are not connected to another switch.

Perform the following procedure to view the isolated devices.

Procedure steps

Step	Action
1	In the MultiLink Trunking Manager navigation tree, expand the Isolated folder, and then select an isolated device. The Isolated Device table appears in the contents pane.

—End—

Job aid

The following table describes the fields in the Isolated Device table.

Field	Description
Device	IP address, system name, or host name of the device.
Id	Number of the MLT.
Name	Name given to the MLT.
PortMembers	Ports that are assigned to the MLT.
PortType	Type of port on the MLT (access or trunk).
VlanIds	VLAN(s) to which the ports belong.
Enable	Indicates whether the MLT is enabled (true) or disabled (false).
IfIndex	Interface index, a number that identifies the MLT to the software. The range is: • 512–519 for Passport (legacy) 1050, 1150, 1200, and 1250 devices • 4096–4127 for Ethernet Routing Switch 8000 family devices
MltType	For SMLT configurations, shows one of the following types of MLT links: • normalMLT—used for normal MLT that do not use SMLT features. • istMLT—used for IST (inter-switch trunk) links between peer devices in SMLT configurations. • splitMLT—used for SMLT links between peer devices and non-peer devices in SMLT configurations.

Field	Description
SmltId	Shows the SMLT ID number for split multilink trunk links.
RunningType	Read only field displaying the MLT operational type: • normalMLT • istMLT • splitMLT

Viewing interswitch trunks

Inter-switch trunks are links between peer devices in SMLT configurations.

Perform the following procedure to view interswitch trunks.

Procedure steps

Step Action

1 In the MultiLink Trunking Manager navigation tree, select the **Interswitch Trunk** under the Smlt Network folder.
The inter-switch trunk table appears in the contents pane.

—End—

Job aid

The following table describes the fields in the inter-switch trunk table.

Field	Description
Device	Identifies the device on which the IST is configured.
IstSession Enable	Lets you enable or disable the IST session.
IstPeerIp	Lets you enter the IP address of the peer device at the other end of the IST.
IstVlanId	Lets you enter the VLAN ID for the IST.

Viewing SMLTs

An SMLT improves the reliability of a Layer 2 (L2) network operating between a building's user access switches and the network center aggregation switch. It does so by providing loadsharing among all the links and fast failover in case of link failures. For more information about configuring single port SMLTs, see "Viewing single port SMLTs" (page 120).

Perform the following procedure to view SMLT.

Procedure steps

Step	Action
1	In the MultiLink Trunking Manager navigation pane, select the any device node under **SMLT** folder. The SMLT table appears in the contents pane.

—End—

Job aid

The following table describes the fields in the SMLT table.

Field	Description
Device	IP address, system name, or host name of the device.
Id	Number of the MLT (assigned by MultiLink Trunking Manager).
MltType	One of the following types of MLT links: • normalMLT–Use for normal MLT that do not use SMLT features. • istMLT– Use for IST (inter-switch trunk) links between peer devices in SMLT configurations. • splitMLT–Use for SMLT links between peer devices and non-peer devices in SMLT configurations.
SmltId	Shows the SMLT ID number for split MLTs.
RunningType	Read only field displaying the MLT operational type: • normalMLT • istMLT • splitMLT

Viewing single port SMLTs

Perform the following to view single-port SMLT.

Procedure steps

Step	Action
1	In the MultiLink Trunking Manager navigation pane, select the **Single-port SMLT** under the Smlt Network folder. The single-port SMLT table appears in the contents pane.

—End—

Job aid

The following table describes the fields in the Single-port SMLT table.

Field	Description
Device	IP address, system name, or host name of the device.
Smlt ID	The Split MLT ID, an integer from 1 to 512. • A read-only field with a value of 1 to 512 indicates the port's single port SMLT ID assignment. • A blank field indicates the port is not configured for single port SMLT. Find an unused SMLT ID by viewing the currently-used IDs.
Port	The slot/port number for the port.
OperType	Read only field displaying the MLT operational type: • normalMLT • istMLT • splitMLT
VlanIDs	VLAN IDs for the single-port SMLT.

Updating information in the MultiLink Trunking Manager

You can discover the devices in the MultiLink Trunking Manager window with MultiLink trunk information polled from the network devices. You can use this feature to load any updated information that took effect since you opened MultiLink Trunking Manager.

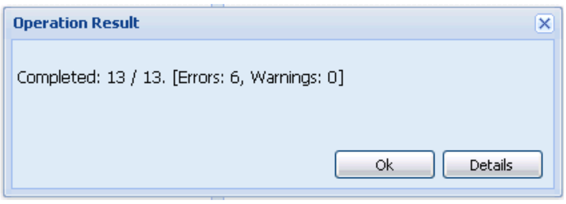
Perform the following procedure to discover the MultiLink trunk information.

Procedure steps

Step Action

1 On the MultiLink Trunking Manager window, click **Discover MultiLink Trunks** on Navigation pane tool bar.

COM rediscovers all trunks, and the operation result dialog box appears.



Completed: 13 / 13. [Errors: 6, Warnings: 0]

2 Click **Ok** to view the MultiLink Trunking Manager window.

OR

Click **Details** to view the errors and warnings, if any.

—End—

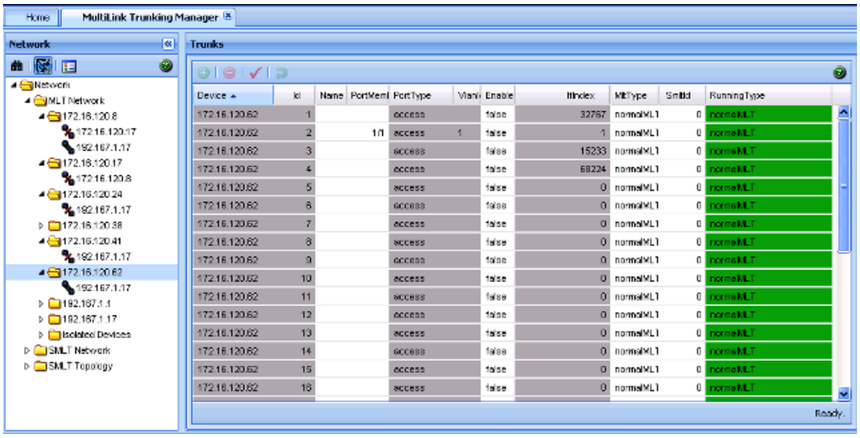
Viewing devices and MLT links on the topology map

COM displays the topology information from MultiLink Trunking Manager in the contents pane.

Perform the following procedure to highlight devices and their MLTs in COM.

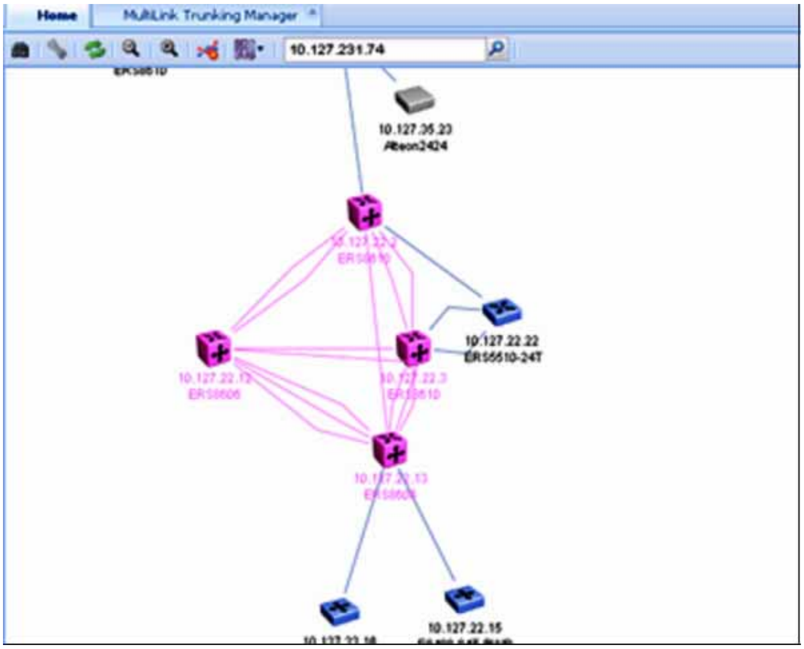
Procedure steps

Step	Action
1	In the navigation pane, select a device with a trunk connection. The Trunk table appears in the MultiLink Trunking Manager contents pane.
2	From the MultiLink Trunking Manager menu bar, choose **Highlight On Topology**. The trunk table is highlighted.



Device ▲	Id	Name	PortMeml	PortType	Vlanl	Enable	IfIndex	MltType	SmltId	RunningType
172.16.120.62	1			access		false	32767	normalMLT	0	normalMLT
172.16.120.62	2		1/1	access	1	false	1	normalMLT	0	normalMLT
172.16.120.62	3			access		false	15233	normalMLT	0	normalMLT
172.16.120.62	4			access		false	68224	normalMLT	0	normalMLT
172.16.120.62	5			access		false	0	normalMLT	0	normalMLT
172.16.120.62	6			access		false	0	normalMLT	0	normalMLT
172.16.120.62	7			access		false	0	normalMLT	0	normalMLT
172.16.120.62	8			access		false	0	normalMLT	0	normalMLT
172.16.120.62	9			access		false	0	normalMLT	0	normalMLT
172.16.120.62	10			access		false	0	normalMLT	0	normalMLT
172.16.120.62	11			access		false	0	normalMLT	0	normalMLT
172.16.120.62	12			access		false	0	normalMLT	0	normalMLT
172.16.120.62	13			access		false	0	normalMLT	0	normalMLT
172.16.120.62	14			access		false	0	normalMLT	0	normalMLT
172.16.120.62	15			access		false	0	normalMLT	0	normalMLT
172.16.120.62	16			access		false	0	normalMLT	0	normalMLT

Step	Action
3	Return to the MultiLink Trunking window. The topology view appears in the COM contents pane with devices connected to the MLT highlighted in blue and the ports in the MLT or SMLT highlighted in green.


Home
MultiLink Trunking Manager
10.127.231.74
ERS8610
10.127.35.23
Alteon2424
10.127.22.2
ERS8610
10.127.22.22
ERS5510-24T
10.127.22.12
ERS8606
10.127.22.3
ERS8610
10.127.22.13
ERS8606
10.127.22.16
10.127.22.15

—End—

Using Security Manager

This section describes Security Manager and how to use it to manage access to the devices in your network.

Navigation

About Security Manager

Security Manager provides a centralized location where you can manage access to the devices in your network. You can use Security Manager to:

- group together devices to which you want to apply to same passwords and access policies
- choose the authentication method for a security group (either RADIUS or TACACS authentication)
- choose different types of management access (such as CLI, Web, SNMP, or SSH access)
- create access policies and apply them to security groups, or to individual devices within a security group
- synchronize, change, and view passwords and access policies

ATTENTION

This functionality is not to be confused with the Device and Server Credentials offered through UCM-CS services. The functionality described in this chapter addresses adding/deleting/changing the passwords on the device itself.

Supported devices

The following table lists the devices that are supported by Security Manager.

Type of access	Device type
CLI and Web	Passport 1050/1150/1200/1250
	Ethernet Routing Switch 8xxx
	Ethernet Routing Switch 16xx 2.0 or later (WEB only)
Access Policy and RADIUS server	Passport 1050/1150/1200/1250
	Ethernet Routing Switch 8xxx
	Ethernet Routing Switch 16xx 2.0 or later
SNMP	Ethernet Routing Switch 8xxx (except for 83xx) earlier than 3.7
	Passport 1050/1150/1200/1250
SNMPv3	Ethernet Switch 325, 425, 460, 470
	Ethernet Routing Switch 55xx 56xx
	Ethernet Routing Switch 45xx
	Ethernet Routing Switch 25xx
	Ethernet Routing Switch 8xxx 3.3 and up (8300 all)
	Ethernet Routing Switch 16xx 2.0 or later
SSH	Ethernet Routing Switch 8300 2.1.1 and up
	Ethernet Routing Switch 16xx 2.0 or later
	Ethernet Routing Switch 8xxx (excluding 8300) 3.2.1 and up
	Business Policy Switch 2000 2.5.0 and up
	Ethernet Switch 460, 470 2.5.0 and up
	Ethernet Routing Switch 55xx 56xx 4.0.0 and up
	Ethernet Switch 425/420/325 3.0 and up
	Ethernet Routing Switch 45xx 4th version digit odd
TACACS	Ethernet Routing Switch 8600 5.1 and up
	Ethernet Routing Switch 8300 2.2 and up

Starting Security Manager

Perform the following procedure to start Security Manager.

Procedure steps

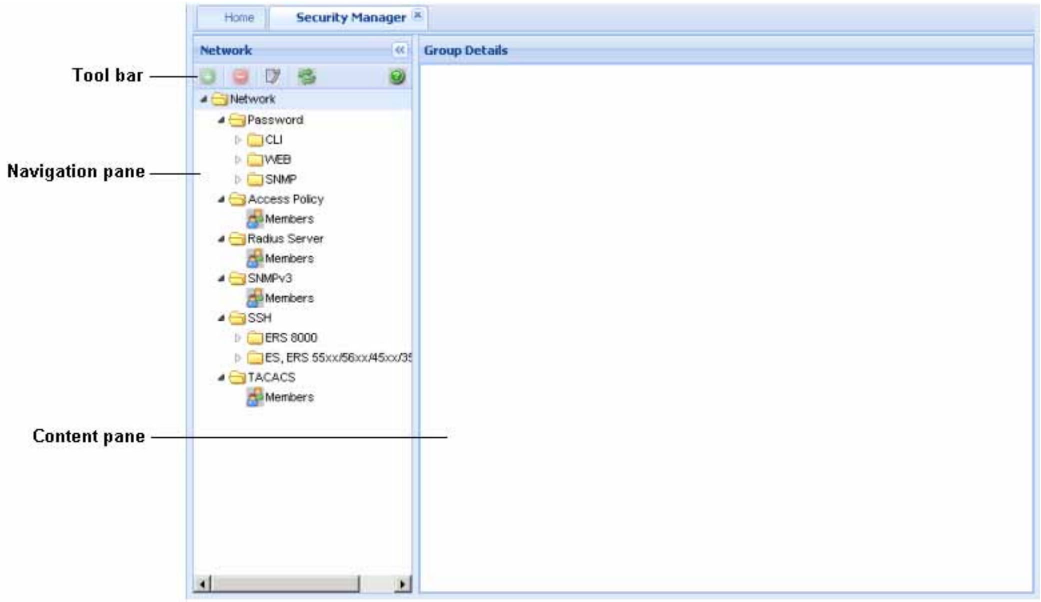
Step	Action
1	In the Configuration and Orchestration Manager window Navigation pane, click the + sign to open the list of Managers.
2	Click on the **Security Manager** icon in the navigation tree. The Security Manager dialog box appears.

—End—

Using the Security Manager window

The following figure shows the Security Manager window.

Security Manager window



The following table describes the parts of the Security Manager window.

Parts of the Security Manager window

Part	Description
Tool bar	Provides quick access to commonly used Security Manager commands. For more information, see "Toolbar and Contents pane buttons" (page 128).
Navigation pane	Allows you to navigate security settings for the current network devices. For more information, see "Navigation pane" (page 128).
Contents pane	Displays elements of the folder or element selected on the navigation pane. For more information, see "Contents pane" (page 129).

Toolbar and Contents pane buttons

The following table describes the Security Manager menu bar commands and toolbar buttons.

Security Manager Menu bar commands and toolbar buttons

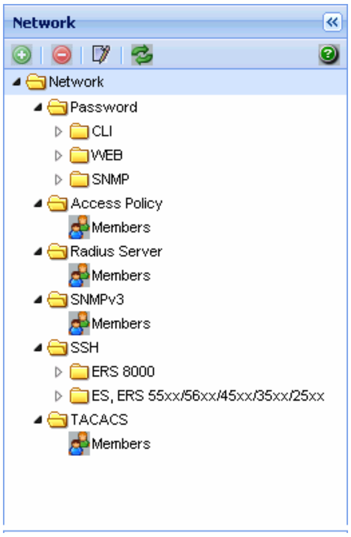
Command	Tool bar button	Description
Add	⊕	Creates a new security group that contains devices of the current domain type (CLI, WEB, SNMP, Access Policy, Radius Server, SSH, TACACS).
Delete	⊖	Removes the selected security group from Security manager.
Edit	✎	Modifies the current device list contained inside the security group.
Reload	⟳	Rediscovers the network and reloads Security Manager with the latest information. For more information, see "Reloading Security Manager" (page 132).
Revert Changes	↩	Undo any unapplied change you made to a record.
Apply Changes	✓	Applies your settings to all of the devices in the security group.

Navigation pane

The Security Manager navigation pane displays a hierarchical folder tree that you can use to navigate to security groups.

The following figure shows the navigation pane of the Security Manager window.

Security Manager navigation pane



Contents pane

The content pane only displays detailed information for each device selected in the navigation pane.

Creating and managing security groups

The following sections describe how to use Security Manager to create and modify security groups:

- "Creating security groups" (page 129)
- "Adding new devices to a security group" (page 131)
- "Saving security group settings" (page 132)
- "Reloading Security Manager" (page 132)
- "Editing Security Groups" (page 132)
- "Deleting security groups" (page 133)

Creating security groups

Perform the following procedure to create a security group.

Procedure steps

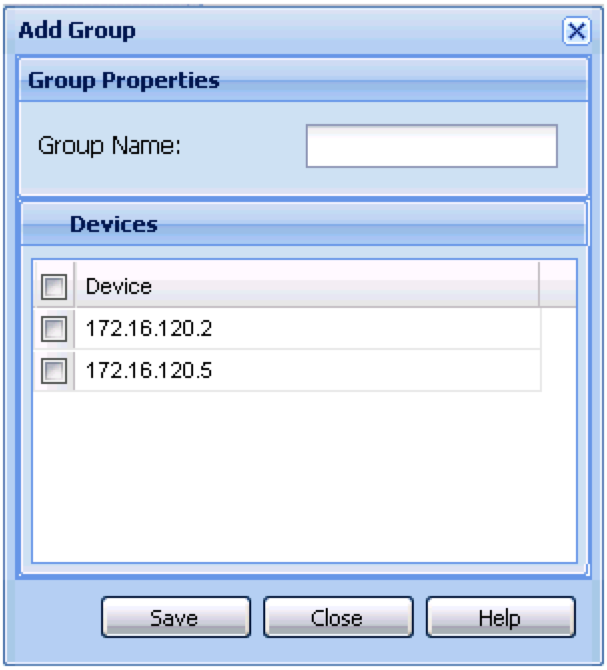
Step	Action
1	In the navigation pane, browse and select one of the following application folders: • Access Policy • Radius Server

- SNMPv3
- SSH
- TACACS

OR
Under the Password folder, select **CLI**, **WEB** or **SNMP**.

2 On the Toolbar, click **Add** (the + sign).

The Add Group dialog box appears.



□	Device
□	172.16.120.2
□	172.16.120.5

3 In the **Group Name** field, type a new group name.

4 In the device list, choose the devices that you want to include in the new security group.
OR
Click the device check box to select all devices at the same time.

5 Click **Save**.

The Security Manager creates a new security group containing the selected devices.

—End—

Job aid

The following table describes the Add Group dialog box.

Part	Description
Group Name	Allows you to enter a name for the new security group. The new security group should have a unique name.
Device list	Displays a list of devices that you can add to the new security group.

Adding new devices to a security group

Perform the following procedure to add additional devices to an already existing security group.

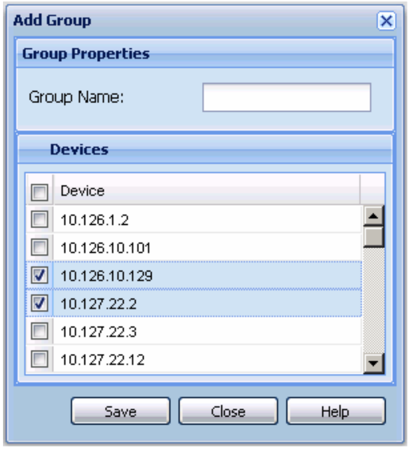
Procedure steps

Step Action

1 Open the folder for the security group to which you want to add a device.

2 Click **Add**.

The Add group dialog box appears.



Add Group

Group Properties

Group Name:

Devices

□ Device
□ 10.126.1.2
□ 10.126.10.101
☑ 10.126.10.129
☑ 10.127.22.2
□ 10.127.22.3
□ 10.127.22.12

3 If you want to change the name of the group, type the new name in the Group Name field.

4 Select the check box corresponding to the devices you want to add to the group.

5 Click **Save**. The device gets added to the group and appears on the Navigation pane under the group.

If you do not want to add the device, click **Close**.

—End—

Saving security group settings

Security Manager saves all security group information to the local hard disk when you close the Security Manager window. When you restart Security Manager, it reloads the saved security group settings.

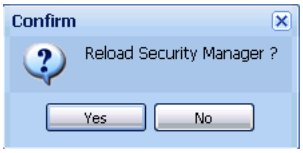
Reloading Security Manager

Security Manager allows you to refresh the information in the window with security information polled from the network devices. You can use this feature to load any updated information that took effect since you opened Security Manager.

Perform the following procedure to reload the security information.

Procedure steps

Step	Action
1	On the Security Manager tool bar, click **Reload Security manager**. A dialog box appears asking for confirmation to reload the Security Manager.


Confirm

Reload Security Manager ?

Step	Action
2	Click **Yes** to reload the Security Manager. COM reloads topology information from the network devices and refreshes the Security Manager window with it.
3	If you do not want to reload the Security Manager, click **No**.

—End—

Editing Security Groups

Perform the following procedure to edit selected devices in a security group.

Procedure steps

Step	Action

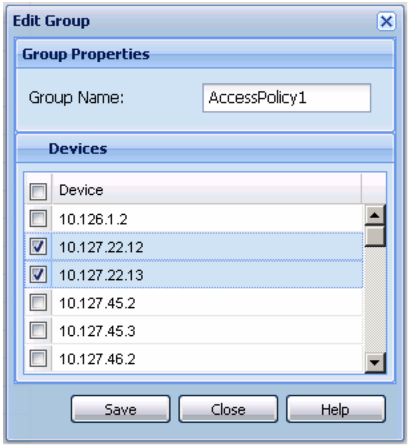
1 In the navigation pane, browse and select one of the following application folders:

- Access Policy
- Radius Server
- SNMPv3
- SSH
- TACACS

OR
Under the Password folder, select **CLI**, **WEB** or **SNMP**.

2 Click the device in the security group folder that requires editing..

3 Click **Edit.**
The Edit group dialog box appears.



Edit Group

Group Properties

Group Name: AccessPolicy1

Devices

□	Device
□	10.126.1.2
☑	10.127.22.12
☑	10.127.22.13
□	10.127.45.2
□	10.127.45.3
□	10.127.46.2

4 If you want to change the name of the group, type the new name in the Group Name field.

5 Click **Save.**

—End—

Deleting security groups

Perform the following procedure to delete a security group.

Procedure steps

Step	Action
1	In the navigation pane, select the security group that you want to delete.
2	On the Tool bar, click **Delete** (the - symbol). A dialog box appears asking for confirmation to delete security group.
3	Click **Yes** to delete the security group.

—End—

Configuring the authentication method

You can specify a centralized server—such as a RADIUS server or a TACACS server—to authenticate the credentials of users that access devices in a security group. If you do not specify a centralized server, users are authenticated locally on the device by default.

The following sections describe how to use Security Manager to configure the authentication method used by security groups in your network:

- "Configuring RADIUS authentication" (page 134)
- "Configuring TACACS authentication" (page 138)

Configuring RADIUS authentication

The following sections provide information about using a RADIUS server with a security group.

- "Adding RADIUS servers" (page 134)
- "Setting global RADIUS server parameters" (page 137)
- "Removing RADIUS servers" (page 138)

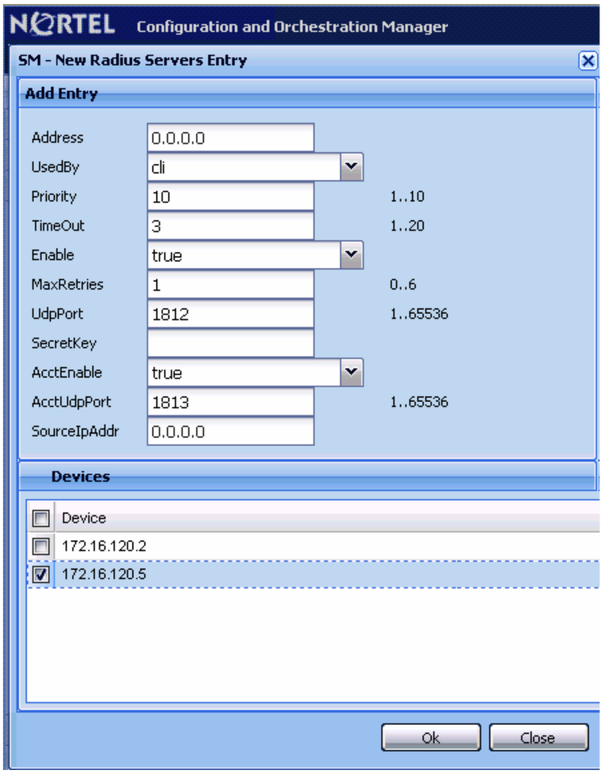
Adding RADIUS servers

Perform the following procedure to add a RADIUS server to a security group.

Procedure steps

Step	Action
1	Under the **Radius Server** folder in the navigation pane, click the folder for the security group for which you want to add a RADIUS server.
2	In the contents pane, click the **Radius Servers** tab.
3	On the Tool bar, click **Add** (the + symbol).

The New Radius Servers Entry dialog box appears.



SM - New Radius Servers Entry

Add Entry

Address	0.0.0.0	
UsedBy	cli	
Priority	10	1..10
TimeOut	3	1..20
Enable	true	
MaxRetries	1	0..6
UdpPort	1812	1..65536
SecretKey		
AcctEnable	true	
AcctUdpPort	1813	1..65536
SourceIpAddr	0.0.0.0	

Devices

☐ Device
☐ 172.16.120.2
☑ 172.16.120.5

> **ATTENTION**
>
> The default values for the RADIUS port (UdpPort) and the RADIUS accounting port (AccUdpPort) are 1812 and 1813, respectively. Many legacy servers use default ports 1645 and 1646, respectively. You must ensure that the ports specified in this table match the ports on which your RADIUS servers are listening.

4 Set the dialog box parameters as appropriate.

5 Click **OK**.

The Security Manager creates a new entry on the Radius Server tab.

Security Manager applies your changes only to the changed devices in the security group.

—End—

Job aid

The following table describes the New Radius Servers Entry dialog box.

Part	Description
Address	Specifies the IP address of the new server.
UsedBy	Configures accesses for cli, igap, snmp and eap as they require RADIUS server authentication.
Priority	Specifies the priority between 1 and 10 of the new RADIUS server.
TimeOut	Specifies the number of seconds, between 1 and 10, between retransmissions from the client to the RADIUS server.
Enable	Enables the RADIUS server.
MaxRetries	Specifies the maximum number of retries, between 1 and 6, to allow requests to the server.
UdpPort	Specifies the UDP port number, between 1 and 65536, that the client will use to send requests to the server. The default value is 1812.
SecretKey	Specifies the secret key of the authentication client.
AccEnable	Allows you to enable accounting on the RADIUS server.
AccUdpPort	Allows you to enter the UDP port number of the RADIUS accounting server. The default value is 1813.
SourceIpAddr	Configures the source IP address for RADIUS packets.

The following table describes the Radius Servers tab.

Radius Servers tab of the Attributes folder

Part	Description
Address	Allows you to enter the IP address of the new server.
UsedBy	Configures accesses for cli, igap, snmp and eap as they require RADIUS server authentication.
Priority	Allows you to enter the priority between 1 and 10 of the RADIUS server.
TimeOut	Allows you to enter the number of seconds, between 1 and 10, that you require between retransmissions from the client to the RADIUS server.
Enable	Allows you to enable the RADIUS server.
MaxRetries	Allows you to enter the maximum number of retries, between 1 and 6, that you require to allow requests to the server.

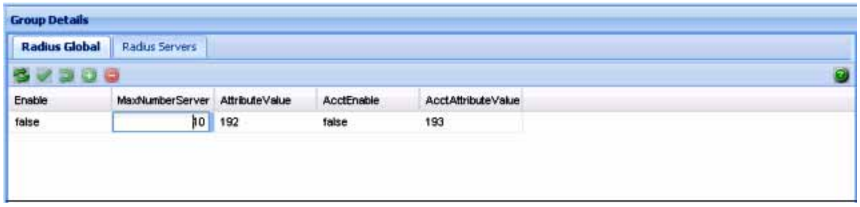
Part	Description
UdpPort	Allows you to enter the UDP port number, between 1 and 65536, that the client will use to send requests to the server. **ATTENTION** The UDP port value set for the client must be the same as the value set for the RADIUS server.
SecretKey	Allows you to enter the secret key of the authentication client.
AccEnable	Allows you to enable accounting on this RADIUS server.
AccUdpPort	Allows you to enter the UDP port number of the RADIUS accounting server.
SourceIpAddr	Configures the source IP address for RADIUS packets.

Setting global RADIUS server parameters

Perform the following procedure to set global RADIUS server parameters.

Procedure steps

Step	Action
1	Under the **Radius Server** folder in the navigation pane, open the folder for the security group for which you want to set global RADIUS server parameters.
2	In the contents pane, click the **Radius Global** tab.



Enable	MaxNumberServer	AttributeValue	AcctEnable	AcctAttributeValue
false	10	192	false	193

Step	Action
3	Set the parameters as appropriate.
4	On the Security Manager tool bar, click **Apply Changes**. Security Manager applies your changes only to the changed devices in the security group.

—End—

Job aid

The following table describes the Radius Global tab.

Part	Description
Enable	Allows you to enable or disable the RADIUS authentication feature globally.
MaxNumber Server	Allows you to set the maximum number of servers, between 1 and 10, that you want to use.
Attribute Value	Allows you to set the value for Access-Priority attribute. The default is 192.
AcctEnable	Allows you to enable or disable accounting on this RADIUS server.
AcctAttribute Value	Allows you to set the account attribute value, ranging from 192 to 240. This attribute is vendor-specific and is different from the attribute value used for authentication.

Removing RADIUS servers

Perform the following procedure to remove a RADIUS server from a security group.

Procedure steps

Step	Action
1	Under the **Radius Server** folder in the navigation pane, open the folder for the security group for which you want to remove a RADIUS server.
2	In the contents pane, click the **Radius Servers** tab.
3	Click any cell of the entry for the RADIUS server that you want to remove.
4	On the Tool bar, click **Delete** (the - symbol). The system asks for confirmation on deleting the entry.
5	Click **Yes** to delete the selected entry. Security Manager deletes the selected entry in the RADIUS server table.

—End—

Configuring TACACS authentication

You can use Security Manager to add, delete, and modify attributes for TACACS servers for all the devices in a security group.

The following topics are covered in this section:

- "Enabling or disabling TACACS Global" (page 139)
- "Adding TACACS servers" (page 139)
- "Deleting TACACS server entries" (page 141)

Enabling or disabling TACACS Global

Security Manager allows you to enable and disable TACACS globally within a security group.

Perform the following procedure to enable or disable TACACS globally within a security group.

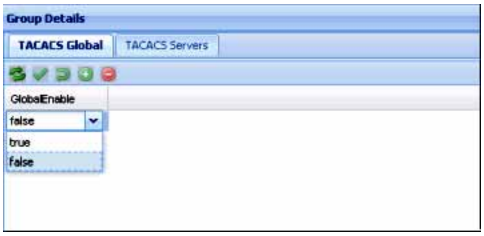
Procedure steps

Step **Action**

1 Click on the required security group.

2 Click **TACACS Global** tab.

3 Select **True** to enable and **False** to disable the TACACS globally within the security group.



GlobalEnable
false

—End—

Adding TACACS servers

You can add TACACS servers using the Security Manager.

Perform the following procedure to add a TACACS server:

Procedure steps

Step **Action**

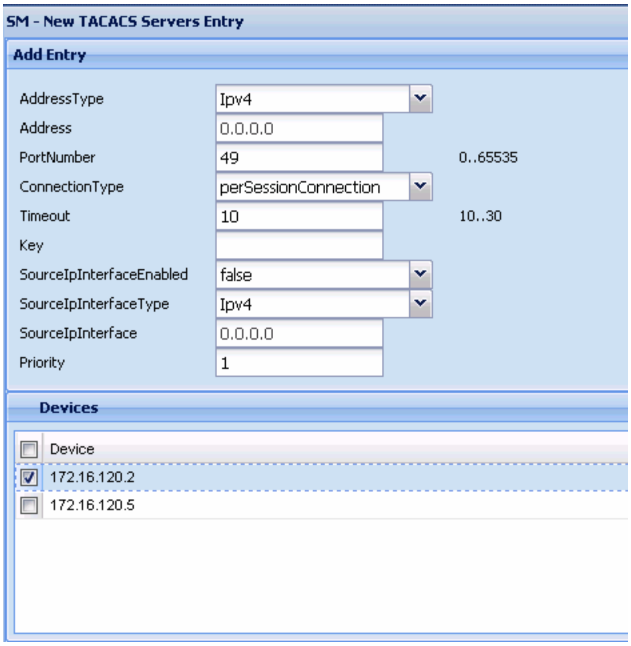
1 In the navigation pane, click the folder for the security group for which you want to configure TACACS.

2 Select the required device.

3 In the Contents pane, click the **TACACS Servers** tab.

4 On the Toolbar, click **Insert** (the plus symbol).

The New TACACS Servers Entry dialog box appears.



SM - New TACACS Servers Entry

Add Entry

AddressType: Ipv4
Address: 0.0.0.0
PortNumber: 49 0..65535
ConnectionType: perSessionConnection
Timeout: 10 10..30
Key:
SourceIpInterfaceEnabled: false
SourceIpInterfaceType: Ipv4
SourceIpInterface: 0.0.0.0
Priority: 1

Devices

□ Device
☑ 172.16.120.2
□ 172.16.120.5

5 Select appropriate settings for the TACACS server to be added.

6 Click **OK**.

The Security Manager adds the new TACACS server.

—End—

Job aid

The following table describes New TACACS Server dialog box.

New TACACS Server dialog box fields

Part	Description
Address Type	Specifies the type of address of the TACACS server.
Address	Specifies the server address.
Port number	Specifies the port number to access the server.
Connection type	Specifies the single connection or per session connection to the server.

Part	Description
Timeout	Specifies the number of seconds, between 1 and 10, between retransmissions from the client to the RADIUS server.
Key	Specifies the key.
SourceIPInterfaceEnabled	Specifies the IP address of the interface whether it is enabled.
SourceIPInterfaceType	Specifies the type of the IP address.
SourceIPInterface	Specifies the IP address of the interface.
Priority	Specifies the priority, between 1 and 10, of the new TACACS server.

Deleting TACACS server entries

Perform the following procedure to delete a TACACS server entry.

Procedure steps

Step **Action**

1 Click the folder for the security group from which you want to delete a TACACS entry.

2 In the security group folder, click the desired device.

3 In the Contents pane, click the **TACACS Servers** tab.

4 On the TACACS Servers tab, click the cell of the TACACS Server that you want to delete (entire row is deleted).

5 On the Toolbar, click **Delete**(the - symbol).

6 Click **Yes** to delete the security group.

Security Manager deletes the TACACS server entry.

—End—

Configuring management access

You can use Security Manager to configure how management applications can access the devices in a security group.

The following sections describe how to configure the type of access permitted for devices in a security group:

- "Configuring a security group for SSH access" (page 142)
- "Configuring a security group for CLI access" (page 148)
- "Configuring a security group for Web access" (page 150)
- "Configuring a security group for SNMP v1/v2c access" (page 152)

Configuring a security group for SSH access

This section describes how to configure SSH security groups, SSH Bulk passwords, and related properties.

- "Creating SSH security groups" (page 142)
- "Configuring SSH Bulk Passwords" (page 142)
- "Configuring SSH properties for ERS 8000 security groups and devices" (page 146)
- "Configuring SSH properties for ERS 55xx/35xx/45xx/25xx and Ethernet Switch security groups" (page 147)
- "Deleting SSH security groups" (page 148)

Creating SSH security groups

Perform the following procedure to create an SSH security group.

Procedure steps

Step	Action
1	In the navigation pane, click the **SSH** folder. SSH contains two subtype domains, one to group devices from ERS8600 family and the other for ES/ERS55xx/ERS45xx/35xx/25xx compatible devices.
2	Select a subdomain.
3	Click **Add** button (the + sign from Navigation Pane tool bar). The Add Group dialog box appears.
4	In the **Group Name** field, type a new group name.
5	Select devices (not all SSH capable devices are in Devices list, just the ones filtered to be compliant to the current selected subgroup).
6	Click **Save**. The Security Manager creates a new SSH security group containing the selected devices.

—End—

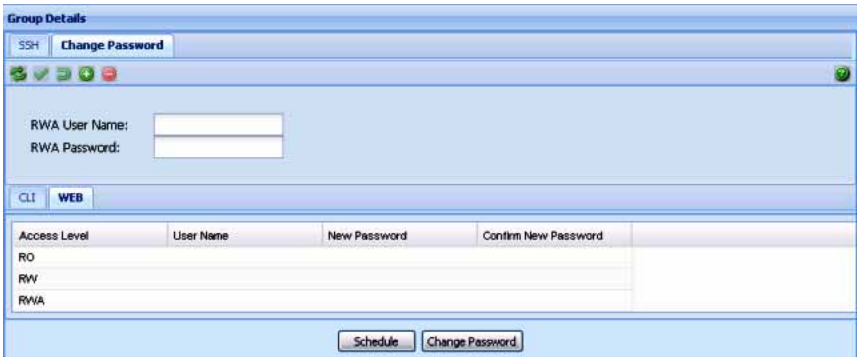
Configuring SSH Bulk Passwords

In Security Manager, you can use Secure Shell (SSH) to configure the CLI user name and password for all the devices in a security group. You can also use SSH to configure the SNMP communities for the security group on ERS 55xx/35xx/45xx/25xx, and Ethernet Switch devices. Using an SSH connection to make these configuration changes ensures the confidentiality of the user names and passwords of the devices in the security group.

Perform the following procedure to configure SSH access for a security group.

Procedure steps

Step	Action
1	Under the SSH folder in the navigation pane, click the folder for the security group for which you want to configure SSH access.
2	In the contents pane, click the **Change Password** tab. The Change Password tab appears.



RWA User Name:
RWA Password:

Access Level	User Name	New Password	Confirm New Password
RO			
RW			
RWA			

Step	Action
3	For ERS 8000 devices, enter the current user name for the devices in the **RWA Username** field.
4	Enter the current password for the devices in the **RWA Password** field.
5	Update the CLI and WEB passwords as follows:

- To update the password for the CLI for ERS 55xx/35xx/45xx/25xx or Ethernet Switch devices:
  - — Click the **CLI** tab.
  - — In the **Password** column, double-click a password cell to activate it.
  - — Enter the desired password.
  - — In the adjacent **Confirm Password** cell, re-enter the desired password.

- To update the SNMP community string for ERS 55xx/35xx/45xx/25xx or Ethernet Switch devices.
    - — Click the **WEB** tab.
    - — Update the required fields in the table.

      You can update the user name and password for the following three access levels:
        - – RO
        - – RW
        - – RWA
- To update the password for the CLI for non-ERS 55xx/35xx/45xx/25xx devices:
    - — Choose the **CLI** tab.
    - — In the **User ID** column, double-click a user ID cell to activate it.
    - — Enter the desired UserName.
    - — In the **Old Password** field, enter the old password.
    - — In the **Confirm Old Password** field, reenter the old password.
    - — In the **New Password** field, enter the new password.
    - — In the **Confirm New Password** field, reenter the new password.

6 Initiate the password change:

- To initiate the password change immediately, click **Change Password**. The status bar shows the current status. After all devices have finished the password change, the status is displayed as Done.
- To initiate the password change at a later time, click **Schedule**, and complete the **Schedule Password Change** dialog box.

> **ATTENTION**
> Password change is applicable only to fields with data. Empty fields are not considered. All passwords are shown as asterisks (***), not plain text.

7 In the **Name** box, enter a name to assign to the task. The name distinguishes this task from other scheduled tasks for easy identification.

8 Use the **Schedule** option to set a schedule for the task.

- When you choose **One Time Only**, Scheduler Server executes the task only once at the time you specify.
- When you choose **Every Month on the __ Day**, Scheduler Server executes the task every month on the day of the month and at the time you specify.
- When you choose **Every Week on __**, Scheduler Server executes the task every week on the day of the week and at the time you specify.
- When you choose **Every __ Days**, Scheduler Server executes the task at the interval and time you specify.
- When you choose **Every Day**, Scheduler Server executes the task every day at the time you specify.

9 In the **Date** box, set the date and time you want Scheduler Server to execute the task.

10 Click **Set**.

Scheduler Server schedules the task and executes it at the set time.

—End—

Job aid The following table describes the Schedule Password Change dialog box.

Part	Description
Id	Specifies the ID of this schedule.
Name	Specifies the name of this schedule.
Log File	Specifies the name of the Log file.
Schedule-One time only	Specifies a password change scheduled only once.
Schedule-Every Month on The nth Day	Specifies a password change for every month on the specified day.
Schedule-Every week on	Specifies a password change for every week on the specified day
Schedule-Every n days	Specifies a password change for every n days.
Schedule-Every Day	Specifies a password change every day.

Part	Description
Select date/time	Specifies the date and time from which the scheduler should be activated.
Set	Fixes the time at which the password must change.

Configuring SSH properties for ERS 8000 security groups and devices

Perform the following procedure to configure SSH properties for an ERS 8000 security group.

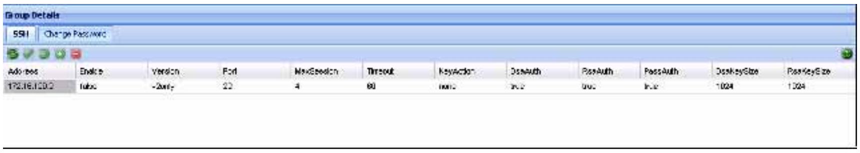
Procedure steps

Step Action

1 Under the SSH folder in the navigation pane, click the folder for the security group for which you want to configure SSH properties.

2 In the contents pane, click the **SSH** tab.

The SSH tab appears.



Address	Enable	Version	Port	MaxSession	Timeout	KeyAction	DsaAuth	RsaAuth	PassAuth	DsaKeySize	RsaKeySize
172.16.120.2	false	v2only	22	4	60	none	true	true	true	1024	1024

3 Select and modify any of the fields in the table. See the job aid below for descriptions on each field.

4 Click **Apply Changes**.

—End—

Job aid The following table describes the SSH tab.

Part	Description
Address	Specifies the IP address for the device.
Enable	Enables or disables SSH. Set to false to disable SSH services. Set to true to enable SSH services. Set to secure to enable SSH and disable insecure services SNMP, TFTP, and Telnet. The secure mode will take effect after restart. Default is false.
Version	Sets the SSH version. Set to both or v2only. Default is v2only.

Part	Description
Port	Sets the SSH connection port number. Default is 22.
Max Session	Sets the maximum number of SSH sessions allowed. The value can be from 0 to 8. Default is 4.
Timeout	Sets the SSH authentication connection timeout in seconds. Default is 60 seconds.
KeyAction	Sets the SSH key action.
DsaAuth	Enables or disables DSA authentication. Default is enabled.
RsaAuth	Enables or disables RSA authentication. Default is enabled.
PassAuth	Enables or disables password authentication. Default is enabled.
DsaKeySize	Specifies the DSA key size. Value can be from 512 to 1024. Default is 1024.
RsaKeySize	Specifies the RSA key size. Value can be from 512 to 1024. Default is 1024.

Configuring SSH properties for ERS 55xx/35xx/45xx/25xx and Ethernet Switch security groups

Perform the following procedure to configure SSH properties for an ERS 55xx/35xx/45xx/25xx or Ethernet Switch security group.

Procedure steps

Step Action

1 Under the **SSH** folder in the navigation pane, click the folder for the security group for which you want to configure SSH properties.

2 In the contents pane, click the **SSH** tab.

The SSH tab appears.

3 Select and modify any of the fields in the table. See the job aid below for descriptions on each field.

4 Click **Apply Changes**.

—End—

Job aid The following table describes the SSH tab:

Part	Description
Device Address	Specifies the IP address for the device.

Part	Description
Enable	Enables or disables SSH. Set to false to disable SSH services. Set to true to enable SSH services. Set to secure to enable SSH and disable insecure services SNMP, TFTP, and Telnet. The secure mode will take effect after reboot. Default is false.
Version	Sets the SSH version. Set to both or v2only. Default is v2only.
Port	Sets the SSH connection port number. Default is 22.
Timeout	Sets the SSH authentication connection timeout in seconds. Default is 60 seconds.
KeyAction	Sets the SSH key action.
DsaAuth	Enables or disables DSA authentication. Default is enabled.
PassAuth	Enables or disables password authentication. Default is enabled.

Deleting SSH security groups

Perform the following procedure to delete an SSH security group.

Procedure steps

Step **Action**

1 In the navigation pane, select the SSH security group that you want to delete.

2 On the Tool bar, click **Delete** (the - symbol).

The system asks for confirmation on deleting the security group.

3 Click **Yes** to delete the security group.

Security Manager delete the selected security group.

If you do not wish to delete the security group, click **No**.

—End—

Configuring a security group for CLI access

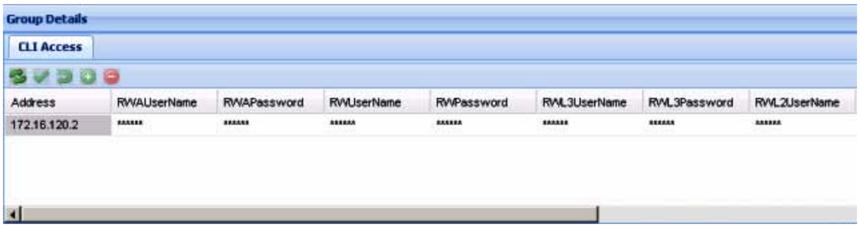
You can use Security Manager to configure the Command Line Interface (CLI) user names and passwords for all of the devices in a security group.

Perform the following procedure to configure CLI access for a security group.

Procedure steps

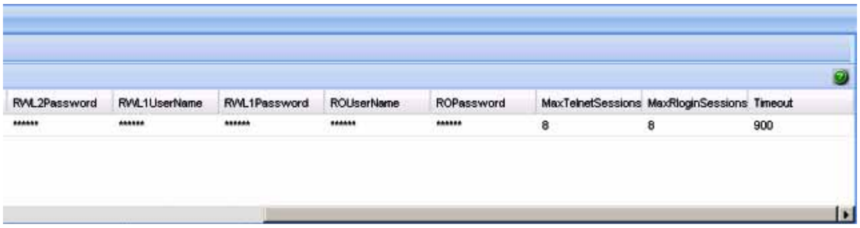
Step	Action
1	Under the CLI folder in the navigation pane, click the folder for the security group for which you want to configure CLI access.
2	Click any field in the Content pane and edit the contents of the field.

CLI Access tab



Address	RWAUserName	RWAPassword	RWUserName	RWPassword	RWL3UserName	RWL3Password	RWL2UserName
172.16.120.2	******	******	******	******	******	******	******

CLI Access tab (contd.)



RWL2Password	RWL1UserName	RWL1Password	ROUserName	ROPassword	MaxTelnetSessions	MaxRloginSessions	Timeout
******	******	******	******	******	8	8	900

3 On the Security Manager tool bar, click **Apply Changes**.

Security Manager applies your changes only to the changed devices in the security group.

—End—

Job aid

The following table describes the CLI Access tab.

Part	Description
Address	Specifies the IP address of the CLI account.
RWAUserName	Specifies the user name for the read/write/all CLI account.
RWAPassword	Specifies the password for the read/write/all CLI account.
RWUserName	Specifies the user name for the read/write CLI account.
RWPassword	Specifies the password for the read/write CLI account.

Part	Description
RWL3UserName	Specifies the user name for the Layer 3 read/write CLI account.
RWL3Password	Specifies the password for the Layer 3 read/write CLI account.
RWL2UserName	Specifies the user name for the Layer 2 read/write CLI account.
RWL2Password	Specifies the password for the Layer 2 read/write CLI account.
RWL1UserName	Specifies the user name for the Layer 1 read/write CLI account.
RWL1Password	Specifies the password for the Layer 1 read/write CLI account.
ROUserName	Specifies the user name for the read-only CLI account.
ROPassword	Specifies the password for the read-only CLI account.
MaxTelnet Sessions	Specifies the maximum number of concurrent Telnet sessions that are allowed (from 0 to 8).
MaxRlogin Sessions	Specifies the maximum number of concurrent Rlogin sessions that are allowed (from 0 to 8).
Timeout	Specifies the number of seconds of inactivity for a Telnet or Rlogin session before automatic timeout and disconnect (30 to 65535 seconds).

The CLI Access tab also lets you specify the number of allowed Telnet sessions and remote login (Rlogin) sessions. To prohibit Telnet or rlogin access to the devices, specify zero (0) as the number of allowed sessions. Ports are in the forwarding and blocking states.

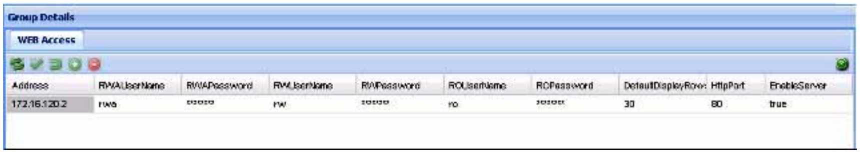
Configuring a security group for Web access

You can use Security Manager to manage access to the Web interfaces for all devices in the security group.

Perform the following procedure to configure Web access for a security group.

Procedure steps

Step	Action
1	Under the **WEB** folder in the navigation pane, click the folder for the security group for which you want to configure Web access.
2	In the contents pane, click the **Web Access** tab. The fields appear on the Contents pane.



Address	RWAUserName	RWAPassword	RWUserName	RWPassword	ROUserName	ROPassword	DefaultDisplayRow	HttpPort	EnableServer
172.16.120.2	rwa	*****	rw	*****	ro	*****	30	80	true

3 On the Web Access tab, edit the Web access user names and passwords.

> **ATTENTION**
>
> In Web Access only the ROPassword can be changed.

4 On the Security Manager toolbar, click **Apply Changes**.

Security Manager applies your changes only to the changed devices in the security group.

—End—

Job aid

The following table describes the parts of the Web Access tab.

Part	Description
Address	Specifies the IP address of the security group.
RWAUserName	Specifies the user name of the RWAUserName Web access account for the security group.
RWAPassword	Specifies the password of the RWAPassword Web access account for the security group.
RWUserName	Specifies the user name of the RWUserName Web access account for the security group.
RWPassword	Specifies the password of the RWPassword Web access account for the security group.
ROUserName	Specifies the user name of the ROUserName Web access account for the security group.
ROPassword	Specifies the password of the ROPassword Web access account for the security group.
DefaultDisplay Rows	Displays the number of default display rows on the Web management interface.
HttpPort	Displays the HTTP port for Web management access.
Enable Server	Allows you to enable or disable the Web access server.

Configuring a security group for SNMP v1/v2c access

You can use Security Manager to configure the SNMP community strings for all of the devices in a security group.

Perform the following procedure to configure SNMP community strings for a security group.

Procedure steps

Step	Action
1	Under the **SNMP** folder in the navigation pane, click the folder to configure SNMP access for the security group.
2	Click the **SNMP Access** tab.
3	On the **SNMP Access** tab, edit the SNMP community strings.
4	On the Security Manager toolbar, click **Apply Changes**. Security Manager applies your changes only to the changed devices in the security group.

—End—

Job aid

The following table describes the parts of the SNMP Access tab.

Part	Description
ReadWriteAll	Specifies the SNMP ReadWriteAll community string for the security group.
ReadWrite	Specifies the SNMP ReadWrite community string for the security group.
ReadOnly	Specifies the SNMP ReadOnly community string for the security group.
ReadWrite Layer3	Specifies the SNMP ReadWriteLayer3 community string for the security group.
ReadWrite Layer2	Specifies the SNMP ReadWriteLayer2 community string for the security group.
ReadWrite Layer1	Specifies the SNMP ReadWriteLayer1 community string for the security group.

Creating and configuring access policies

You can use Security Manager to add, delete, monitor, and synchronize access policies for all the devices in a security group.

Security Manager allows you to enable and disable access policies at a variety of levels within a security group. See the following topics for more information:

- "Adding access policies" (page 153)
- "Enabling or disabling access policies for devices in a security group" (page 155)
- "Enabling or disabling individual access policies" (page 156)
- "Deleting access policies" (page 158)

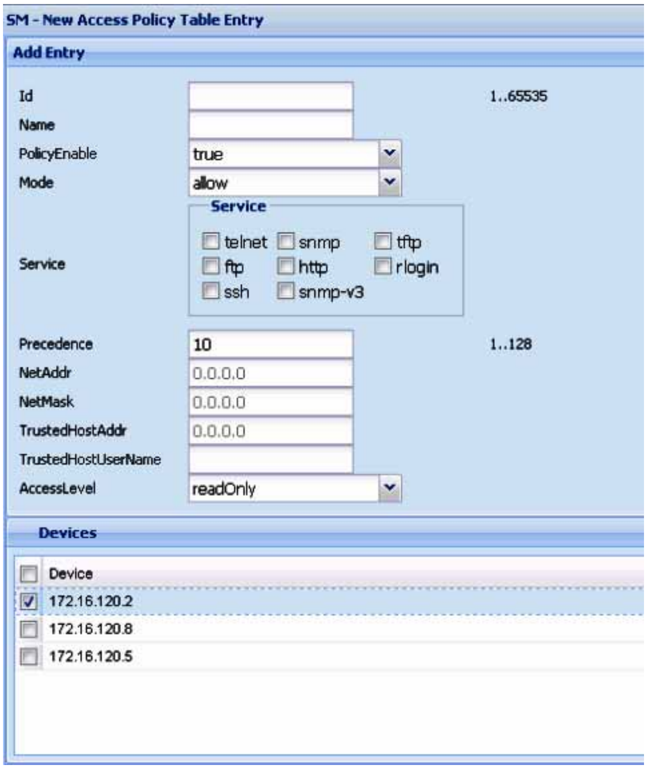
Adding access policies

You can control access to Passport and Accelar devices in the security group with access policies. The access policy specifies the hosts or networks that can access the switch through various services.

Perform the following procedure to add an access policy.

Procedure steps

Step	Action
1	Under the **Access Policy** folder in the navigation pane, click the folder for the security group for which you want to configure access policies.
2	In the security group folder, click the desired device.
3	In the contents pane, click the **Access Policy Table** tab.
4	On the tool bar, click **Create Entry** (the plus symbol). The New Access Policy Table Entry dialog box appears.



SM - New Access Policy Table Entry

Add Entry

Id: 1..65535

Name:

PolicyEnable: true

Mode: allow

Service: ☐ telnet ☐ snmp ☐ tftp ☐ ftp ☐ http ☐ rlogin ☐ ssh ☐ snmp-v3

Precedence: 10 (1..128)

NetAddr: 0.0.0.0

NetMask: 0.0.0.0

TrustedHostAddr: 0.0.0.0

TrustedHostUserName:

AccessLevel: readOnly

Devices

☐	Device
☑	172.16.120.2
☐	172.16.120.8
☐	172.16.120.5

5 Select appropriate access policy settings.

6 Click **OK**.

The Security Manager creates the New Access Policy entry in the selected devices in the device list.

—End—

Job aid

The following table describes the New Access Policy Table Entry dialog box.

Part	Description
Id	Specifies the ID of this policy.
Name	Specifies the Name of this policy.
PolicyEnable	Activates the access policy.
Mode	Indicates whether a packet having a source IP address that matches this entry should be permitted to enter the device or denied access.
Service	Selects the protocol to which this entry should be applied.

Part	Description
Precedence	Indicates the precedence of the policy. The lower the number, the higher the precedence (1 to 128).
NetAddr	Specifies the source network IP address. An address of 0.0.0.0 specifies any address on the network.
NetMask	Specifies the source network masks.
TrustedHost Addr	Specifies the trusted IP address of the host performing rlogin or rsh into the device. Applies only to rlogin and rsh. **ATTENTION** You cannot use wildcard entries.
TrustedHost UserName	Specifies the user name assigned to the trusted host. Applies only to rlogin and rsh. **ATTENTION** You cannot use wildcard entries. The user must already be logged in with the user name to be assigned to the trusted host.
AccessLevel	Specifies the access level of the trusted host (readOnly, readWrite, or readWriteAll).
Clear all	Deselects all of the devices on the device list.

Enabling or disabling access policies for devices in a security group

Perform the following procedure to enable or disable access policies for a device in a security group.

Procedure steps

Step **Action**

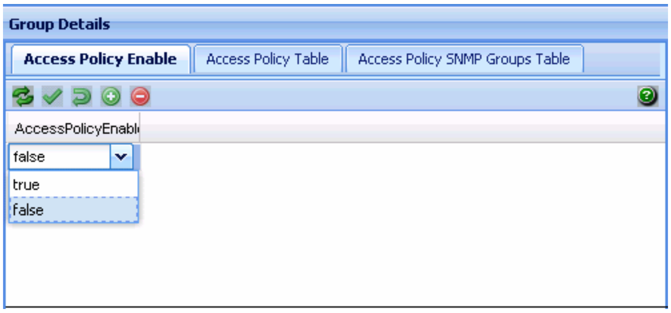
1 Under the **Access Policy** folder in the navigation pane, open the folder for the security group for which you want to set access policies.

2 In the security group folder, click the desired device.

3 In the contents pane, click the **Access Policy SNMP Groups Table** tab for devices supporting SNMPv3.

4 Enter the **Policy Id, Name,** and **Model** for the SNMP group.

5 In the contents pane, click the **Access Policy Enable** tab.



AccessPolicyEnabl
false
true
false

6 Click the drop-down box in the **Enable** column and choose **True** to enable access policies or **False** to disable access policies.

7 On the Security Manager tool bar, click **Apply Changes** to save the changes.

—End—

Job aid

The following table describes the Access Policy SNMP Groups Table tab.

Part	Description
AccessPolicyId	Specifies the Policy ID for the SNMP access group.
AccPolSnmpGrpName	Specifies the Access policy SNMP group name.
AccPolSnmpGrpModel	Specifies the Model of the SNMP group.

The following table describes the Access Policy Enable tab.

Part	Description
AccessPolicyEnable	Enables or disables access policies for the security group. The available settings are true and false.

Enabling or disabling individual access policies

Perform the following procedure to enable or disable individual access policies in a security group.

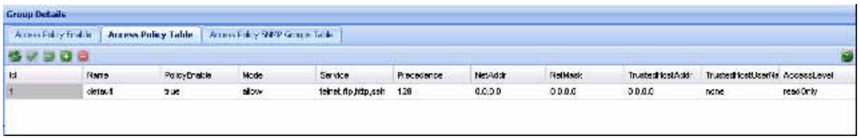
Procedure steps

Step Action

1 Under the **Access Policy** folder in the navigation pane, open the folder for the security group for which you want to set access policies.

2 In the security group folder, click the desired device.

3 In the contents pane, click the **Access Policy Table** tab.



Id	Name	PolicyEnable	Mode	Service	Precedence	NetAddr	NetMask	TrustedHostAddr	TrustedHostUserNa	AccessLevel
1	default	true	allow	telnet,ftp,http,ssh	128	0.0.0.0	0.0.0.0	0.0.0.0	none	readOnly

4 Go to the row for the access policy that you want to enable or disable.

5 In the **Enable** column, click the entry for the access policy and choose **True** to enable the access policy or **False** to disable the access policy.

6 On the Security Manager tool bar, click **Apply**.

—End—

Job aid

The following table describes the Access Policy Table.

Part	Description
Id	Identifies the entry in the table.
Name	Displays the name of the policy.
Policy Enable	Allows you to activate or deactivate the access policy. See "Enabling or disabling individual access policies" (page 156) for more information.
Mode	Indicates whether a packet having a source IP address that matches this entry should be permitted to enter the device or denied access.
Service	Selects the protocol to which this entry should be applied.
Precedence	Indicates the precedence of the policy. The lower the number, the higher the precedence (1 to 128).
NetAddr	Specifies the source network IP address. An address of 0.0.0.0 specifies any address on the network.
NetMask	Specifies the source network masks.
TrustedHostAddr	Specifies the trusted IP address of the host performing rlogin or rsh into the device. Applies only to rlogin and rsh. **ATTENTION** You cannot use wildcard entries.

Part	Description
TrustedHostUserName	Specifies the user name assigned to the trusted host. Applies only to rlogin and rsh. **ATTENTION** You cannot use wildcard entries. The user must already be log on with the user name to be assigned to the trusted host.
AccessLevel	Specifies the access level of the trusted host (readOnly, readWrite, or readWriteAll).

Deleting access policies

Perform the following procedure to delete an access policy from a security group.

Procedure steps

Step **Action**

1 Under the **Access Policy** folder in the navigation pane, click the folder for the security group from which you want to delete an access policy.

2 In the security group folder, click the desired device.

3 In the contents pane, click the **Access Policy Table** tab.

4 On the **Access Policy Table** tab, click any cell of the access policy that you want to delete.

5 On the Tool bar, click **Delete** (the - symbol).

The system asks for a confirmation on deleting the selected entry.

6 Click **Yes** to delete the entry.

Security Manager deletes the selected access policy.

—End—

Configuration of Routing Manager

You can configure routing parameters for devices across a network discovered by COM. Routing Manager supports the following protocols:

- IP Routing
- RIP
- OSPF
- ARP
- VRRP
- IPv6 Routing
- IPv6 OSPF

Starting Routing Manager

Perform the following procedure to start the Routing Manger.

Procedure steps

Step	Action
1	In the Configuration and Orchestration Manager window Navigation pane, click **Routing Manager** button. The Routing Manager window appears.

—End—

Job aid

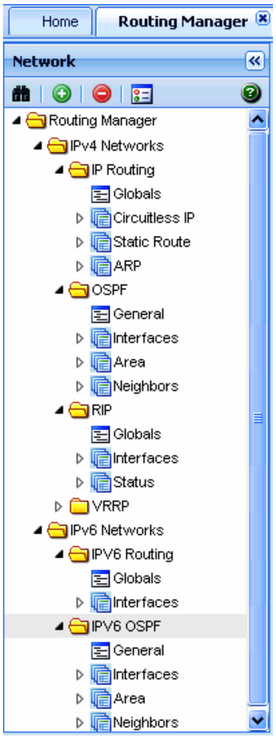
The following table describes the parts of the Routing Manager tool bar.

Toolbar button	Menu	Description
	Discover Routing	It discovers Routing Manager with the latest information. The assigned devices in the Admin/Access control tab are used in the discovery process. These devices are then filtered based on the specific manager user preferences.
	Add devices	Opens the Add devices dialog box, where you can add a device for a selected tree node. It is used for the circuit less tree node and for all other nodes that have less devices than the number of available devices.
	Remove device	The user can remove a selected device from the tree. This device will appear in the add devices dialog box after this operation.
	Preferences	The user can select the required configuration by clicking on this button.

Navigation pane

Routing Manager displays devices and adjacent devices in a tree structure. The Routing Manager navigation tree is located on the left side of the window and contains branches with the IP address of devices discovered by COM.

The following figure shows Routing Manager navigation pane.



From the navigation tree in the navigation pane, select the folder for which you want to view routing information.

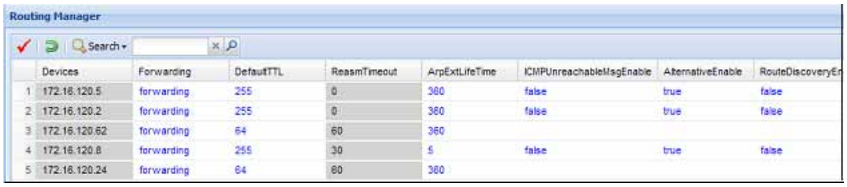
Contents pane

When you choose a folder in the navigation pane, its contents appear in the contents pane.

Perform the following procedure to view the folder in the contents pane.

Procedure steps

Step	Action
1	In the COM navigation pane, expand Routing Manager and select a Routing folder. The contents of the folder appear as a table in the contents pane, as shown in the following figure.



	Devices	Forwarding	DefaultTTL	ReasmTimeout	ArpExtLifeTime	ICMPUnreachableMsgEnable	AlternativeEnable	RouteDiscoveryEn
1	172.16.120.5	forwarding	255	0	360	false	true	false
2	172.16.120.2	forwarding	255	0	360	false	true	false
3	172.16.120.62	forwarding	64	60	360			
4	172.16.120.8	forwarding	255	30	5	false	true	false
5	172.16.120.24	forwarding	64	60	360			

—End—

Job aid

The following table describes the Content pane toolbar.

Toobar button	Menu	Description
⊕	Add Entry	The user can add a row to the specific table. A dialog box appears and the user can add the desired data; each dialog box is specific to its corresponding table. It is applicable only for protocol specific tables.
⊖	Delete Entry	The user can delete a row from the table by selecting a row and pressing the Delete Entry button. This is applicable only for protocol specific tables.
✓	Apply Changes	The user can modify the editable data in the table; after the editing is finished, the changes are applied to the device.
↺	Revert Changes	If the user wants to return to the initial state of the table this button should be pressed.
🔍	Search	The user can search the information in the table by selecting the columns to be searched and enter the information in the form near the search button.

Rediscovering Routing Manager

You can refresh the information in the Routing Manager window with routing information polled from the network devices. You can use this feature to load any updated information that takes effect after you open Routing Manager.

Perform the following procedure to rediscover the routing information.

Procedure steps

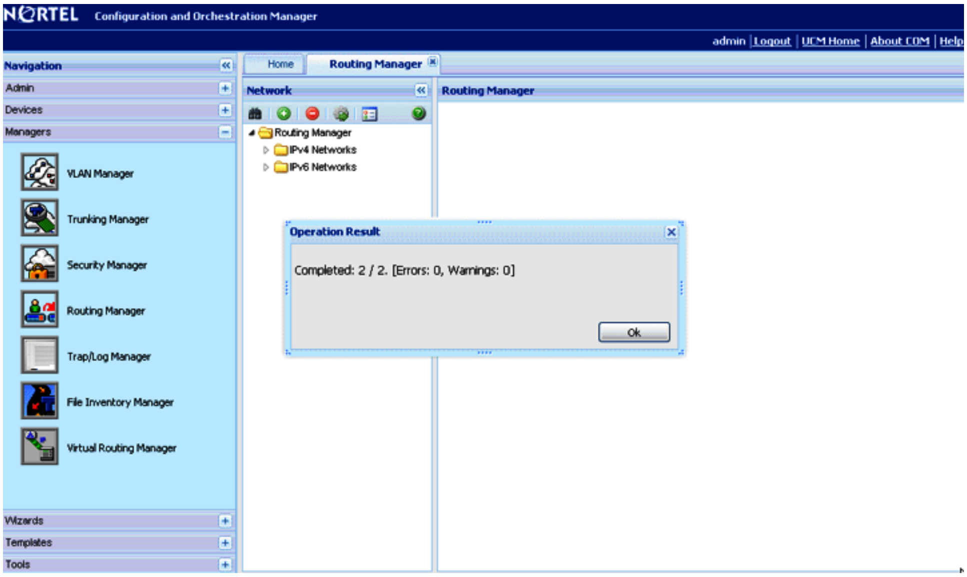
Step	Action
1	In the COM navigation pane, expand the Routing Manager toolbar, and click **Discover Routing**.
2	Click **OK** when the operation has completed.

—End—

Discover Routing

When the user opens the routing manager an automatic discovery is performed for the available devices. After this step, the user can obtain again the changes in the network by pressing the discovery button. While the discovery is being performed, there is a progress manager bar that shows the discovery progress.

This progress shows the total number of devices and the number of the discovered devices; also the user can see in here the possible warnings or errors that might appear in the discovery process. For more information, about these warnings and errors refer to the log file.



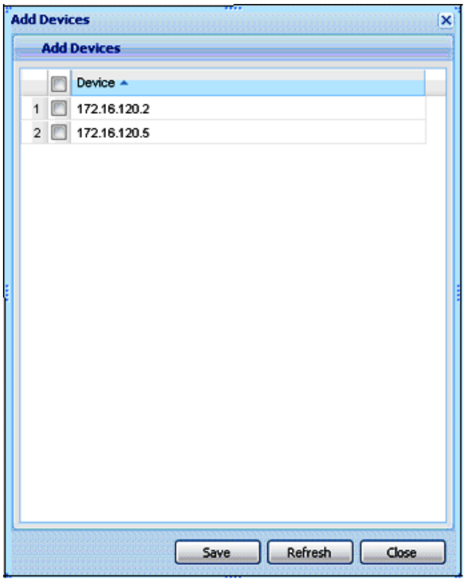
Completed: 2 / 2. [Errors: 0, Warnings: 0]

Adding devices

The add devices dialog box appears when pressing the toolbar Add Devices button. The available devices for the selected tree node appear in the dialog box; the available devices can be:

- Devices that have support for the specific protocol (like IP Routing/Circuitless).
- Devices that were previously removed from the tree for the specific protocol.

The user can select the desired devices and they get added to the left side tree.



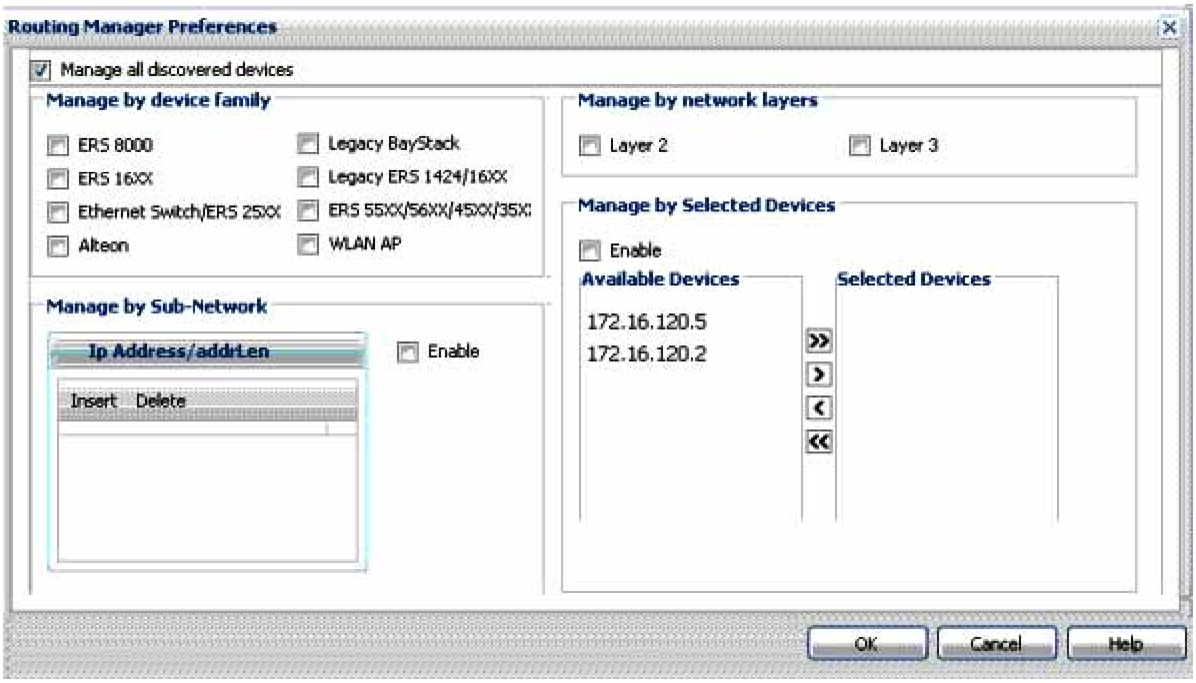
Add Devices

Add Devices

	□	Device ▲
1	□	172.16.120.2
2	□	172.16.120.5

Preferences

The Routing Manager preferences box appears when clicking the toolbar Preferences button. The user can select the specific set of assigned devices to be used in the Routing Manager discovery process, based on several criteria. More details about manager preferences can be found in the Preferences section.



Routing Manager Preferences

☑ Manage all discovered devices

Manage by device family

□ ERS 8000
□ ERS 16XX
□ Ethernet Switch/ERS 25XX
□ Alteon
□ Legacy BayStack
□ Legacy ERS 1424/16XX
□ ERS 55XX/56XX/45XX/35X
□ WLAN AP

Manage by network layers

□ Layer 2
□ Layer 3

Manage by Sub-Network

Ip Address/addrLen

□ Enable

Manage by Selected Devices

□ Enable

Available Devices

172.16.120.5
172.16.120.2

Selected Devices

Routing Manager features

You can use Routing Manager to perform the following tasks:

- Create, delete, or modify routes across multiple devices.
- View and configure routes and properties for IP, RIP, OSPF, VRRP, IPv6, and IPv6 OSPF.

Supported devices for Routing Manager

The following table provides a feature/device matrix for Routing Manager.

Features		Supported devices			
		ERS 8600	ERS 8300	ERS 55xx	ERS 16xx
IP Routing	Static Route	All versions	All versions	v4.0 and up	v2.1 and up
	ARP	All versions	All versions	v3.0 and up	v2.1 and up
OSPF	Interfaces	All versions	v3.0 and up	v5.0 and up	v2.1 and up
	Area	All versions	v3.0 and up	v5.0 and up	v2.1 and up
	Neighbors	All versions	v3.0 and up	v5.0 and up	v2.1 and up
RIP	Interfaces	All versions	All versions	v5.0 and up	v2.1 and up
	Status	All versions	All versions	v5.0 and up	v2.1 and up
VRRP	Interfaces	All versions	v3.0 and up	v5.0 and up	v2.1 and up
IPv6 Routing	Interfaces	v4.1 and up	not supported	not supported	not supported
IPv6 OSPF	Interfaces	v4.1 and up	not supported	not supported	not supported
	Area	v4.1 and up	not supported	not supported	not supported
	Neighbors	v4.1 and up	not supported	not supported	not supported

Viewing and configuring IPv4 routing

In the Routing Manager navigation pane, the navigation tree shows the IP addresses of discovered devices. Icons associated with IPv4 addresses on the branches indicate the following types of routes:

- IP routes (static and ARP)
- OSPF routes
- RIP routes
- VRRP routes

This section contains information about configuring routes for IPv4 routes and protocols.

Configuring IPv4 routing

This section contains information about the following topics:

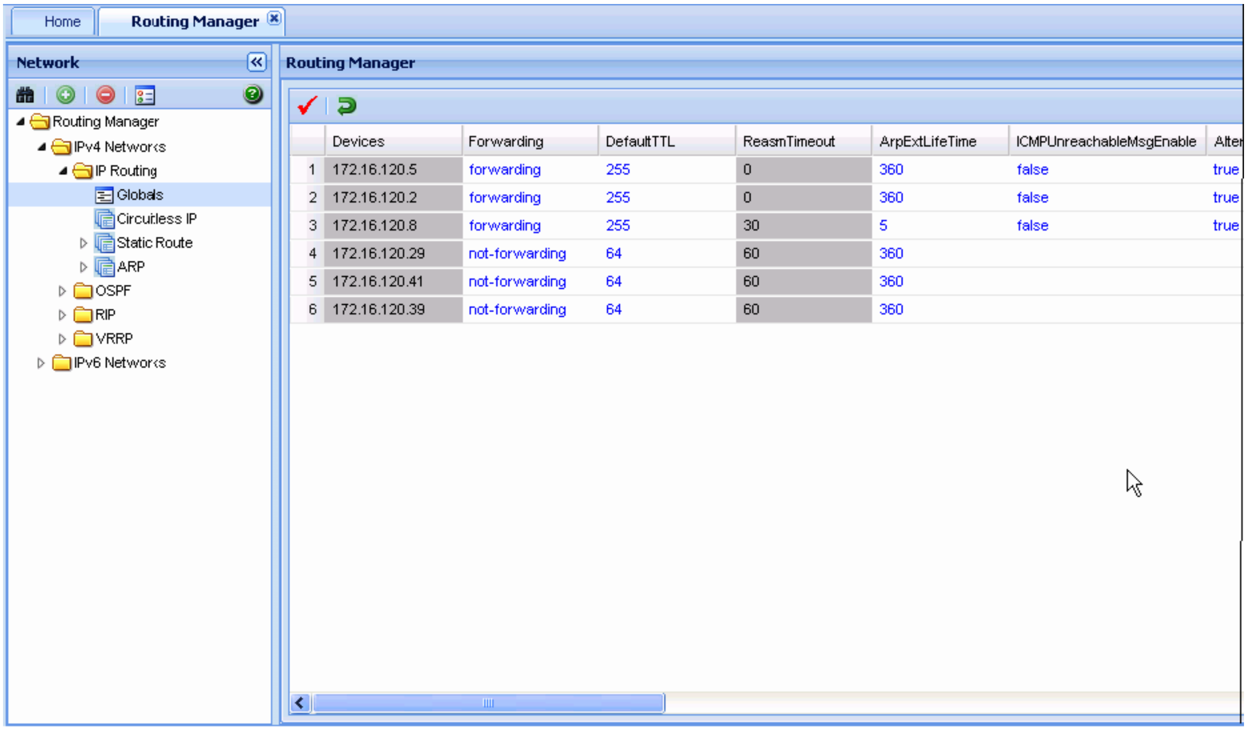
- "Configuring IPv4 routing Globals" (page 166)
- "Configuring circuitless IP" (page 168)
- "Configuring IPv4 routing Static Route" (page 169)
- "Configuring IPv4 routing ARP" (page 170)

Configuring IPv4 routing Globals

Perform the following procedure to configure the IPv4 routing global properties.

Procedure steps

Step	Action
1	In the COM navigation pane, expand the managers, click on the Routing Manager and select the node under **IPv4 Networks, IP ROUTING, Globals**. The Globals table appears in the contents pane.
2	To modify any of the configurable global routing properties, modify the fields directly in the contents pane and click **Apply Changes**. The following table describes the fields in the IPv4 routing – Globals table.



	Devices	Forwarding	DefaultTTL	ReasmTimeout	ArpExtLifeTime	ICMPUnreachableMsgEnable	Alter
1	172.16.120.5	forwarding	255	0	360	false	true
2	172.16.120.2	forwarding	255	0	360	false	true
3	172.16.120.8	forwarding	255	30	5	false	true
4	172.16.120.29	not-forwarding	64	60	360		
5	172.16.120.41	not-forwarding	64	60	360		
6	172.16.120.39	not-forwarding	64	60	360		

—End—

Job aid

The following table describes the fields in IP Routing Globals table.v4

Field	Description
Devices	Identifies the device.
Forwarding	Sets the switch for forwarding (routing) or not-forwarding.
DefaultTTL	Sets the default time-to-live (TTL) value for a routed packet. TTL indicates the maximum number of seconds elapsed before a packet is discarded. Enter an integer between 1 and 255. The default value of 255 is inserted in the TTL field whenever one is not supplied in the datagram header.
ReasmTimeout	The maximum number of seconds that received fragments are held while they wait for reassembly at this entity. The default value is 30 seconds.
ArpExtLifeTime	The lifetime in minutes of an ARP entry within the system.

ICMPUnreachableMsg	Enable If selected, enables the generation of Internet Control Message Protocol (ICMP) net unreachable messages if the destination network is not reachable from this router. These messages assist in determining if the routing switch is reachable over the network. The default is disabled (not selected).
ICMPRedirectMsgEnable	Enables or disables the switch from sending ICMP destination redirect messages.
AlternativeEnable	Enables or disables the alternative-route feature globally. If the alternative-route parameter is disabled, all existing alternative routes are removed. When the parameter is enabled, all alternative routes are re-added.
RouteDiscoveryEnable	If selected, enables the ICMP Route Discovery feature.
AlowMoreSpecificNonLocal RouteEnable	Enables or disables a more specific nonlocal route.
UdpCheckSumEnable	Enables or disables UDP checksum calculation.
EcmpEnable	Globally enables or disables the Equal Cost Multipath (ECMP) feature. Note: When ECMP is disabled, the EcmpMaxPath is reset to the default value of 1.
EcmpMaxPath	Used to globally configure the maximum number of ECMP paths. • When the switch is in R mode, the interval is 1 to 8. • When the switch is not in R mode, the interval is 1 to 4. • The default value is 1. You cannot configure this feature unless ECMP is enabled globally on the switch.
Ecmp<1-4>PathList	Used to select a preconfigured ECMP path.
EcmpPathListApply	Set this field to true to apply any changes in the ECMP path list configuration or in the prefix lists configured to be used as path lists.

Configuring circuitless IP

You can configure circuitless IP (Clip) interfaces on the following devices: ERS 1600v2.0 and up, ERS 8000 v3.3 and up, and ERS 8300 v2.2 and up.

Perform the following procedure to configure circuitless IP and to add or delete circuitless IP interfaces.

Procedure steps

Step **Action**

1 In the COM navigation pane, expand the managers, click on the Routing Manager and select the node under **IPv4 Networks, IP ROUTING, Circuitless IP**.

2 Select the device for which you want to configure CLIP.

3 From the Routing Manager toolbar, select **Add**.

The Circuitless IP Insert dialog box appears.

4 Enter the required information.

Field descriptions follow this procedure.

5 Click **Save**.

The new CLIP interface appears in the contents pane.

6 To delete a CLIP interface, in the contents pane click in the row for that interface and select **Delete entry** from the Routing Manager Edit menu.

You cannot modify CLIP interface fields in the contents pane.

—End—

Job aid

The following table describes the fields in the IPv4 Routing - Insert Circuitless IP field.

Field	Description
IfIndex	The interface index.
Addr	The IP address of the Clip interface.
NetMask	The network mask of the Clip interface.

Configuring IPv4 routing Static Route

Perform the following procedure to configure static routes.

Procedure steps

Step **Action**

1 In the COM navigation pane, expand the managers, click on the Routing Manager and select the node under **IPv4 Networks, IP ROUTING, Static Route**.

The Static Route table appears in the contents pane.

2 To add a route, from the tool bar, click **Add entry** . The Add entry dialog box appears.

3 Complete the fields as required, and select the devices for which the static route applies.

4 Click **OK**.

The new entry appears in the contents pane.

5 To modify any of the configurable static route properties of an entry, modify the fields directly in the contents pane and click **Apply Changes**.

—End—

Configuring IPv4 routing ARP

Perform the following procedure to configure ARP routes.

Procedure steps

Step Action

1 In the COM navigation pane, expand the managers, click on the Routing Manager and select the node under **IPv4 Networks, IP ROUTING, ARP**.

The ARP table appears in the contents pane.

2 To add a route, from the tool bar, click **Add entry**.

The Insert ARP dialog box appears.

3 Complete the fields as required, and select the devices for which the ARP route applies.

4 Click **OK**.

The new entry appears in the contents pane.

—End—

Job aid

The following table describes the fields in the IPv4 routing ARP.

Field	Description
Interface	The router interface for this ARP entry: • Brouter interfaces are identified by the slot or port number of the brouter port. • For virtual router interfaces, the brouter slot/port and the name of the VLAN followed by the (VLAN) designation are specified.
MacAddress	The Ethernet MAC address.
IpAddress	The IP address corresponding to the MAC address.
Type	The type of ARP entry: • local—a locally configured ARP entry • static—a statically configured ARP entry • dynamic—a learned ARP entry

Configuring OSPF

This section contain information about the following topics:

- "Configuring OSPF General" (page 171)
- "Configuring OSPF Interfaces" (page 173)
- "Configuring OSPF Area" (page 177)
- "Configuring OSPF Neighbors" (page 178)

Configuring OSPF General

Perform the following procedure to configure general OSPF properties.

Procedure steps

Step	Action
1	In the COM navigation pane, expand managers, click on Routing Manager and select a node under **IPv4 Networks, OSPF, General**. The OSPF – General table appears in the contents pane.
2	To modify any of the configurable OSPF properties, modify the fields directly in the contents pane and click **Apply Changes**.

—End—

Job aid

The following table describes the fields in the OSPF – General table.

Field	Description
Devices	Identifies the device.
RouterId	The Router ID, which in OSPF has the same format as an IP address but identifies the router independent of other routers in the OSPF domain.
AdminStat	The administrative status of OSPF in the router. The value enabled denotes that the OSPF process is active on at least one interface; disabled disables the OSPF process on all interfaces. The default is disabled.
VersionNumber	Current version number of OSPF.
AreaBdrRtrStatus	A flag to note if this router is an area border router (ABR). **ATTENTION** The AreaBdrRtrStatus value must be true to create a virtual router interface.
ASBdrRtrStatus	When the ASBdrRtrStatus option is selected, the router is configured as an autonomous system boundary router (ASBR).
ExternLsaCount	The number of external (LS type 5) link state advertisements in the link state database.
ExternLsa CksumSum	The 32-bit unsigned sum of the link state checksums of the external link state advertisements contained in the link state database. This sum is used to determine if a changed occurred in a router link state database and to compare the link state databases of two routers.
OriginateNewLsas	The number of new link state advertisements that have been originated. This number is incremented each time the router originates a new link state area (LSA).
RxNewLsas	The number of link state advertisements received that are determined to be new instances. This number does not include newer instances of self-originated link state advertisements.
DefaultMetric 10MegPort	Indicates the default cost to be applied to the 10 Mb/s interface (port).
DefaultMetric 100MegPort	Indicates the default cost to be applied to the 100 Mb/s interface (port).
DefaultMetric 1000MegPort	Indicates the default cost to be applied to the 1000 Mb/s interface (port).
DefaultMetric10000 MegPort	Indicates the default cost to be applied to the 10000 Mb/s interface (port).
TrapEnable	Indicates whether to enable traps relating to the OSPF.
AutoVirtLink Enable	Enables or disables automatic creation of virtual links.
SpfHoldDown Time	Allows you to change the OSPF hold-down timer value (3 to 60 seconds).

Field	Description
Action	Allows you to initiate a new SPF run to update the routing table.
Rfc1583 Compatibility	Allows you to control the preference rules used when choosing among multiple AS-External LSAs advertising the same destination. When you enable this setting, the preference rule is the same as specified by RFC 1583. When you disable the setting, the new preference rule as described in RFC 2328 is applicable, which potentially prevents the routing loops when AS-External LSAs for the same destination originate from different areas.
LastSpfRun	Used to indicate the time (SysUpTime) since the last SPF calculated by OSPF.

Configuring OSPF Interfaces

Perform the following procedure configure OSPF interfaces.

Procedure steps

Step **Action**

1 In the COM navigation pane, expand the managers, click on the Routing Manager and select a node under **IPv4 Networks, OSPF, Interfaces**.

The OSPF – Interfaces table appears in the contents pane.

> **ATTENTION**
>
> By default, OSPF Interfaces tab parameter appears.

2 To add an interface, from the menu bar, click **Add Entry**.

The Add entry dialog box appears.

3 Complete the fields as required.

4 Click **Save**.

The new entry appears in the contents pane.

5 To modify any of the configurable OSPF interface properties for an entry, modify the fields directly in the contents pane and click **Apply** .

—End—

Job aid

The following table describes the fields in the OSPF – Interfaces table.

Tab	Field	Description
Interfaces	IpAddress	IP address of the current OSPF interface.
	AddressLessIf	Designates whether an interface has an IP address. Interfaces with an IP address = 0 Interfaces without IP address = ifIndex
	AreaId	Dotted decimal value to designate the OSPF area name. VLANs that maintain the default area setting on the interface cause the link-state database (LSDB) to be inconsistent. **ATTENTION** The area name is not related to an IP address. You can use any value for the OSPF area name (for example, 1.1.1.1 or 200.200.200.200).
	AdminStat	Current administrative state of the OSPF interface (enabled or disabled).
	State	Current designated router (DR) state of the OSPF interface (DR, BDR, OtherDR)
	RtrPriority	OSPF priority for the interface during the election process for the designated router. The interface with the highest priority number is the designated router. The interface with the second-highest priority becomes the backup designated router. If the priority is 0, the interface cannot become the designated router or the backup. The priority is used only during election of the designated router and backup designated router. The range is 0 to 255. The default is 1.
	Designated Router	IP address of the router elected by the Hello Protocol to send link state advertisements on behalf of the NBMA network.
	Backup Designated Router	IP address of the router elected by the Hello Protocol to send link state advertisements on behalf of the NBMA network if the designated router fails.
	IfType	Type of OSPF interface (broadcast, nbma, or passive)

Tab	Field	Description
	AuthType	Type of authentication required for the interface. • none—No authentication required. • simple password—All OSPF updates received by the interface must contain the authentication key specified in the interface AuthKey field. • MD5 authentication—All OSPF updates received by the interface must contain the md5 key.
	AuthKey	Key (up to 8 characters) required when simple password authentication is specified in the interface AuthType field.
	Primary Md5Key	The primary MD5 key used for encrypting outgoing packets.
	Hello Interval	Length of time, in seconds, between Hello packets. This value must be the same for all routers attached to a common network. The default is 10 seconds. **ATTENTION** When you change the Hello interval values, you must save the configuration file and reboot the switch for the values to be restored and checked for consistency.
	TransitDelay	Length of time, in seconds between 1 and 3600, required to transmit an LSA update packet over the interface.
	RetransInterval	Length of time, in seconds between 1 and 3600, required between LSA retransmissions.
	Dead Interval	Interval used by adjacent routers to determine if the router was removed from the network. This interval must be identical on all routers on the subnet and a minimum of four times the Hello interval. To avoid interpretability issues, the RtrDeadInterval value for the OSPF interface must match the RtrDeadInterval value for the OSPF virtual interface. The default is 40 seconds.
	AdvertiseWhen Down	If true, the network on this interface is advertised as up, even if the port is down.
	MtuIgnore	Specifies whether the interface MTU flag ignores the MTU setting.
	Events	Number of state changes or error events that occurred through all interfaces.
	PollInterval	Length of time, in seconds, between Hello packets sent to an inactive OSPF router.

Tab	Field	Description
Interfaces Advance (ERS 8300 only)	IfIndex	It is a unique value to identify a physical interface or a logical interface (VLAN).
	IP Address	IP address of the current OSPF interface.
	Enable	Enables or disables the OSPF routing on the specified interface.
	IfType	OSPF interface type. It can be broadcast or passive.
	AuthType	Type of authentication required for the interface: • none—no authentication required. • simple password—all OSPF updates received by the interface must contain the authentication key specified in the interface AuthKey field. • MD5 authentication—all OSPF updates received by the interface must contain the md5 key.
	AuthKey	Specify key if the simple password is selected in the interface AuthType field. The key can be up to 8 characters.
	IfAreaID	Dotted-decimal value to designate the OSPF area name. **ATTENTION** The link state database (LSDB) is inconsistent if the settings is default area for VLAN.
	Advertise WhenDown	Indicates when the interface advertises. **ATTENTION** Indicates even when it is non-operational.
	HelloInterval	It is the length of time between the hello packets. The time is mentioned in seconds. This value must be the same for all routers attached to a common network. The default is 10 seconds.

Tab	Field	Description
	RtrDead Interval	Interval used by adjacent routers to check if the router is removed from the network. On the subnet the interval must be identical on all routers. It also needs to be minimum of four times the hello interval. To avoid interpretability issues, the RtrDeadInterval value for the OSPF interface needs to match with the RtrDeadInterval value for the OSPF virtual interface. The default is 40 seconds.
	RtrPriority	It is used only during the election and backup of the designated router. The OSPF priority for the interface during the election process for the designated route: • designated router—interface with the highest priority number • backup designated router—interface with the second highest priority **ATTENTION** The priority range is from 0 to 255 and the default is 1. The interface is not designated if the priority is 0.
	Metric	It is the metric value applied to the indicated type of service. By default, this equals the least metric at the type of service among the interfaces to other areas.

Configuring OSPF Area

Perform the following procedure configure OSPF areas.

Procedure steps

Step	Action
1	In the COM navigation pane, expand the managers, click on the Routing Manager and select a node under **IPv4 Networks, OSPF, Area**. The OSPF – Area table appears in the contents pane.
2	To add an area, from the menu bar, click **Add Entry**. The Add entry dialog box appears.
3	Complete the fields as required and select the devices for which the area applies.

4 Click **OK**.

The new entry appears in the contents pane.

—End—

Job aid

The following table describes the fields in the OSPF – Area table.

Field	Description
AreaId	A 32-bit integer uniquely identifying an area. Area ID 0.0.0.0 is used for the OSPF backbone. VLANs that maintain the default area setting on the interface cause the LSDB to be inconsistent.
ImportAsExtern	The area support for importing AS-external link-state advertisements (LSA). Options include importExternal (default), importNotExternal, or importNssa (not so stubby area).
SpfRuns	Used to indicate the number of SPF calculations performed by OSPF.
AreaBdrRtrCount	The total number of area border routers reachable within this area. The value, initially zero, is calculated in each SPF Pass.
AsBdrRtrCount	The total number of autonomous system border routers reachable within this area. The value, initially zero, is calculated in each SPF pass.
AreaLsaCount	The total number of link state advertisements in the link state database for this area, excluding AS-external LSAs.
AreaLsa CksumSum	The 32-bit unsigned sum of the link state advertisements. This sum excludes external (LS type 5) link state advertisements. The sum is used to determine if a change occurred in a router link state database and to compare the link state database of two routers.
AreaSummary	The support for Summary advertisements in a stub area.
ActiveIfcount	The number of active interfaces in the area.

Configuring OSPF Neighbors

Perform the following procedure configure OSPF neighbors.

Procedure steps

Step Action

1 In the COM navigation pane, expand managers, click Routing Manager and select a node under **IPv4 Networks, OSPF, Neigbors**.

The OSPF – Neighbors table appears in the contents pane.

2 To add a neighbor entry, from the menu bar, click **Add Entry**.

The Add Entry dialog box appears.

3 Complete the fields as required.

4 Click **Save**.

—End—

Job aid

The following table describes the fields in the OSPF – Neighbors table.

Field	Description
IpAddr	The neighbor IP address.
AddressLess Index	On an interface having an IP address, this value is zero. On addressless interfaces, this value is the corresponding value of ifIndex in the Internet standard management information base (MIB). On row creation, this value is derived from the instance.
RtrId	The router ID of the neighboring router, which in OSPF has the same format as an IP address but identifies the router independent of its IP address.
Options	A bit mask corresponding to the options field of the neighbor.
Priority	Indicates the preferential treatment assignment, which places the transmitted packets into queues. The priority field also indicates the possible selection of the priority field in the data link header when the switch forwards the packet.
State	The OSPF interface state.
Events	The number of state changes or error events that occurred between the OSPF router and the neighbor router.
LsRetransQLen	The number of elapsed seconds between advertising retransmissions of the same packet to a neighbor.
ospfNbmaNbr Permanence	Indicates whether the neighbor is a manually configured NBMA neighbor.
HelloSuppressed	This variable indicates whether Hellos to a neighbor are suppressed.

Configuring RIP

This section contains information about the following topics:

- "Configuring RIP Globals" (page 179)
- "Configuring RIP interface parameters" (page 180)
- "Configuring RIP Advanced Interface parameters" (page 181)
- "Viewing RIP status" (page 182)

Configuring RIP Globals

Perform the following procedure configure global RIP properties.

Procedure steps

Step	Action
1	In the COM navigation pane, expand managers, click on Routing Manager and select **IPv4 Networks, RIP, Globals**. The RIP–Globals table appears in the contents pane.
2	To modify any of the configurable RIP global properties, modify the fields directly in the contents pane and click **Apply Changes**.

—End—

Job aid

The following table describes the fields in the RIP – Globals table.

Field	Description
Devices	Identifies the device.
Operation	Enables or disables the operation of RIP on all interfaces. The default is disabled.
UpdateTime	The time interval between RIP updates on all interfaces. This is a global parameter for the switch and it applies to all interfaces. You cannot set this parameter individually for each interface.
RouteChanges	The number of route changes RIP made to the IP route database, excluding the refresh of a route age.
Queries	The number of responses sent to RIP queries from other systems.
HoldDownTime	Sets the length of time that RIP continues to advertise a network after determining it is unreachable.
TimeOutInterval	Sets the RIP timeout interval in seconds.
DefImportMetric	Sets the value of the default import metric to import a route into a RIP domain. For announcing OSPF internal routes into a RIP domain, if the policy does not specify a metric value, the default import metric must be used. For OSPF external routes, the external cost is used.

Configuring RIP interface parameters

Perform the following procedure configure RIP interface parameters.

Procedure steps

Step	Action
1	In the COM navigation pane, expand managers, click on Routing Manager and select a node under **IPv4 Networks, RIP, Interfaces**. The Interfaces tab appears in the contents pane.

2 To modify any of the configurable RIP interface properties, modify the fields directly in the contents pane, and click **Apply.**

—End—

Job aid

The following table describes the fields in the RIP Interfaces tab.

Field	Description
Address	The IP address of the router interface.
Send	What the router sends on this interface (selected from a menu): • DoNotSend—no RIP updates sent on this interface • ripVersion1—RIP updates compliant with RFC 1058 • rip1Compatible—broadcast RIP2 updates using RFC 1058 route subsumption rules • ripVersion2—multicasting RIP2 updates
Receive	Indicates which versions of RIP updates are accepted: • rip1 • rip2 • rip1OrRip2 The rip2 and rip1OrRip2 imply reception of multicast packets.

Configuring RIP Advanced Interface parameters

Perform the following procedure configure advanced RIP interface parameters.

Procedure steps

Step **Action**

1 In the COM navigation pane, expand managers, click on Routing Manager and select a node under **IPv4 Networks, RIP, Interfaces**.

The Interfaces tab appears in the contents pane.

2 Click the **RipAdvancedInterfaces** tab.

The Interfaces Advance table appears.

3 To modify any of the configurable RIP advance interface properties, modify the fields directly in the contents pane, and click **Apply**.

—End—

Job aid

The following table describes the fields in the Interfaces Advance tab.

Field	Description
Address	Displays the address of the entry in the IP RIP interface table.
Interface	The index value of the RIP interface.
Enable	Displays if the RIP interface is enabled or disabled.
Supply	Enables (true) or disables (false) the switch to send out RIP updates on this interface.
Listen	What the router sends on this interface (selected from a menu). The default is rip1compatible.
Poison	Sets whether (true) or not (false) RIP routes on the interface learned from a neighbor are advertised back to the neighbor. If disabled, split horizon is invoked and IP routes learned from an immediate neighbor are not advertised back to the neighbor. If enabled, the RIP updates sent to a neighbor from which a route is learned are poisoned with a metric of 16. Therefore, the receiver neighbor ignores this route because the metric 16 indicates infinite hops in the network.
DefaultSupply	Enables (true) or disables (false) an advertisement of a default route on this interface. This command takes effect only if a default route exists in the routing table.
DefaultListen	Enables (true) or disables (false) the switch to accept the default route learned through RIP on this interface.
TriggeredUpdate	Enables (true) or disables (false) the switch to send out RIP updates on this interface.
AutoAggregate	Enables (true) or disables (false) automatic route aggregation on this interface. When enabled, the switch automatically aggregates routes to their natural mask when they are advertised on an interface. This configuration aggregates only the routes with a mask length longer than natural mask.
InPolicy	This policy determines whether to learn a route on this interface. It also specifies the parameters of the route when it is added to the routing table.
OutPolicy	This policy determines whether to advertise a route from the routing table on this interface. This policy also specifies the parameters of the advertisement.
Cost	Indicates the RIP cost for this interface. Enter a value between 1 and 15.

Viewing RIP status

Perform the following procedure view the RIP protocol statistics.

Procedure steps

Step	Action
1	In the COM navigation pane, expand managers, click on Routing Manager and select a node under **IPv4 Networks, RIP, Status**. The RIP Status table appears in the contents pane.

—End—

Job aid

The following table describes the fields in the RIP Status table.

Field	Description
Address	The IP address of the router interface.
RcvBadPackets	The number of RIP response packets received by the RIP process that were subsequently discarded for any reason (for example, a version 0 packet or an unknown command type).
RcvBadRoutes	The number of routes, in valid RIP packets, that were ignored for any reason (for example, unknown address family or invalid metric).
SentUpdates	The number of triggered RIP updates actually sent on this interface. This field explicitly does not include full updates sent containing new information.
HolddownTime	The hold down time.
TimeoutInterval	The time interval between two rip packets.
ProxyAnnounceFlag	

Configuring VRRP

This section contains information about the following topics:

- "Configuring VRRP Globals" (page 183)
- "Configuring VRRP Interfaces" (page 184)

Configuring VRRP Globals

Perform the following procedure configure VRRP global properties.

Procedure steps

Step	Action
1	In the COM navigation pane, expand managers, click on Routing Manager and select **IPv4 Networks, VRRP, Globals**. The VRRP – Globals table appears in the contents pane.

2 To modify any of the configurable VRRP global properties, modify the fields directly in the contents pane and click **Apply Changes**.

—End—

Job aid

The following table describes the fields in the VRRP – Globals table.

Field	Description
Devices	Identifies the device.
NotificationCntl	Indicates whether the VRRP-enabled router generates Simple Network Management Protocol (SNMP) traps for events defined in this management information base (MIB): • Enabled—SNMP traps are sent • Disabled—no traps are sent
VirtualAddr Enable	Used to configure whether this device must respond to pings directed to a virtual router IP address.

Configuring VRRP Interfaces

Perform the following procedure configure VRRP interface properties.

Procedure steps

Step Action

1 In the COM navigation pane, expand the managers, click on the Routing Manager and select a node under **IPv4 Networks, VRRP, Interfaces**.

The VRRP – Interfaces table appears in the contents pane.

2 To modify any of the configurable VRRP interface properties, modify the fields directly in the contents pane and click **Apply Changes**.

—End—

Job aid

The following table describes the fields in the VRRP – Interfaces table.

Field	Description
IfIndex	Interface of the VRRP router.

Field	Description
VrId	A number that uniquely identifies a virtual router on a given VRRP router. The virtual router acts as the default router for one or more assigned addresses (1 to 255).
IpAddr	The assigned IP addresses that a virtual router is responsible for backing up.
VirtualMacAddr	The MAC address of the virtual router interface.
State	The state of the virtual router interface: • initialize—waiting for a startup event • backup—monitoring availability and state of the master router • master—functioning as the forwarding router for the virtual router IP addresses
Control	Whether VRRP is enabled or disabled for the port (or VLAN).
Priority	Priority value to be used by this VRRP router. Set a value from 1 to 255, where 255 is reserved for the router that owns the IP addresses associated with the virtual router. The default is 100.
MasterIpAddr	The IP address of the physical interface of the master virtual router that is responsible for forwarding packets sent to the virtual IP addresses associated with the virtual router.
FasterAdv IntervalEnabled	Enables or disables the fast advertisement interval. When disabled, the regular advertisement interval is used. The default is disabled.
Advertisement Interval	The time interval (in seconds) between sending advertisement messages. Set from 1 to 255 seconds with a default of 1 second. Only the master router sends advertisements.
FasterAdv Interval	Sets the fast advertisement interval, which is the time interval between sending VRRP advertisement messages. The interval is between 200 and 1000 milliseconds, and you must enter the same value on all participating routers. The default is 200. You must enter the values in multiples of 200 milliseconds.
VirtualRouter UpTime	The time interval, in hundredths of a second, since this virtual router was initialized.
Action	Using the following action list to manually override the delay timer and force preemption: • preemption—preempt the timer • none—allow the timer to keep working

Field	Description
HoldDown Timer	The time interval (in seconds) a router is delayed for the following conditions: • The VRRP holddown timer is executed during the switch transitions from Init to backup and then to master. It occurs only during a switch bootup. • The VRRP holddown timer is not executed during a non-bootup condition. If the master VR goes down, the backup switch becomes the master after the master downtime interval. (3 * hello interval). • The VRRP holddown timer applies to the VRRP BackupMaster feature.
HoldDown State	When Hold Down Timer is counting down status is active and preemption occurs. The text box displays dormant when preemption is not pending.
HoldDownTime Remaining	The remaining time (in seconds) before preemption.
CriticalIpAddr Enable	Sets the IP interface on the local router to enable or disable the backup.
CriticalIpAddr	An IP interface on the local router configured so that a change in its state causes a role switch in the virtual router (for example, from master to backup) in case the interface stops responding.
BackUpMaster Enable	Indicates if the VRRP backup master is enabled or disabled. This option is not recommended for non Split-MLT ports.
BackUpMaster State	Displays the BackupMaster operational state. The BackUpMaster state is down if VRRP is enabled on a switch during the master state . The BackUpMaster state is up if VRRP is enabled on a switch during the backup state. • up: during BackupMaster state • down: during the original state

Viewing and configuring IPv6 routing

In the Routing Manager navigation pane, the navigation tree shows the IP addresses of discovered devices. Icons associated with IP addresses on the branches indicate the following types of routes:

- IPv6 Routing
- IPv6 OSPF

This section contains information about configuring routes for IPv6 routes and protocols. This section includes information about the following topics:

- "Configuring IPv6 routing" (page 187)
- "Configuring IPv6 OSPF" (page 189)

Configuring IPv6 routing

This section contains information about the following topics:

- "Configuring IPv6 routing Globals" (page 187)
- "Configuring IPv6 routing Interfaces" (page 188)

Configuring IPv6 routing Globals

Perform the following procedure view the IPv6 routing global properties.

Procedure steps

Step	Action
1	In the COM navigation pane, expand the managers, click on the Routing Manager and select a node under **IPv6 Networks, IPV6 ROUTING, Globals**. The Globals table appears in the contents pane.
2	To modify any of the configurable global routing properties, modify the fields directly in the contents pane and click **Apply Changes**.

—End—

Job aid The following table describes the fields in the IPv6 routing – Globals table.

Field	Description
Devices	Identifies the device.
Forwarding	Indicates whether this entity is acting as an IPv6 router in respect to the forwarding of datagrams received by, but not addressed to, this entity. IPv6 routers forward datagrams. IPv6 hosts do not (except those source-routed through the host).
DefaultHopLimit	The default value inserted into the Hop Limit field of the IPv6 header of datagrams originated at this entity whenever a Hop Limit value is not supplied by the transport layer protocol.
Interfaces	The number of IPv6 interfaces (regardless of their current state) present on this system.
IfTableLastChange	The value of sysUpTime at the time of the last insertion or removal of an entry in the ipv6IfTable. If the number of entries is unchanged since the last reinitialization of the local network management subsystem, then this object contains a zero value.
IcmpNetUnreach	Enables or disables ICMP net unreach feature.
IcmpRedirectMsg	Enables or disables ICMP redirect feature.

Field	Description
IcmpErrorInterval	The rate (in milliseconds) at which ICMP error messages can be sent out. A value of zero indicates that no ICMP error messages are sent.
MulticastAdminStatus	This indicates the global admin status for multicast.
FasterAdvIntervalEnable	
FasterAdvInterval	

Configuring IPv6 routing Interfaces

Perform the following procedure configure IPv6 routing properties for interfaces.

Procedure steps

Step Action

1 In the COM navigation pane, expand the managers, click on the Routing Manager and select a node under **IPv6 Networks, IPV6 ROUTING, Interfaces**.

The Interfaces table appears in the contents pane.

2 To add an interface entry, from the menu bar, click **Add Entry**.

The IPv6 Routing - Insert Interface dialog box appears.

3 Complete the fields as required.

4 Click **Save**.

5 Click **Ok** or **Details** if there are errors or warnings.

The new entry appears in the contents pane.

—End—

Job aid The following table describes the fields in the IPv6 Routing – Interfaces table.

Field	Description
Interface	A unique value to identify a physical interface or a logical interface (VLAN). For the brouter port, this is the ifindex of the port. For the VLAN, this is the ifindex of the VLAN.
Identifier	IPv6 address interface identifiers. This is a binary string of up to 8 octets in network byte-order.
IdentifierLength	The length of the interface identifier in bits.

Field	Description
Descr	A textual string containing information about the interface. This string can be set by a network management system.
VlanId	A value that uniquely identifies the VLAN associated with this entry. This value corresponds to the lower 12 bits in the IEEE 802.1Q VLAN tag.
Type	The interface type.
ResmMaxSize	MTU for this IPv6 interface. This value should be the same for all the IP addresses defined on this interface.
PhysAddress	The media-dependent physical address. For Ethernet media, this is the MAC address.
AdminStatus	The indication of whether IPv6 is enabled (up) or disabled (down) on this interface. This object does not affect the state of the interface itself, only its connection to an IPv6 stack.
OperStatus	Operating status of the interface.
ReachableTime	The time (in milliseconds) a neighbor is considered reachable after receiving a reachability confirmation. Reference RFC2461, Section 6.3.2
RetransmitTime	The time (in milliseconds) between retransmissions of Neighbor Solicitation messages to a neighbor when resolving the address or when probing the reachability of a neighbor. Reference RFC2461, Section 6.3.
MulticastAdminStatus	The admin status for multicast for this interface.

Configuring IPv6 OSPF

This section contains information about the following topics:

- "Configuring IPv6 OSPF General" (page 189)
- "Configuring IPv6 OSPF Interfaces" (page 192)
- "Configuring IPv6 OSPF Area" (page 194)
- "Configuring IPv6 OSPF Neighbors" (page 196)

Configuring IPv6 OSPF General

Perform the following procedure configure IPv6 OSPF general properties.

Procedure steps

Step	Action
1	In the COM navigation pane, expand the managers, click on the Routing Manager and select a node under **IPv6 Networks, IPv6 OSPF, General**. The IPv6 OSPF—General table appears in the contents pane.

2 To modify any of the configurable IPv6 OSPF general routing properties, modify the fields directly in the contents pane and click **Apply Changes**.

—End—

Job aid The following table describes the fields in the IPv6 OSPF – Globals table.

Field	Description
Devices	Identifies the device.
RouterId	Identifies the router independent of other routers in the OSPF domain. The router ID has the same format as an IPv6 address.
AdminStat	The administrative status of OSPF in the router. Enabled indicates that you can activate OSPF interfaces. Disabled deactivates OSPF on all interfaces.
VersionNumber	Current version number of OSPF.
AreaBdrRtr Status	A read-only flag identifying this router as an area border router (ABR). **ATTENTION** The AreaBdrRtrStatus value must be true to create a virtual router interface.
ASBdrRtrStatus	When you select the ASBdrRtrStatus option, the router is configured as an autonomous system boundary router (ASBR).
AsScopeLsa Count	A read-only field displaying the number of external (LS type 5) LSAs in the link-state database.
AsScopeLsa CksumSum	A read-only field displaying the 32-bit unsigned sum of the LS checksums of the external LSAs in the link-state database. This sum determines changes and compares the linkstate databases of two routers.
Originate NewLsas	A read-only field displaying the number of new LSAs. The number is incremented each time the router originates a new LSA.
RxNewLsas	A read-only field displaying the number of new LSAs received. This number does not include new instantiations of self-originated LSAs.
ExtLsaCount	A read-only field displaying the number of external (LS type 0x4005) LSAs in the link-state database.
ExtArea LsdbLimit	The maximum number of nondefault AS-external LSA entries stored in the link-state database. If the value is —1, then there is no limit. The default is -1. You must set the LSDB limit to the same value for all routers attached to the OSPFv3 backbone or any regular OSPFv3 area (that is, OSPFv3 stub areas and NSSAs are excluded).

Field	Description
Multicast Extensions	A bit mask indicating whether the router is forwarding IPv6 multicast datagrams based on the algorithms defined in the multicast extensions to OSPF. Possible forwarding includes: • intraAreaMulticast—forwards to directly attached areas (called intra-area multicast routing) • interAreaMulticast—forwards between OSPFv3 areas (called inter-area multicast routing) • interAsMulticast—forwards between Autonomous Systems (called inter-AS multicast routing)
ExitOverflow Interval	The number of seconds that, after entering the overflow state, a router attempts to leave the overflow state. This allows the router resend nondefault AS-external LSAs. When the value is set to 0, the router does not leave the overflow state until the router is restarted.
Demand Extensions	The router support for demand routing.
Traffic Engineering Support	The router support for traffic engineering extensions.
Reference Bandwidth	The reference bandwidth in kilobits per second for calculating default interface metrics. The default value is 100 000 Kb/s (100 Mb/s).
RestartSupport	The router support for OSPF hitless restart. Options include no restart support, only planned restarts, or both planned and unplanned restarts. Options include: • none (default) • plannedOnly • plannedAndUnplanned
RestartStatus	A read-only field indicating the current status of OSPF hitless restart. Options include: • notRestarting (default) • plannedRestart • unplannedRestart
RestartInterval	The configured OSPF hitless restart timeout interval in the range 1 through 1800 seconds.

Field	Description
RestartAge	A read-only field indicating the remaining time in the current OSPF hitless restart interval in seconds. The range is 1 to 1800.
RestartExit Reason	A read-only field indicating the outcome of the last attempt at a hitless restart. Options include: • none: indicates no restart was attempted • inProgress: indicates a restart attempt is currently underway • completed: indicates a completed restart • timedout: indicates a timed out restart • topologyChanged: indicates a cancelled restart due to topology change

Configuring IPv6 OSPF Interfaces

Perform the following procedure configure IPv6 OSPF interfaces.

Procedure steps

Step	Action
1	In the COM navigation pane, expand the managers, click on the Routing Manager, and select a node under **IPv6 Networks, IPv6 OSPF, Interfaces**.
2	To modify any of the configurable IPv6 OSPF interface properties, modify the fields directly in the contents pane, and click **Apply Changes**.

—End—

Job aid The following table describes the fields in the IPv6 OSPF – Interfaces table.

Field	Description
Index	The interface index of this OSPFv3 interface. The index corresponds to the interface index of the IPv6 interface where OSPFv3 is configured.

Field	Description
AreaId	Dotted decimal value to designate the OSPF area name. VLANs that maintain the default area setting on the interface cause the LSDB to be inconsistent. **ATTENTION** The area name is not related to an IPv6 address. You can use any value for the OSPF area name (for example, 1.1.1.1 or 200.200.200.200).
Type	Type of OSPF interface (broadcast, nbma, point-to-point, or point-to-multipoint).
AdminStat	Current administrative state of the OSPF interface (enabled or disabled).
RtrPriority	OSPF priority for the interface during the election process for the designated router. The interface with the highest priority number is the designated router. The interface with the second-highest priority becomes the backup designated router. If the priority is 0, the interface cannot become the designated router or the backup. The priority is used only during election of the designated router and backup designated router. The range is 0 to 255. The default is 1.
TransitDelay	Length of time, in seconds (1 through 1800), required to transmit an LSA update packet over the interface.
RetransInterval	Length of time, in seconds (1 through 1800), required between LSA retransmissions.
HelloInterval	Length of time, in seconds, between Hello packets. This value must be the same for all routers attached to a common network. **ATTENTION** When you change the Hello interval values, you must save the configuration file and reboot the switch for the values to be restored and checked for consistency.
RtrDeadInterval	Adjacent routers use this interval to determine if the router has been removed from the network. The interval must be identical on all routers on the subnet and a minimum of four times the Hello interval. To avoid interpretability issues, the RtrDeadInterval value for the OSPF interface must match the RtrDeadInterval value for the OSPF virtual interface.
PollInterval	Length of time, in seconds, between Hello packets sent to an inactive OSPF router.

Field	Description
State	A read-only field indicating the OSPFv3 interface state. Options include: • down • loopback • waiting • pointToPoint • designatedRouter • backupDesignatedRouter • otherDesignatedRouter
Designated Router	A read-only field indicating the router ID of the designated router.
BackupDesignated Router	A read-only field indicating the router ID of the backup designated router.
Events	A read-only field indicating the number of times this OSPF interface changed state or an error occurred.
MetricValue	The metric assigned to this interface. The default value of the metric is the Reference Bandwidth or ifSpeed. The value of the reference bandwidth is configured by the rcOspfv3ReferenceBandwidth object.
LinkScope LsaCount	A read-only field indicating the number of Link-Scope LSAs in the link-state database.
LinkLsaCksum Sum	A read-only field indicating the 32-bit unsigned sum of the Link-Scope link-state advertisement LS checksums in the link-state database. The sum determines a change in the router link-state database and compares the link-state database of two routers.
InstId	Enables multiple instances of OSPFv3 over a single link. The switch assigns each protocol instance a separate ID. This ID has local link significance only.
DemandNbr Probe	Indicates whether neighbor probing is enabled. Neighbor probing determines whether the neighbor is inactive.
DemandNbr ProbeRetxLimit	The number of consecutive LSA retransmissions before the neighbor is deemed inactive and the neighbor adjacency is deactivated.
DemandNbr ProbeInterval	Defines how often, in seconds, the neighbor is probed.

Configuring IPv6 OSPF Area

Perform the following procedure configure IPv6 OSPF areas.

Procedure steps

Step	Action
1	In the COM navigation pane, expand the managers, click on the Routing Manager and select a node under **IPv6 Networks, IPv6 OSPF, Area**. The IPv6 OSPF – Area table appears in the contents pane.
2	To add an area, from the menu bar, click **Add Entry**. The Insert Areas dialog box appears.
3	Complete the fields as required.
4	Click **Save**.
5	Click **Ok** or **Details** if there are errors or warnings. The new entry appears in the contents pane.

—End—

Job aid

The following table describes the Configuration of IPv6 OSPF area.

Field	Description
Id	A 32-bit integer uniquely identifying an area. Area ID 0.0.0.0 is used for the OSPF backbone. VLANs that maintain the default area setting on the interface cause the LSDB to be inconsistent.
ImportAsExtern	The support for importing AS-external LSAs. Options include importExternal (default), importNotExternal, or importNssa (not so stubby area).
SpfRuns	Indicates the number of SPF calculations OSPF performs.
BdrRtrCount	The number of area border routers reachable within this area. The switch calculates the value, initially zero, in each SPF pass.
AsBdrRtrCount	The total number of autonomous system border routers reachable within this area. The switch calculates the value, initially zero, in each SPF pass.
ScopeLsaCount	The number of LSAs in the area link-state database, excluding AS External LSAs.
ScopLsaCksum Sum	The 32-bit unsigned sum of the LSAs. This sum excludes external (LS type 5) LSAs. The sum determines changes in a router link-state database and compares the link-state databases of two routers.
Summary	The area support for summary advertisements in a stub area.
StubMetric	The number of active interfaces in this area.

Field	Description
NssaTranslator Role	Indicates an NSSA border router ability to translate NSSA type-7 LSAs into type-5 LSAs. Options include: • always • candidate (default)
NssaTranslator State	Indicates if and how an NSSA border router translates NSSA type-7 LSAs into type-5 LSAs. Options include: • enabled indicates the NSSA border router translator role is set to always. • elected indicates a candidate NSSA border router is translating type-7 LSAs into type-5. • disabled indicates a candidate NSSA border router is not translating type-7 LSAs into type-5.
NssaTranslator StabilityInterval	The number of seconds after an elected translator determines translation is not required that it resumes translation duties.
NssaTranslator Events	A read-only field indicating the number of Translator State changes that occurred since the last bootup.
StubMetricType	Sets the type of metric advertised as a default route: • rcOspfv3Metric indicates the OSPF metric • comparableCost indicates an external type 1 • nonComparable indicates an external type 2

Configuring IPv6 OSPF Neighbors

Perform the following procedure configure IPv6 OSPF neighbors.

Procedure steps

Step	Action
1	In the COM navigation pane, expand the managers, click on the Routing Manager and select a node under **IPv6 Networks, IPv6 OSPF, Neigbors**. The IPv6 OSPF – Neighbors table appears in the contents pane.
2	Select and modify any of the fields in the table.
3	Click **Apply Changes**.

—End—

Job aid

The following table describes the fields in the IPv6 OSPF – Neighbors table.

Field	Description
Interface	A read-only field indicating the local link ID of the link over which the neighbor is reached.
RtrId	A read-only field indicating the router ID of the neighboring router, which in OSPF has the same format as an IPv6 address but identifies the router independent of IPv6 address.
AddressType	A read-only field indicating the address type of rcOspfv3NbrAddress. Only IPv6 addresses without zone index are expected. Options include: • unknown • ipv6 • ipv6z • dns
Address	A read-only field indicating the IPv6 address for the neighbor associated with the local link.
Options	A read-only field indicating the bit mask corresponding to the options field on the neighbor.
Priority	A read-only field indicating the preferential treatment assignment, which places the transmitted packets into queues. The priority field also indicates the possible selection of the priority field in the data link header when the switch forwards the packet.
State	A read-only field indicating the OSPF interface state: • down • attempt • init • twoWay • exchangeStart • exchange • loading • full
Events	A read-only field indicating the number of state changes or error events occurring between the OSPF router and the neighbor router.
LsRetransQLen	A read-only field indicating the number of elapsed seconds between advertising retransmissions of the same packet to a neighbor.
Hello Suppressed	A read-only field indicating whether Hellos are suppressed at a neighbor.
IfId	A read-only field indicating the interface ID that the neighbor advertises in Hello packets on this link, that is, the neighbor local interface index.

Field	Description
RestartHelper Status	A read-only field indicating that the router acts as a hitless restart helper for the neighbor. Options include: • notHelping • helping
RestartHelper Age	A read-only field indicating the time remaining in the current OSPF hitless restart interval, if the router acts as a restart helper for the neighbor. The range is 1 through 1800 seconds.
RestartHelper ExtReason	A read-only field indicating the outcome of the last attempt to act as a hitless restart helper for the neighbor. Options include: • none: indicates no restart was attempted (default) • inProgress: indicates a restart attempt is currently underway • completed: indicates a completed restart • timedout: indicates a timed-out restart • topologyChanged: indicates a cancelled restart due to the topology change

Configuration of Trap/Log Manager

The Trap/Log Manager is a Configuration and Orchestration Manager (COM) manager that allows you to configure and view the traps/notifications and the system log. This manager combines the functionality of the original Trap Receiver and Log Manager, and adds trap/notification configuration and syslog configuration.

You can configure the network manager to which the traps are sent using this manager. You can also configure the severity of the log, the host, and the port to which the log is sent. The trap receiver shows the traps received from the configured devices.

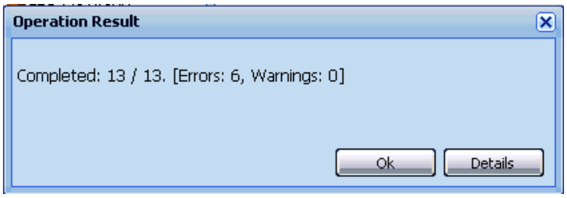
Similarly, the syslog receiver shows the system log for the configured devices.

Navigation

Starting Trap/Log Manager

Perform the following procedure to start Trap/Log Manager.

Procedure steps

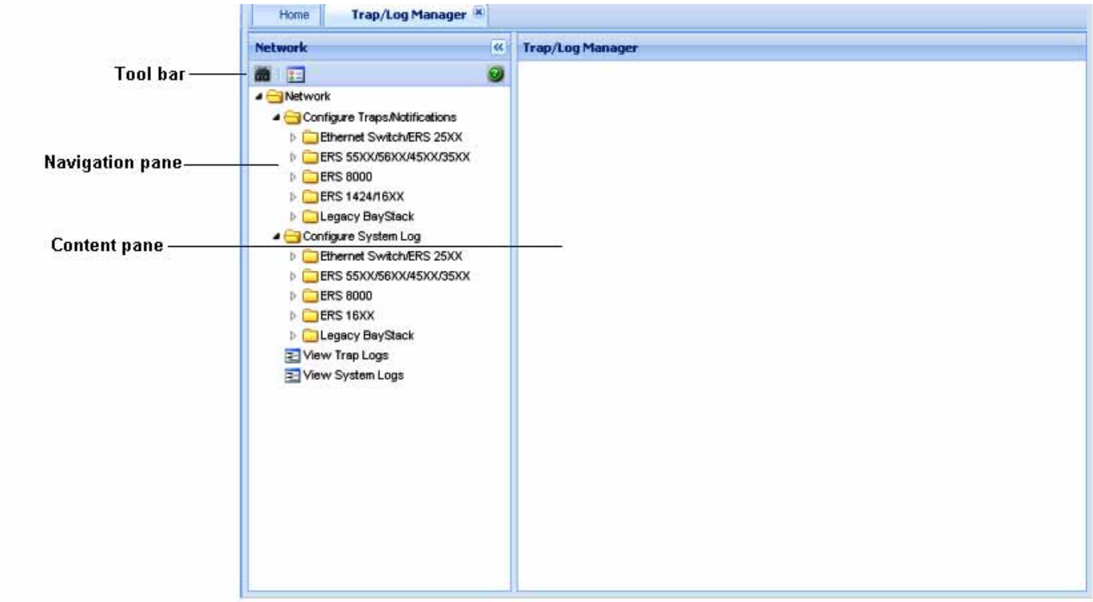
Step	Action
1	In the **Configuration and Orchestration Manager Navigation** tree, expand **Managers**.
2	Click **Trap/Log Manager** icon. COM automatically launches the device discovery, and displays the operation result (errors and warnings), as shown in the following figure.  Operation Result Completed: 13 / 13. [Errors: 6, Warnings: 0]
3	Click **Ok** to view Trap/Log Manager tab. **OR** Click **Details** to view errors or warnings, if any. The following figure shows the Trap/Log Manager window.

—End—

Trap/Log Manager window

The following figure shows the Trap/Log Manager window.

Figure 10
Trap/Log Manager window



The following table describes the parts of the Trap/Log Manager window.

Table 9
Parts of the Trap/Log Manager window

Part	Description
Tool bar	Provides quick access to commonly used Trap/Log Manager commands. For more information, see "Tool bar buttons" (page 201).
Navigation pane	Allows you to navigate to the settings for the current network devices. For more information, see "Navigation pane" (page 202).
Contents pane	Displays details of the folder selected on the navigation pane. For more information, see "Contents pane" (page 202).

Tool bar buttons

The following table describes the Trap/Log Manager tool bar buttons.

Table 10
Tool bar buttons

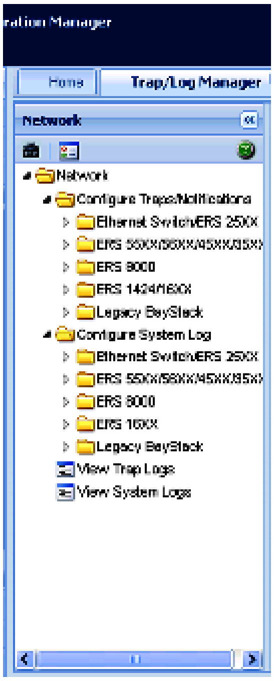
Button	Description
Discover Trap/Log	Discovers the devices for the Trap/Log Manager.
Preferences	Allows you to set the preferences for working with the Trap/Log Manager.

Navigation pane

The Trap/Log Manager navigation pane displays a hierarchical folder tree that you can use to navigate to the groups.

The following figure shows the navigation pane of the Trap/Log Manager window.

Figure 11
Navigation pane



Contents pane

The contents pane displays detailed information for the element selected in the navigation pane.

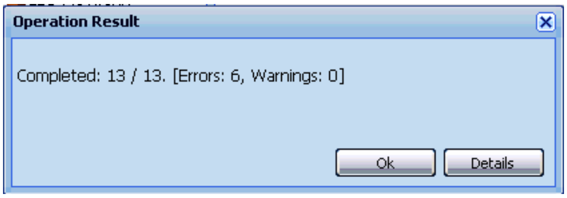
Discovering devices

You can discover the information in the Trap/Log Manager window with trap/log information polled from the network devices. You can use this feature to load any updated information that took effect since you opened Trap/Log Manager. Perform the following procedure to discover traps/logs.

Procedure steps

Step	Action
1	Click on the **Discover Trap/Log** button in the tool bar.

COM initiates the device discovery, and displays the operation result (errors and warnings), as shown in the following figure.



Operation Result

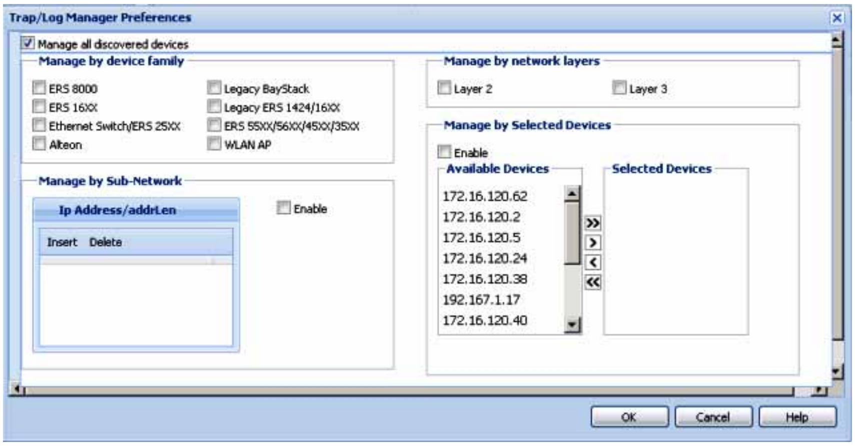
Completed: 13 / 13. [Errors: 6, Warnings: 0]

—End—

Displaying Preferences

You can select the specific set of assigned devices to be used in the Trap/Log Manager discovery process in the Trap/Log Manager Preferences dialog box, based on several criteria.

Step	Action
1	Click **Preferences** button in the tool bar. The Trap/Log Manager preferences dialog box appears.



Trap/Log Manager Preferences

☑ Manage all discovered devices

Manage by device family

□ ERS 8000
□ ERS 16XX
□ Ethernet Switch/ERS 25XX
□ Alteon
□ Legacy BayStack
□ Legacy ERS 1424/16XX
□ ERS 55XX/56XX/45XX/35XX
□ WLAN AP

Manage by network layers

□ Layer 2
□ Layer 3

Manage by Sub-Network

□ Enable

Ip Address/addrLen

Manage by Selected Devices

□ Enable

Available Devices

172.16.120.62
172.16.120.2
172.16.120.5
172.16.120.24
172.16.120.38
192.167.1.17
172.16.120.40

Selected Devices

—End—

For more information on editing the Preferences, see "Editing preferences" (page 249).

Configuring Traps

For instructions on configuring traps for ERS devices see the following sections.

Configuring Trap Receivers for ERS devices

Perform the following procedure to configure trap/logs for the following devices:

- ERS 25XX
- ERS 55XX/56XX/45XX/35XX

Procedure steps

Step **Action**

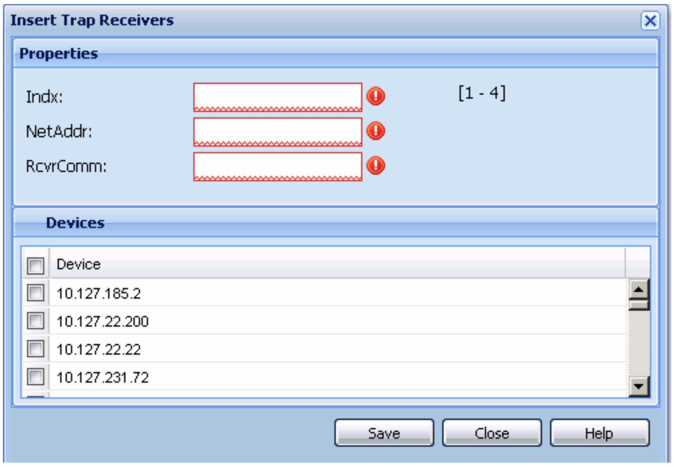
1 In the **Trap/Log Manager** navigation tree, click **Configure Traps/Notifications**.

2 Choose the switch for which you want to configure trap receivers.

3 In the contents pane, click the **Trap Receivers** tab.

4 To add a trap receiver entry for a device, click the **Add** button in the tool bar.

The Insert Trap Receiver dialog box appears.



Insert Trap Receivers

Properties

Indx: [1 - 4]

NetAddr:

RcvrComm:

Devices

□	Device
□	10.127.185.2
□	10.127.22.200
□	10.127.22.22
□	10.127.231.72

5 Populate the fields as required.

6 Click **Save**.

A row corresponding to the newly created trap receiver is added to the table in the contents pane.

—End—

You can also edit the existing trap receiver by editing the corresponding cells.

Job aid

The following table describes the Insert Trap Receiver dialog box fields:

Part	Definition
Indx	Specifies the index value. Ranges from 1 to 4.
NetAddr	Specifies the network address.
RcvrComm	Specifies the receiver address.
Devices	Allows you to set these values for other similar devices.

Configuring Target Address Table for ERS devices

Perform the following procedure to configure Target Address Table for the following devices:

- ERS 25XX
- ERS 55XX/56XX/45XX/35XX
- ERS 8000
- ERS 1424/16XX

Procedure steps

Step **Action**

1 In the **Trap/Log Manager** navigation tree, click **Configure Traps/Notifications**.

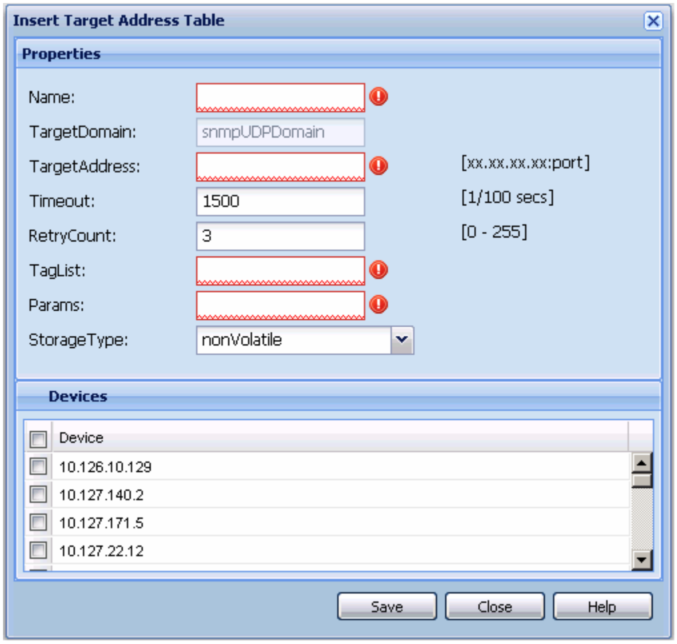
2 Choose the switch for which you want to configure target addresses.

3 In the contents pane, click the **Target Address Table** tab.

By default, the **Target Address Table** tab opens.

4 To add a target address entry for a device, click the **Add** button in the tool bar

The Insert Target Address Table dialog box appears.



Insert Target Address Table

Properties

Name:		
TargetDomain:	snmpUDPDomain	
TargetAddress:		[xx.xx.xx.xx:port]
Timeout:	1500	[1/100 secs]
RetryCount:	3	[0 - 255]
TagList:		
Params:		
StorageType:	nonVolatile	

Devices

□	Device
□	10.126.10.129
□	10.127.140.2
□	10.127.171.5
□	10.127.22.12

5 Enter the values in the fields as required.

6 Click **Save**.

A row corresponding to the newly created Target Address is added to the table in the Contents pane.

—End—

You can edit the existing Target Address entries by editing the corresponding cells.

You can modify any of the configurable global routing properties directly in the Contents pane and save the changes by clicking **Apply changes**.

Job aid

The following table describes the Insert Target Address Table dialog box fields.

Part	Definition
Name	Specifies the name of the target table.
TDomain	Specifies the TDomain for the target table.

Part	Definition
TAddress	The IP address and the host of the target and the UDP port number. **ATTENTION** Port 162 is reserved for SNMP traps.
Timeout	The maximum round trip time required for communicating with the transport address defined by this row.
RetryCount	The number of retries to be attempted when a response is not received for a generated message.
TagList	Specifies a list of tag values. A tag value refers to a class of targets to which the messages may be sent.
Params	The string value that identifies snmpTargetParamsTable entries.
StorageType	Specifies the storage type. Default value is nonVolatile.

Configuring Target Params Table for ERS devices

Perform the following procedure to configure Target Params Table for the following devices:

- ERS 25XX
- ERS 55XX/56XX/45XX/35XX
- ERS 8000
- ERS 1424/16XX

Procedure steps

Step Action

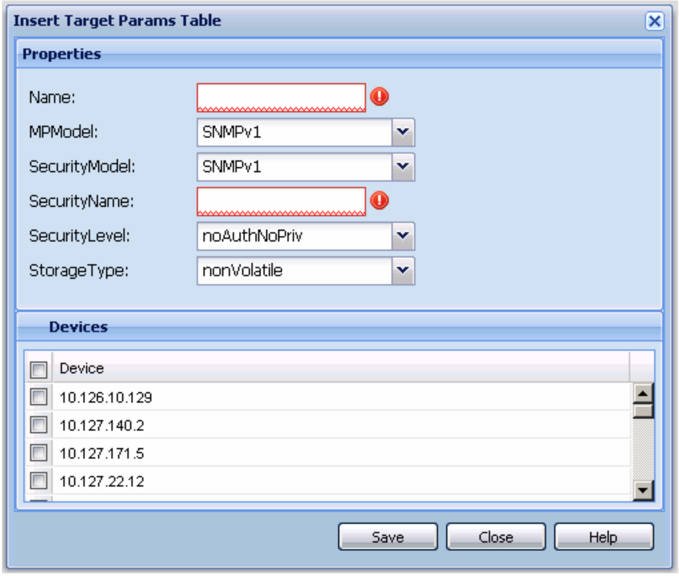
1 In the **Trap/Log Manager** navigation tree, click **Configure Traps/Notifications**.

2 Choose the switch for which you want to configure target parameters.

3 In the contents pane, click the **Target Params Table** tab.

4 To add a target parameter entry for a device, click the **Add** icon in the tool bar menu.

The Insert Target Params dialog box appears.



Insert Target Params Table

Properties

Name:

MPModel: SNMPv1

SecurityModel: SNMPv1

SecurityName:

SecurityLevel: noAuthNoPriv

StorageType: nonVolatile

Devices

□	Device
□	10.126.10.129
□	10.127.140.2
□	10.127.171.5
□	10.127.22.12

5 Enter the values in the fields as required.

6 Click **Save**.

A row corresponding to the newly created Target Params entry is added to the table in the contents pane.

You can edit the existing values by editing the corresponding cells and clicking **Apply Changes**.

—End—

Job aid

The following table describes he Insert Target Params dialog box fields.

Part	definition
Name	Specifies the unique name of the target parameters table.
MPModel	Specifies the Message Processing model, SNMPv1, SNMPv2c, or SNMPv3/USM. Default value is SNMPv1.
SecurityModel	Specifies the security model, SNMPv1, SNMPv2c, or SNMPv3/USM. Default value is SNMPv1.
SecurityName	Specifies a new security name, which identifies the principal to generate SNMP messages.
SecurityLevel	The security level. The valid options are noAuthNoPriv, authNoPriv, and authPriv. Default value is noAuthNoPriv.

Part	definition
StorageType	Specifies the storage type. Default value is non-volatile.
Multiple Devices Insertion	Allows you to set these values for other similar devices.

Configuring Notify Table for ERS devices

Perform the following procedure to configure Notify Table for the following devices:

- ERS 25XX
- ERS 55XX/56XX/45XX/35XX
- ERS 8000
- ERS 1424/16XX

Procedure steps

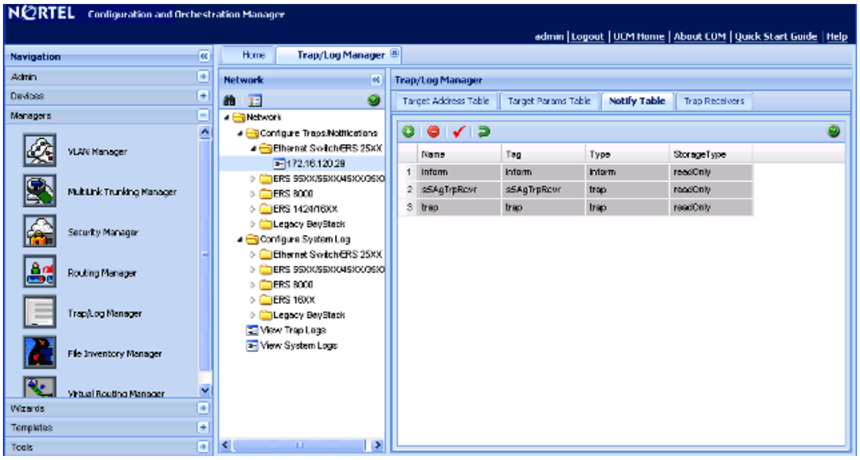
Step **Action**

1 In the **Trap/Log Manager** navigation tree, click **Configure Traps/Notifications**.

2 Choose the switch for which you want to configure notifications.

3 In the contents pane, click the **Notify Table** tab.

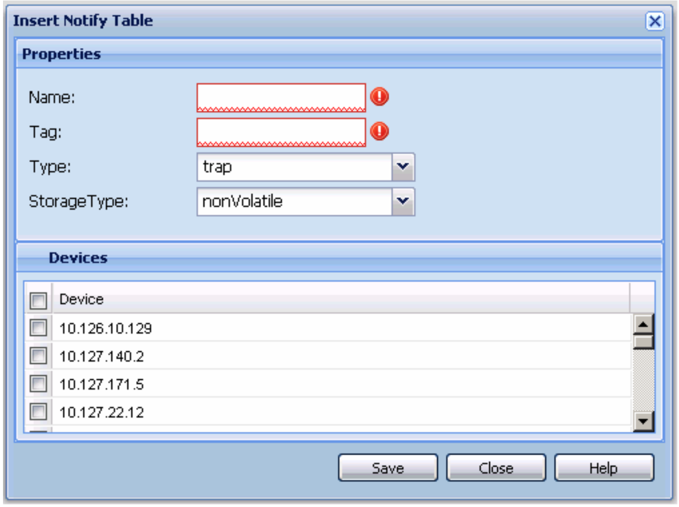
The Notify Table window appears.



	Name	Tag	Type	StorageType
1	inform	inform	inform	readOnly
2	s5AgTrpRcvr	s5AgTrpRcvr	trap	readOnly
3	trap	trap	trap	readOnly

4 To add a notification entry for a device, click the **Add** icon in the tool bar.

The Insert Notify Table dialog box appears.



Insert Notify Table

Properties

Name:

Tag:

Type: trap

StorageType: nonVolatile

Devices

□	Device
□	10.126.10.129
□	10.127.140.2
□	10.127.171.5
□	10.127.22.12

5 Enter the values in the fields as required.

6 Click **Save**.

A row corresponding to the newly created notification is added to the table in the contents pane.

You can modify any of the existing notifications by modifying the fields directly in the Contents pane and clicking **Apply Changes**.

—End—

Job aid

The following table describes the Insert Trap Receiver dialog box fields.

Part	definition
Name	Specifies the unique identifier associated for the notify table.
Tag	A single tag value used to select entries in the snmpTargetAddrTable. Any entry in the snmpTargetAddrTable that contains a tag value equal to the value of an instance of this object is selected. If this object contains a value of zero length, no entries are selected.

Part	definition
Type	This object determines the type of notification generated for entries in the snmpTargetAddrTable that are selected by the corresponding instance of snmpNotifyTag. If the value of this object is trap, then any messages generated for selected rows contain SNMPv2-Trap PDUs. If the value of this object is inform, then any messages generated for selected rows contain Inform PDUs. **ATTENTION** If an SNMP entity only supports generation of traps (and not informs), then this object is read-only.
StorageType	Specifies the storage type. Default value is other.

Viewing Trap Log

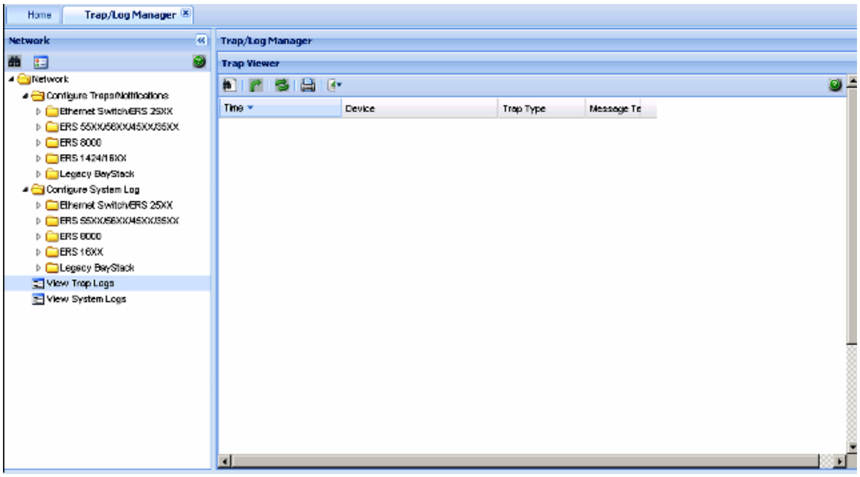
Perform the following procedure to view the trap log.

Procedure steps

Step **Action**

1 In the **Trap/Log Manager** navigation tree, click **View Trap Logs**.

The Trap Logs dialog box appears.



—End—

The cells are non-editable.

This tab shows the traps that are received from the devices in case of any events. The right-hand panel displays the Trap or Notifications tab based on the version of the device. Older versions support the Trap tab and newer versions support the Notifications tab.

You can export trap log information to a text file by clicking **Export** and saving the file to a local location.

Configuring System Log

The Trap/Log Manager lists the devices that support System Log configuration that are discovered using the Topology Manager. In each of the configuration nodes, the devices are grouped by family of device. Each device can be selected to see the configuration.

To display the devices, expand the **Configure System Log navigation** tree.

> **ATTENTION**
>
> The Add icon on the tool bar is enabled only on clicking a device.

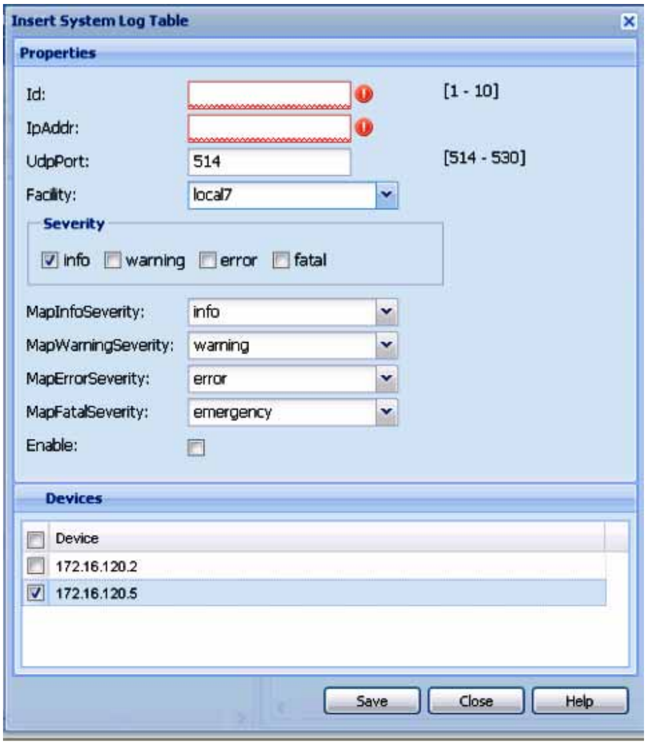
Configuring System Log for ERS devices

Perform the following procedure to create a system log for the following devices:

- ERS 8000
- ERS 1424/16XX

Procedure steps

Step	Action
1	In the **Configure System Log** folder, choose a device to create a system log.
2	Click **System Log Table** tab.
3	Click **Add** button on the tool bar. The Insert Syslog Log Table dialog box appears.



Insert System Log Table

Properties

Id: [1 - 10]

IpAddr:

UdpPort: 514 [514 - 530]

Facility: local7

Severity

☑ info □ warning □ error □ fatal

MapInfoSeverity: info

MapWarningSeverity: warning

MapErrorSeverity: error

MapFatalSeverity: emergency

Enable: □

Devices

□ Device

□ 172.16.120.2

☑ 172.16.120.5

4 Enter values in the fields as required.

5 Click **Save**.

To modify any of the configurable SyslogHost interface properties, modify the fields directly in the contents pane and click **Apply Changes** on the tool bar.

—End—

Job aid

The following table describes the Insert Syslog dialog box fields.

Part	Definition
Id	ID for the syslog host being created.
IPAddr	IP address of the syslog host.
UdpPort	The UDP port to use to send messages to the syslog host (514 to 530). Default value is 514.
Facility	The syslog host facility used to identify messages (LOCAL0 to LOCAL7).

Part	Definition
Severity	The Ethernet Routing Switch 8000 Series message severity for which syslog messages will be sent. Default value has all values enabled: info, fatal, warning and error.
MapInfo Severity	The fields that map the Ethernet Routing Switch 8000 Series severity levels to syslog severity. Default value is info.
MapWarning Severity	The fields that map Ethernet Routing Switch 8000 Series warning severity levels to syslog severity. Default value is warning.
MapError Severity	The fields that map Ethernet Routing Switch 8000 error severity levels to syslog severity. Default value is error.
MapFatal Severity	The fields that map Ethernet Routing Switch 8000 fatal severity levels to syslog severity. Default value is emergency.
Enable	Enables or disables sending messages to the syslog host. Default value is false (not selected).

Enabling System Log for ERS devices

Perform the following procedure to enable the system log for the following devices:

- ERS 25XX
- ERS 55XX/56XX/45XX/35XX
- ERS 8000
- ERS 1424/16XX

Procedure steps

Step Action

1 In the **Configure System Log** folder, choose a device for which to enable the system log.

2 In the **System Log** window, click in the **Enable** field.

3 Select the check box in the field.

4 To apply the changes, click the **Apply Changes** in the tool bar.

The value in the **Enable** field is updated to **true**.

—End—

Job aid

The following table describes the System Log tab fields.

Part	Definition
Enable	Used to enable/disable the syslog feature.
MaxHosts	The maximum number of remote hosts considered active and able to receive messages from the syslog service.
OperState	The operational state of the syslog service.

Viewing System Log

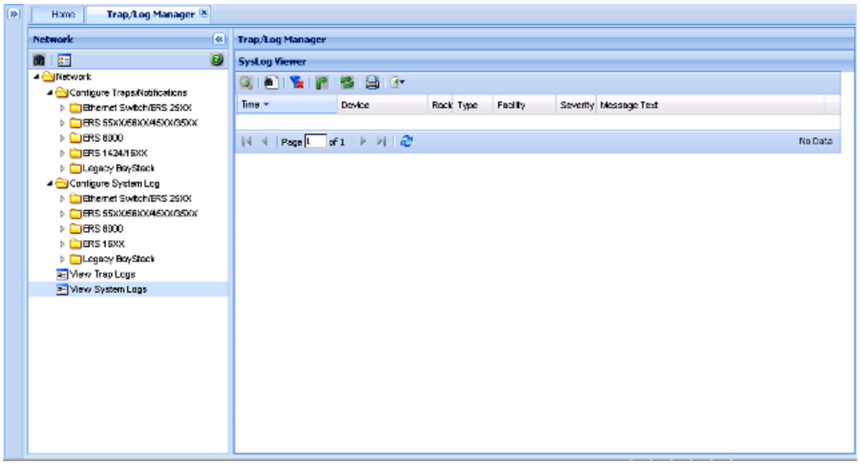
Perform the following procedure to view the System Log.

Procedure steps

Step Action

1 In the **Trap/Log Manager** navigation tree, click **View System Logs**.

The Syslog Viewer window appears.



—End—

The cells are non-editable.

You can export the information to a text file by using the **Export** button.

Using File Inventory Manager

File Inventory Manager allows you to manage the hardware and software configurations for different devices. File Inventory Manager allows you to

- view hardware configurations
- view software configurations
- edit Preferences
- download files from a device
- upload files to a device
- backup configuration files
- restore configuration files
- archive configuration files
- synchronize configuration files
- upgrade devices
- compare runtime configuration with existing configurations

This section describes using File Inventory Manager. It includes the following information:

About File Inventory Manager

File Inventory Manager has two primary functions—file management and inventory management. This section describes the capabilities provided by those functions.

This section contains information on the following topics:

- "File management features" (page 218)
- "Inventory management features" (page 221)

File management features

The file management features of File Inventory Manager allows you to upload and download files to and from network devices. For all devices that support multiple devices, you can also use File Inventory Manager to do bulk uploads or downloads to or from multiple devices. This feature makes it easier to deploy updated image or configuration files across your network.

The following table summarizes the file management capabilities of File Inventory Manager.

Table 11
File Inventory Manager file management capabilities

Device family	Operation	Multiple devices	File types
ERS 8000	Download	Yes	Any (for example image, WSM image, and configuration.)
	Upload	Yes	Any (image, configuration, syslog, etc.)
	Backup	Yes	Configuration or boot configuration
	Restore	Yes	Configuration or boot configuration
	Archive	Yes	Configuration or boot configuration
	Synchronize	Yes	Configuration or boot configuration
	Device upgrade wizard	Yes	Image
	Compare runtime	Yes	Configuration
Passport 1000 (legacy)	Not supported		
Legacy ERS 1424/16xx	Download	Yes	Image or configuration
	Upload	Yes	Configuration or history log
	Backup	Yes	Configuration

Device family	Operation	Multiple devices	File types
	Restore	Yes	Configuration
	Archive	Yes	Configuration
	Synchronize	Yes	Configuration
	Device upgrade	Yes	Image
	Compare runtime	Yes	Configuration
Legacy ERS 1424/16xx	Download	Yes	Image or configuration
	Upload	Yes	Configuration or history log
	Backup	Yes	Configuration
	Restore	Yes	Configuration
	Archive	Yes	Configuration
	Synchronize	Yes	Configuration
	Device upgrade	Yes	Image
	Device upgrade wizard (ERS 16xx only)	Yes	Image
	Compare runtime	Yes	Configuration
Ethernet Routing Switch 55xx/35xx/45xx/25xx	Download	Yes	Image, configuration, firmware image, or ASCII configuration file
	Upload	Yes	Configuration only
	Backup	Yes	Configuration
	Restore	Yes	Configuration
	Archive	Yes	Configuration
	Synchronize	Yes	Configuration
	Device upgrade	Yes	Image
	Compare runtime	Yes	Configuration

Device family	Operation	Multiple devices	File types
Ethernet Switch	Upload	Yes	Image, configuration, firmware image*, or ASCII configuration file* * Ethernet Switch 460/470, Ethernet Switch 425 3.0
	Download	Yes	Configuration only
	Backup	Yes	Configuration
	Restore	Yes	Configuration
	Archive	Yes	Configuration
	Synchronize	Yes	Configuration
	Device upgrade	Yes	Image
	Compare runtime	Yes	Configuration
Legacy BayStack	Download	Yes	Image, configuration, firmware image*, or ASCII configuration file* * BPS 2000 2.0.5 and up, BayStack 380 3.0, BayStack 420 3.0
	Upload	Yes	Configuration only
	Backup	Yes	Configuration
	Restore	Yes	Configuration
	Archive	Yes	Configuration
	Synchronize	Yes	Configuration
	Device upgrade	Yes	Image
Alteon	Download	Yes	Image or configuration
	Upload	Yes	Configuration or dump file
	Backup	Yes	Configuration
	Restore	Yes	Configuration
	Archive	Yes	Configuration
	Synchronize	Yes	Configuration
	Device upgrade	Yes	Image

Device family	Operation	Multiple devices	File types
OM 1000	Download	Yes	Image, configuration, firmware image, or ASCII configuration file
	Upload	Yes	Configuration only
	Backup	Yes	Configuration
	Restore	Yes	Configuration
	Archive	Yes	Configuration
	Synchronize	Yes	Configuration
	Device upgrade	Yes	Image
WLAN AP devices	Download	Yes	ApplicationImage or Configuration or NN Data file
	Upload	Yes	Configuration only
	Backup	Yes	Configuration
	Restore	Yes	Configuration
	Archive	Yes	Configuration
	Synchronize	Yes	Configuration
	Device upgrade	Yes	Image

ATTENTION

The actual file upload and download operations are performed by a Trivial File Transfer Protocol (TFTP) server. You can use either TFTP server software running on the COM management station, or you can designate a separate machine as the TFTP server.

Inventory management features

The inventory management features of File Inventory Manager show you current information about the hardware and software discovered on your network.

- Device and chassis types
- Installed blades
- Serial and revision numbers
- Image and configuration file names and versions
- GBIC data

Starting File Inventory Manager

Perform the following procedure to start File Inventory Manager.

- The administrator must assign the File Inventory Manager in the MultiElementManager Assignment tab.

Procedure steps

Step	Action
1	Select **Managers** from **Configuration and Orchestration Manager**, and then click the **File Inventory Manager** Icon. The Confirmation dialog box appears.
2	Click **Yes** to query the discovered devices for inventory information, or click **No** to get inventory information from a previously saved inventory file. If you click **No**, File Inventory Manager prompts you for the location of the inventory file. Browse the file and then click **Open Inventory**.
3	Select the device from the **Available Devices** list, click **>** or **>>** to move the highlighted devices in the **Selected Devices** list, and then click **Query Now**. The **File Inventory Manager** dialog box appears.

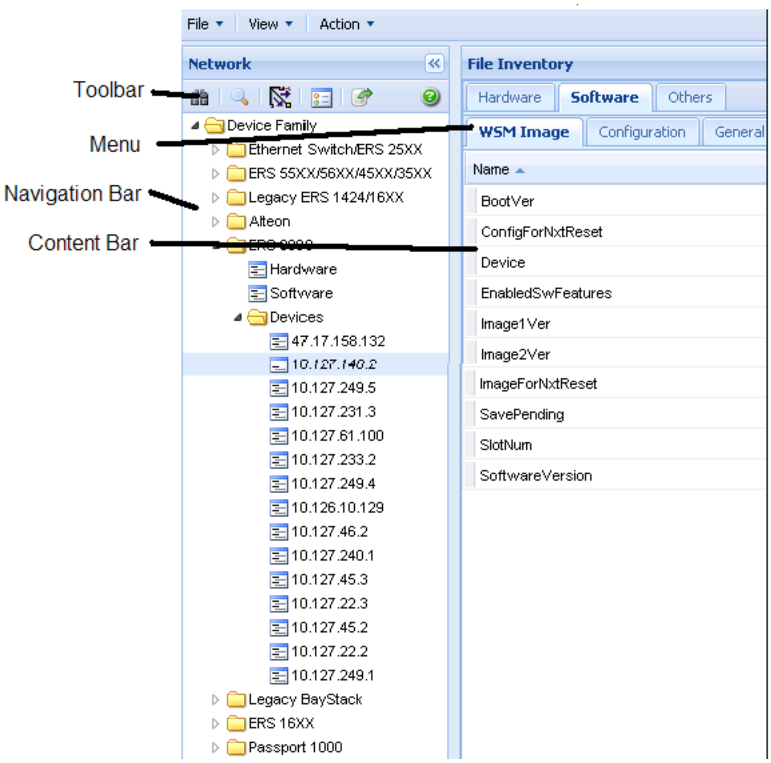
> **ATTENTION**
> Discovery process does not include devices without proper credentials assigned to them.

—End—

Using the File Inventory Manager window

The following figure shows the File Inventory Manager window.

File Inventory Manager window



The following table describes the parts of the File Inventory Manager window.

Table 12
Parts of the File Inventory Manager window

Part	Description
Menu bar	Provides access to all File Inventory commands. For more information, see "Tool bar commands" (page 223).
Tool bar	Provides quick access to commonly used File Inventory commands. For more information, see "Tool bar commands" (page 223).
Navigation pane	Allows you to navigate File Inventory elements for devices discovered on the network. For more information, see "Navigation pane" (page 225).
Contents pane	Displays file and inventory information for the element selected on the Navigation pane. For more information, see "Contents pane" (page 226).

Tool bar commands

The following table describes the File Inventory Manager tool bar commands.

Table 13
Tool bar commands

Command	Toolbar Button	Description
Discover		Rediscovers the inventory information and reloads File Inventory Manager with the latest information.
Set Preferences		Filters devices based on Family or Capabilities.
Find	🔍	Finds matching text strings in the navigation or contents panes.
Highlight Topology		Highlights devices of the selected family on the Configuration and Orchestration Manager topology map.
Help	?	Opens online Help for the current folder or tab.
Export		Exports inventory information displayed in content panel grid in to a text file.

Menu bar commands

The following table describes the File Inventory Manager menu bar commands.

Table 14
Menu bar commands

Command	Description
Save Inventory information	Allows you to save inventory files that you can load again later.
Open Inventory file	Allows you to load saved inventory files.
Save Inventory in Tab delimited text file	Allows you to save network inventory information in a tab-delimited text file.
Set View Preferences	Allows you to select the information to be displayed.
Download file to device	Allows you to download configuration or image files or both to devices.
Upload file from device	Allows you to upload configuration or image files or both from devices.
Backup Config	Allows you to create backup files that can be restored to devices in the event of a network failure.

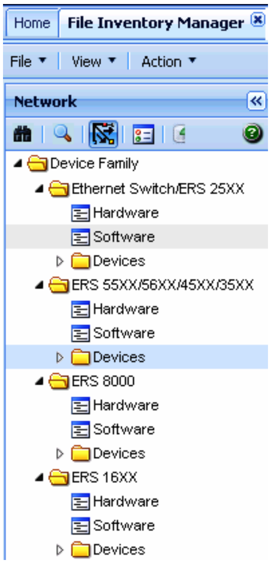
Command	Description
Restore Config	Allows you to restore the configuration for the target device(s).
Archive Config	Allows you to archive the configuration for the target device(s).
Synchronize Config	Allows you to synchronize the configuration for the target device(s).
Upgrade device	Allows you to update the software for the specified device(s).
Upgrade device wizard	Displays the Auto Upgrade form.
Edit File	Allows you to edit configuration files with a text editor.
Compare Config	Compares the runtime configuration for the specified device(s) with the external configuration file.

Navigation pane

The File Inventory Manager Navigation pane allows you to navigate File/Inventory elements for devices discovered on the network. Devices are grouped in folders according to the device family. They are identified by their IP address.

Double-click the folder to view its elements, and then click an element to examine detailed information in the Contents panel.

Parts of the File/Inventory Navigation pane



The following table describes the Navigation pane.

Table 15
Parts of Navigation pane

Part	Description
Device Family folder	Specifies the root folder; contains all of the icons and folders in the Tree Panel.
ERS 8000 folder	Displays the information specific to ERS 8xxx devices.
ERS 55XX/45XX/35XX folder	Displays the information specific to ERS 55xx, 45xx, and 35xx devices.
Legacy ERS 1424/16xx	Displays the information specific to ERS 1424 and 16xx devices.
ERS 55xx/35xx/45xx/25xx folder	Displays the information specific to ERS 55xx, 35xx, 45xx and 25xx devices.
Legacy BayStack	Displays the information specific to legacy baystack.
Alteon	Displays the information specific to Alteon devices.
OM 1000	Displays the information specific to OM 1000 devices.
WLAN AP devices	Displays the information specific to WLAN AP devices.
Hardware	Displays all hardware information for the discovered devices.
Software	Displays all software information for the discovered devices.
Devices	Displays hardware and software information for the selected device.

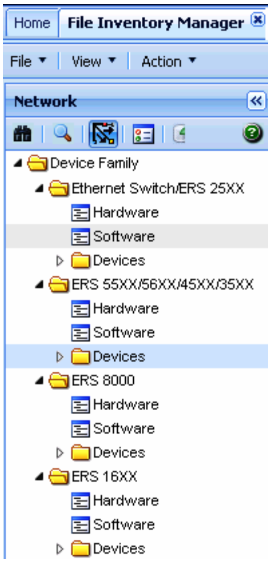
Contents pane

The contents pane displays file and inventory information for the element selected on the Navigation pane. The information is provided in tabular format. Each tab at the top of the contents pane is a table. Click the tab to view the table contents. Use the horizontal scroll bar at the bottom of the contents pane when a table is wider than the contents pane.

Understanding the File Inventory navigation tree

The following figure shows the File Inventory Manager navigation tree. Depending on the devices that were discovered, your File Inventory Manager window may show folders that are not listed here, and may not show folders that are listed.

Understanding the File Inventory Manager navigation tree



The following sections describe the tab contents of Device Family folders:

- "ERS 55xx/45xx/35xx folder" (page 227)
- "ERS 8000 folder" (page 234)

ERS 55xx/45xx/35xx folder

Use the ERS 55xx/45xx/35xx folder to view information about Ethernet Routing Switch 5510, 5520, 5530, 4548GT, 4548GT_PWR, 4550T, 4550T_PWR, 4526FX, and 3510 hardware, software, and devices in the network inventory.

The following table describes the parts of the ERS 55xx/45xx/35xx folder.

Table 16
Parts of the ERS 55xx/45xx/35xx folder

Part	Description
"ERS 55xx/45xx/35xx Hardware table" (page 228)	Shows information about Ethernet Routing Switch 55xx, 45xx, and 35xx device hardware in the network inventory.
"ERS 55xx/45xx/35xx Software table" (page 230)	Shows information about software running on Ethernet Routing Switch 55xx, 45xx, and 35xx devices in the network inventory.
"ERS 55xx/45xx/35xx Devices folder" (page 231)	Shows information about each of the Ethernet Routing Switch 55xx, 45xx, and 35xx devices discovered on the network.

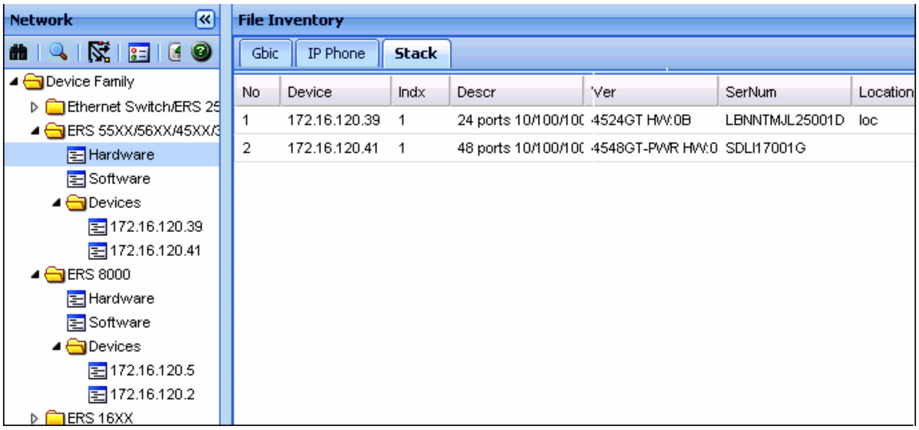
ERS 55xx/45xx/35xx Hardware table Use the ERS 55xx/45xx/35xx Hardware table to view information about Ethernet Routing Switch 55xx. 45xx, and 35xx device hardware in the network inventory.

The following table describes the parts of the ERS 55xx/45xx/35xx Hardware table.

Table 17
Parts of the ERS 55xx/45xx/35xx Hardware table

Part	Description
"Stack tab" (page 228)	Shows information about Ethernet Routing Switch 55xx, 45xx, and 35xx stack.
"Gbic tab" (page 229)	Shows information about the system that Ethernet Routing Switch 55xx, 45xx, and 35xx use to determine the device capabilities.

Stack tab Use the Stack of the "ERS 55xx/45xx/35xx folder" (page 227) to view information about Ethernet Routing Switch 55xx, 45xx, and 35xx stack.



No	Device	Indx	Descr	Ver	SerNum	Location
1	172.16.120.39	1	24 ports 10/100/10(	4524GT HW:0B	LBNNTMJL25001D	loc
2	172.16.120.41	1	48 ports 10/100/10(	4548GT-PWR HW:0	SDLI17001G	

The following table describes the parts of the Stack tab.

Table 18
Parts of the stack tab of the ERS 55xx/45xx/35xx Hardware table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name for the device.
Indx	Shows the index number of the device.
Descr	Shows the description for the device
Ver	Shows the version number of the device.

Part	Description
SerNum	Shows the serial number of the device.
Location	Show the location of the device.

Gbic tab Use the Gbic tab of the "ERS 55xx/45xx/35xx folder" (page 227) to view information about the system that Ethernet Routing Switch 55xx, 45xx, and 35xx use to determine the device capabilities.

The following table describes the parts of the Gbic tab

Table 19
Parts of the Gbic tab of the ERS 55xx/45xx/35xx Hardware table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name for the device.
Port Number	Shows the port number of the device.
GBIC Type	Shows the gbic type. It follows the port number.
Vendor Name	Shows the gbic vendor name.
Vendor OUI	Shows the company ID of the gbic vendor IEEE.
Vendor Part #	Shows the part number provided by gbic vendor.
Vendor Revision	Shows the revision level for part number provided by vendor.
Vendor Serial	Shows the serial number provided by the vendor.
HW Options	Shows the hardware options for the gbic.
Date Code	Shows the manufacturing date code of the vendor.
Vendor Data	Shows the vendor specific data for gbic.

Chassis tab Use the Chassis tab of the "ERS 55xx/45xx/35xx folder" (page 227) to view information about Ethernet Routing Switch 55xx, 45xx, and 35xx chassis.

The following table describes the parts of the Chassis tab.

Table 20
Parts of the Chassis tab of the ERS 55xx/45xx/35xx Hardware table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name for the device.
ModuleType	Shows the Ethernet Routing Switch module type.

Part	Description
HwRevision	Shows the current hardware revision of the device chassis.
DeviceSerial Number	Shows the serial number of the device.

ERS 55xx/45xx/35xx Software table Use the ERS 55xx/45xx/35xx Software table to view information about software running on Ethernet Routing Switch 55xx, 45xx, and 35xx devices in the network inventory.

The following table describes the parts of the ERS 55xx/45xx/35xx Software table.

Table 21
Parts of the ERS 55xx/45xx/35xx Software table

Part	Description
"General tab" (page 230)	Shows general information about software running on Ethernet Routing Switch (legacy) 55xx, 45xx, and 35xx devices in the network inventory.
"Image Config tab" (page 231)	Shows information about software configuration settings.

General tab Use the General tab of the "ERS 55xx/45xx/35xx Software table" (page 230)to view general information about the software running on Ethernet Routing Switch 55xx, 45xx, and 35xx devices.

The following table describes the parts of the General tab.

Table 22
Parts of the General tab of the ERS 55xx/45xx/35xx Software table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name of the device.
Type	Shows the type of the device.
SysName	Shows the system name of the device.
Description	Shows a description of the device.
Location	Shows the location of the device.
Contact	Shows the administrative contact for the device.
UpTime	Shows the elapsed time since the last restart of the device.

Image Config tab Use the Image/Config tab of the "ERS 55xx/45xx/35xx Software table" (page 230) to view information about image and configuration files loaded on the Ethernet Routing Switch 55xx, 45xx, and 35xx devices.

The following table describes the parts of the Image/Config tab.

Table 23
Parts of the Image/Config tab of the ERS 55xx/45xx/35xx software table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name of the device.
ImgFname	Shows the filename of the last image file downloaded to the device.
CfgFname	Shows the filename of the last configuration file downloaded to or uploaded from the device.

ERS 55xx/45xx/35xx Devices folder Use the ERS 55xx/45xx/35xx Devices folder to view information about each of the Ethernet Routing Switch 55xx, 45xx, and 35xx devices discovered on the network.

For each device in the Devices folder, File Inventory Manager displays the following tabs in the contents pane

Table 24
Parts of the ERS 55xx/45xx/35xx Devices folder

Part	Description
"Stack tab" (page 232)	Shows information about Ethernet Routing Switch 55xx, 45xx, and 35xx stack.
"Gbic tab" (page 232)	Shows information about the system that Ethernet Routing Switch 55xx, 45xx, and 35xx use to determine the device capabilities.
"General tab" (page 233)	Shows general information about software running on Ethernet Routing Switch 55xx, 45xx, and 35xx devices in the network inventory.
"Image Config tab" (page 233)	Shows information about software configuration settings.

ATTENTION

The contents pane displays the tabs described in the previous table, only when you select a device from the device folder.

Chassis tab Use the Chassis tab of the "ERS 55xx/45xx/35xx Devices folder" (page 231) to view information about Ethernet Routing Switch 55xx, 45xx, and 35xx chassis.

The following table describes the parts of the Chassis tab.

Table 25
Parts of the Chassis tab of the ERS 55xx/45xx/35xx Devices folder

Part	Description
ModuleType	Specifies the Ethernet Routing Switch module type.
HwRevision	Specifies the current hardware revision of the device chassis.
DeviceSerialNumber	Specifies the serial number for the device.

Stack tab Use the Stack tab of the "ERS 55xx/45xx/35xx Devices folder" (page 231) to view information about Ethernet Routing Switch 55xx, 45xx, and 35xx Stack.

The following table describes the parts of the Stack tab.

Table 26
Parts of the stack tab of the ERS 55xx/45xx/35xx Devices folder

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name for the device.
Indx	Shows the index number of the device.
Descr	Shows the description for the device
Ver	Shows the version number of the device.
SerNum	Shows the serial number of the device.
Location	Show the location of the device.

Gbic tab Use the Gbic tab of the "ERS 55xx/45xx/35xx Devices folder" (page 231) to view information about the system that Ethernet Routing Switch 55xx, 45xx, and 35xx use to determine the device capabilities.

The following table describes the parts of the Gbic tab.

Table 27
Parts of the Gbic tab of the ERS 55xx/45xx/35xx Devices folder

Part	Description
No.	Shows the row number of the table entry.

Part	Description
Device	Shows the IP address or host name for the device.
Port Number	Shows the port number of the device.
GBIC Type	Shows the gbic type. It follows the port number.
Vendor Name	Shows the gbic vendor name.
Vendor OUI	Shows the company ID of the gbic vendor IEEE.
Vendor Part #	Shows the part number provided by gbic vendor.
Vendor Revision	Shows the revision level for part number provided by vendor.
Vendor Serial	Shows the serial number provided by the vendor.
HW Options	Shows the hardware options for the gbic.
Date Code	Shows the manufacturing date code of the vendor.
Vendor Data	Shows the vendor specific data for gbic.

General tab Use the General tab of the "ERS 55xx/45xx/35xx Devices folder" (page 231) to view general information about the selected Ethernet Routing Switch 55xx, 45xx, and 35xx device.

The following table describes the parts of the General tab.

Table 28
Parts of the General tab of the Devices folder

Part	Description
Type	Shows the type of the device.
SysName	Shows the system name of the device.
Description	Shows a description of the device.
Location	Shows the location of the device.
Contact	Shows the administrative contact for the device.
UpTime	Shows the elapsed time since the last restart of the device.

Image Config tab Use the Image/Config tab of the "ERS 55xx/45xx/35xx Devices folder" (page 231)to view information about image and configuration files loaded on the device.

The following table describes the parts of the Image/Config tab.

Table 29
Parts of the Image/Config tab of the ERS 55xx/45xx/35xx Devices folder

Part	Description
PromFWVersion	Shows the version number of the agent PROM firmware.
RuntimeSW Version	Shows the version number of the runtime software.
FirmwareFile	Shows the filename of the last image or firmware file downloaded to the device.
ConfigFName	Shows the filename of the last configuration file downloaded to or uploaded from the device.

ERS 8000 folder

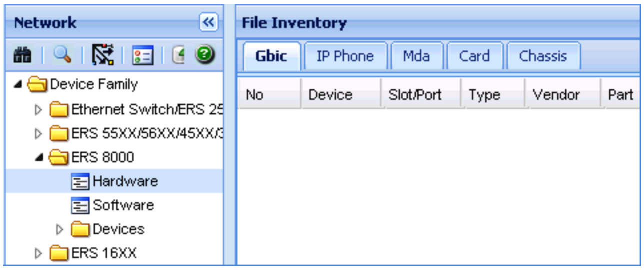
Use the ERS 8000 folder to view information about Ethernet Routing Switch 8000 hardware, software, and devices in the network inventory.

The following table describes the parts of the ERS 8000 folder.

Table 30
Parts of the ERS 8000 folder

Part	Description
"ERS 8000 Hardware table" (page 234)	Shows information about Ethernet Routing Switch 8000 device hardware in the network inventory.
"ERS 8000 Software table" (page 239)	Shows information about software running on Ethernet Routing Switch 8000 devices in the network inventory.
"ERS 8000 Devices folder" (page 242)	Shows information about each of the Ethernet Routing Switch 8000 devices discovered on the network.

ERS 8000 Hardware table Use the ERS 8000 Hardware table to view information about Ethernet Routing Switch 8000 device hardware in the network inventory.



The following table describes the parts of the ERS 8000 Hardware table.

Table 31
Parts of the ERS 8000 Hardware table

Part	Description
"Chassis tab" (page 235)	Shows information about Ethernet Routing Switch 8000 family chassis.
"Card tab" (page 236)	Shows information about cards installed in Ethernet Routing Switch 8000 family chassis.
"Mda tab" (page 237)	Shows information about MDAs installed in Ethernet Routing Switch 8000 family chassis.
"Gbic tab" (page 238)	Shows information about the system that Ethernet Routing Switch 8000 family use to determine the device capabilities.
"IP Phone" (page 238)	Shows information about IP Phone installed in Ethernet Routing Switch 8000 family chassis.

Chassis tab Use the Chassis tab of the "ERS 8000 Hardware table" (page 234) to view information about Ethernet Routing Switch 8000 family chassis.

The following table describes the parts of the Chassis tab.

Table 32
Parts of the Chassis tab of the ERS 8000 Hardware table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name for the device.
Type	Shows the module type.
SerialNumber	Shows the serial number for the device.
Hardware Revision	Shows the current hardware revision of the device chassis.
NumSlots	Shows the number of slots (or cards) this device can contain.
NumPorts	Shows the number of ports currently on this device.
BaseMacAddr	Shows the starting point of the block of MAC addresses used by the switch for logical and physical interfaces.

Part	Description
HaCpu	Shows you the L2 redundancy on the master CPU is enabled or disabled.
StandbyCpu	Shows you whether the L2 Redundancy is enabled on the standby CPU. The possible states are • hotStandbyCPU • warmStandbyCPU • standbyCPUNotPresent

Card tab Use the Card tab of the "ERS 8000 Hardware table" (page 234)to view information about cards installed in Ethernet Routing Switch 8000 series chassis.

The following table describes the parts of the Card tab.

Table 33
Parts of the Card tab of the ERS 8000 Hardware table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name of the device.
SlotNum	Shows the slot numbers of cards installed in the chassis.
FrontType	Indicates the card types in Ethernet Routing Switch 8000 Series devices. Front refers to the I/O portion of the module, the I/O card.
FrontDescription	Shows the model number of the module (for example, 8608GT).
FrontSerialNum	Shows the serial number of the I/O card.
FrontHwVersion	Shows the hardware version of the I/O card.
FrontPartNumber	Shows the part number of the I/O card.
FrontDateCode	Shows the manufacturing date code for the I/O card.
FrontDeviations	Shows front deviations for the card.

Part	Description
BackType	Shows the back type of the card. Possible values are • rc2kBackplane • rc2kSFM • rc2kBFM0 • rc2kBFM2 • rc2kBFM3 • rc2kBFM6 • rc2kBFM8 • rc2kMGSFM • other
BackDescription	Shows the back description for the card.
BackSerialNum	Shows the back serial number for the card.
BackHwVersion	Shows the back hardware version for the card.
BackPartNumber	Shows the back part number for the card.
BackDateCode	Shows the back date code for the card.
BackDeviations	Shows the back deviations for the card.

Mda tab Use the Mda tab of the "ERS 8000 Hardware table" (page 234) to view information about MDA installed in Ethernet Routing Switch 8000 family devices in the network inventory.

The following table describes the parts of the Mda tab.

Table 34
Parts of the Mda tab of the ERS 8000 Hardware table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name of the device in which the MDA is installed.
SlotNum	Shows the identity of the slot in which the MDA is installed.
MdaNum	Shows the number of the MDA.
Type	Shows the type of the MDA.

Part	Description
Description	Shows the MDA description. Possible values include • OC-3c SMF MDA—Dual port OC-3c SMF • OC-3c MMF MDA—Dual port OC-3c MMF • OC-12c SMF MDA—Single Port OC-12c SMF • OC-12c MMF MDA—Single Port OC-12c MMF
NumPorts	Shows the number of ports on the MDA.

Gbic tab Use the Gbic tab of the "ERS 8000 Hardware table" (page 234) to view information about the system that Ethernet Routing Switch 8000 family use to determine the device capabilities.

The following table describes the parts of the Gbic tab.

Table 35
Parts of the Gbic tab of the ERS 8000 Hardware table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name for the device.
Slot/Port	Shows the slot number and the port number of Gbic in the device.
Type	Shows the gbic type. It follows the port number.
Vendor	Shows the gbic vendor name.
Part	Shows the part number provided by gbic vendor.

IP Phone Use the IP Phone tab of the "ERS 8000 Hardware table" (page 234) to view information about the IP Phone that are installed on the Ethernet Routing Switch 8000 family.

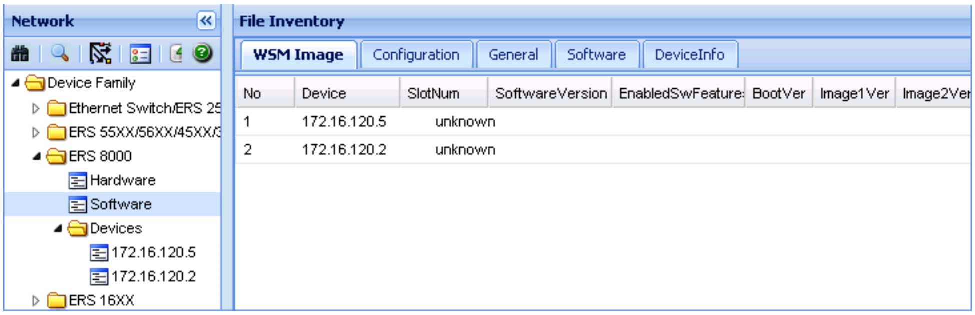
The following table describes the parts of the IP Phone tab.

Table 36
Parts of the IP Phone tab of the ERS 8000 Hardware table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name for the device.
TimeMark	Shows the time.
PortNum	Shows the port number.
Index	Shows the port index.

Part	Description
Type	Shows the port type.
ConnectedIPPhone	Shows the IP phone connected to the device.
SysName	Shows the system name.
Description	Shows the description.

ERS 8000 Software table Use the ERS 8000 Software table to view information about software running on Ethernet Routing Switch 8000 devices in the network inventory.



No	Device	SlotNum	SoftwareVersion	EnabledSwFeature:	BootVer	Image1Ver	Image2Ver
1	172.16.120.5	unknown					
2	172.16.120.2	unknown					

The following table describes the parts of the ERS 8000 Software table.

Table 37
Parts of the ERS 8000 Software table

Part	Description
"General tab" (page 239)	Shows general information about software running on Ethernet Routing Switch 8000 family devices in the network inventory.
"Device Info tab" (page 240)	Shows information about the device.
"Software tab" (page 240)	Shows information about software versions and sources.
"Configuration tab" (page 241)	Shows information about software configuration settings.
"WSM Image tab" (page 241)	Shows information about WSM images.

General tab Use the General tab of the "ERS 8000 Software table" (page 239) to view general information about software running on Ethernet Routing Switch 8000 family devices on the network.

The following table describes the parts of the General tab.

Table 38
Parts of the General tab of the ERS 8000 Software table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name of the device.
Type	Shows the type of the device.
SysName	Shows the system name of the device.
Description	Shows a description of the device.
Location	Shows the location of the device.
Contact	Shows the administrative contact for the device.

Device Info tab Use the Device Info tab of the "ERS 8000 Software table" (page 239) to view information about the device in the Ethernet Routing Switch 8000 family chassis.

The following table describes the parts of the device info tab.

Table 39
Parts of the Device Info tab of the ERS 8000 Software table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name for the device.
Slot	Shows the slot number for the pcmcia card in the device.
FlashBytesUsed	Shows the number of bytes used in the system configuration flash device.
Flash BytesFree	Shows the number of bytes available in the system configuration flash device.
Flash NumFiles	Shows the number of files available in the system configuration flash device.
Pcmcia BytesUsed	Shows the number of bytes used by pcmcia device in the system.
Pcmcia BytesFree	Shows the number of bytes available in the system pcmcia device.
Pcmcia NumFiles	Shows the number of files available in the system pcmcia device.

Software tab Use the Software tab of the "ERS 8000 Software table" (page 239) to view information about the software running on cards installed in the Ethernet Routing Switch 8000 family chassis. The table on the tab has one row for each CPU card in the chassis.

The following table describes the parts of the Software tab.

Table 40
Parts of the Software tab of the ERS 8000 Software table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name of the device.
Slot	Shows the slot number of the card on which the software is running.
SwVersion	Shows the version number of the software.
LastRuntime ImageSource	Shows the name of the file from which the runtime image was loaded.
PrimaryImage Source	Shows the name of the file from which the primary image was loaded.

Configuration tab Use the Configuration tab of the "ERS 8000 Software table" (page 239) to view information about configuration files loaded on the device. The table on the tab has one row for each CPU card in the chassis.

The following table describes the parts of the Configuration tab.

Table 41
Parts of the Configuration tab of the ERS 8000 Software table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name of the device.
Slot	Shows the slot number of the card on which the software is running.
LastBootConfig Source	Shows the name and location of the file from which the last boot configuration was loaded.
LastRuntime ConfigSource	Shows the name and location of the file from which the last runtime configuration was loaded.
PrimaryConfig Source	Shows the name and location of the file from which the last primary configuration was loaded.

WSM Image tab Use the WSM Image tab of the "ERS 8000 Software table" (page 239) to view information about WSM image software running on Ethernet Routing Switch 8000 family devices.

The following table describes the parts of the WSM Image tab.

Table 42
Parts of the WSM Image tab of the ERS 8000 Software table

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name of the device.
Software Version	Shows the software version of the WSM image.
Enabled SwFeatures	Shows the enabled features of the WSM image.
BootVer	Shows the boot version of the WSM image.
Image1Ver	Shows the version number of WSM image 1.
Image2Ver	Shows the version number of WSM image 2.
ImageForNxt Reset	Shows the image file that loads the next time the WSM card resets.
ConfigForNxt Reset	Shows the configuration file that loads the next time the WSM card resets.
SavePending	Indicates that a save action is required because the configuration has been applied but has not been saved to the flash.

ERS 8000 Devices folder Use the ERS 8000 Devices folder to view information about each of the Ethernet Routing Switch 8000 devices discovered on the network.

The following table describes the parts of the ERS 8000 Devices folder.

Table 43
Parts of the ERS 8000 Devices folder

Part	Description
"Chassis tab" (page 243)	Shows information about Ethernet Routing Switch 8000 family chassis.
"Card tab" (page 243)	Shows information about cards installed in Ethernet Routing Switch 8000 series chassis.
"Mda tab" (page 244)	Shows information about MDA installed in Ethernet Routing Switch 8000 family devices in the network inventory.
"General tab" (page 245)	Shows general information about software running on Ethernet Routing Switch 8000 family devices in the network inventory.
"Software tab" (page 245)	Shows information about software versions and sources.
"Configuration tab" (page 246)	Shows information about software configuration settings.

Part	Description
"WSM Image tab" (page 246)	Shows information about WSM images.
"FlashFiles tab" (page 247)	Shows information about the files in the flash memory of Ethernet Routing Switch 8000 family devices.
"DeviceInfo tab" (page 247)	Shows information about the device.
"Gbic tab" (page 248)	Shows information about the system that Ethernet Routing Switch 8000 family use to determine the device capabilities.
"PcmciaFiles tab" (page 248)	Shows information about the PcmciaFiles.

Chassis tab Use the Chassis tab of the "ERS 8000 Devices folder" (page 242) to view information about the Ethernet Routing Switch 8000 device chassis. The following table describes the parts of the Chassis tab.

Table 44
Parts of the Chassis tab of the ERS 8000 Devices folder

Part	Description
Type	Shows the module type.
SerialNumber	Shows the serial number for the device.
Hardware Revision	Shows the current hardware revision of the device chassis.
NumSlots	Shows the number of slots (or cards) this device can contain.
NumPorts	Shows the number of ports currently on this device.
BaseMacAddr	Shows the starting point of the block of MAC addresses used by the switch for logical and physical interfaces.
HaCpu	Shows you whether the L2 redundancy on the master CPU is enabled or disabled.
StandbyCpu	Shows you whether the L2 Redundancy is enabled on the standby CPU. The possible states are • hotStandbyCPU • warmStandbyCPU • standbyCPUNotPresent

Card tab Use the Card tab of the "ERS 8000 Devices folder" (page 242) to view information about cards installed in Ethernet Routing Switch 8000 series chassis.

The following table describes the parts of the Card tab.

Table 45
Parts of the Card tab of the ERS 8000 Devices folder

Part	Description
SlotNum	Shows the slot numbers of cards installed in the chassis.
FrontType	Indicates the card types in Ethernet Routing Switch 8000 Series devices. Front refers to the I/O portion of the module, the I/O card.
FrontDescription	Shows the model number of the module (for example, 8608GT).
FrontSerialNum	Shows the serial number of the I/O card.
FrontHwVersion	Shows the hardware version of the I/O card.
FrontPartNumber	Shows the part number of the I/O card.
FrontDateCode	Shows the manufacturing date code for the I/O card.
FrontDeviations	Shows front deviations for the card.
BackType	Shows the back type of the card. Possible values are • rc2kBackplane • rc2kSFM • rc2kBFM0 • rc2kBFM2 • rc2kBFM3 • rc2kBFM6 • rc2kBFM8 • rc2kMGSFM • other
BackDescription	Shows the back description for the card.
BackSerialNum	Shows the back serial number for the card.
BackHwVersion	Shows the back hardware version for the card.
BackPartNumber	Shows the back part number for the card.
BackDateCode	Shows the back date code for the card.
BackDeviations	Shows the back deviations for the card.

Mda tab Use the Mda tab of the "ERS 8000 Devices folder" (page 242) to view information about MDA installed in Ethernet Routing Switch 8000 family devices in the network inventory.

The following table describes the parts of the Mda tab.

Table 46
Parts of the Mda tab of the ERS 8000 Devices folder

Part	Description
SlotNum	Shows the identity of the slot in which the MDA is installed.
MdaNum	Shows the number of the MDA.
Type	Shows the type of the MDA.
Description	Shows the MDA description. Possible values include • OC-3c SMF MDA—Dual port OC-3c SMF • OC-3c MMF MDA—Dual port OC-3c MMF • OC-12c SMF MDA—Single Port OC-12c SMF • OC-12c MMF MDA—Single Port OC-12c MMF
NumPorts	Shows the number of ports on the MDA.

General tab Use the General tab of the "ERS 8000 Devices folder" (page 242) to view general information about software running on Ethernet Routing Switch 8000 family devices on the network.

The following table describes the parts of the General tab.

Table 47
Parts of the General tab of the ERS 8000 Devices folder

Part	Description
Type	Shows the type of the device.
SysName	Shows the system name of the device.
Device	Shows the device.
Description	Shows a description of the device.
Location	Shows the location of the device.
Contact	Shows the administrative contact for the device.

Software tab Use the Software tab of the "ERS 8000 Devices folder" (page 242) to view information about software running on cards installed in Ethernet Routing Switch 8000 family chassis. The table on the tab will have one row for each CPU card in the chassis.

The following table describes the parts of the Software tab.

Table 48
Parts of the Software tab of the ERS 8000 Devices folder

Part	Description
Slot	Shows the slot number of the card on which the software is running.
SwVersion	Shows the version number of the software.
LastRuntime ImageSource	Shows the name of the file from which the runtime image was loaded.
PrimaryImage Source	Shows the name of the file from which the primary image was loaded.

Configuration tab Use the Configuration tab of the "ERS 8000 Devices folder" (page 242) to view information about configuration files loaded on the device. The table on the tab will have one row for each CPU card in the chassis.

The following table describes the parts of the Configuration tab.

Table 49
Parts of the Configuration tab of the ERS 8000 Devices folder

Part	Description
Slot	Shows the slot number of the card on which the software is running.
LastBootConfig Source	Shows the name and location of the file from which the last boot configuration was loaded.
LastRuntime ConfigSource	Shows the name and location of the file from which the last runtime configuration was loaded.
PrimaryConfig Source	Shows the name and location of the file from which the last primary configuration was loaded.

WSM Image tab Use the WSM Image tab of the "ERS 8000 Devices folder" (page 242) to view information about WSM image software running on Ethernet Routing Switch 8000 family devices.

The following table describes the parts of the WSM Image tab.

Table 50
Parts of the WSM Image tab of the ERS 8000 Devices folder

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name of the device.
Software Version	Shows the software version of the WSM image.

Part	Description
Enabled SwFeatures	Shows the enabled features of the WSM image.
BootVer	Shows the boot version of the WSM image.
Image1Ver	Shows the version number of WSM image 1.
Image2Ver	Shows the version number of WSM image 2.
ImageForNxt Reset	Shows the image file that will be loaded the next time the WSM card resets.
ConfigForNxt Reset	Shows the configuration file that will be loaded the next time the WSM card resets.
SavePending	Indicates that a save action is required because the configuration has been applied but has not been saved to the flash.

FlashFiles tab Use the Flash Files tab of the "ERS 8000 Devices folder" (page 242) to view information about the files in the flash memory of the selected Ethernet Routing Switch 8000 device.

The following table describes the parts of the Flash Files tab.

Table 51
Parts of the Flash Files tab of the ERS 8000 Devices folder

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name of the device.
Slot	Displays slot number of the card that contains the Flash files.
Name	Displays the name of the file
Date	Displays the date the file was written to the flash memory
Size	Displays the file size in bytes

DeviceInfo tab Use the Device Info tab of the "ERS 8000 Devices folder" (page 242) to view information about the device selected Ethernet Routing Switch 8000 device.

The following table describes the parts of the DeviceInfo tab.

Table 52
Parts of the DeviceInfo tab of the ERS 8000 Devices folder

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name for the device.

Part	Description
Slot	Shows the slot number for the pcmcia card in the device.
FlashBytes Used	Shows the number of bytes used in the system configuration flash device.
FlashBytes Free	Shows the number of bytes available in the system configuration flash device.
FlashNum Files	Shows the number of files available in the system configuration flash device.
Pcmcia BytesUsed	Shows the number of bytes used by pcmcia device in the system.
PcmciaBytes Free	Shows the number of bytes available in the system pcmcia device.
PcmciaNum Files	Shows the number of files available in the system pcmcia device.

Gbic tab Use the Gbic tab of the "ERS 8000 Devices folder" (page 242) to view information about the system that Ethernet Routing Switch 8000 family use to determine the device capabilities.

The following table describes the parts of the Gbic tab.

Table 53
Parts of the Gbic tab of the ERS 8000 Devices folder

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name for the device.
Slot/Port	Shows the slot number and the port number of gbic in the device.
Type	Shows the gbic type. It follows the port number.
Vendor	Shows the gbic vendor name.
Part	Shows the part number provided by gbic vendor.

PcmciaFiles tab Use the PmciaFiles tab of the "ERS 8000 Devices folder" (page 242) to view pcmcia file information of the selected Ethernet Routing Switch 8000 device.

The following table describes the parts of the PcmciaFiles tab.

Table 54
Parts of the PcmciaFiles tab of the ERS 8000 Devices folder

Part	Description
No.	Shows the row number of the table entry.
Device	Shows the IP address or host name for the device.
Slot	Shows the slot number for the pcmcia card in the device.
Name	Shows the name of the files in pcmcia card.
Date	Shows the file creation date.
Size	Shows the size of the file.

Setting File Inventory Manager preferences

You can set preferences for displaying and managing devices on the File Inventory Manager. This section contains information about setting the following preferences:

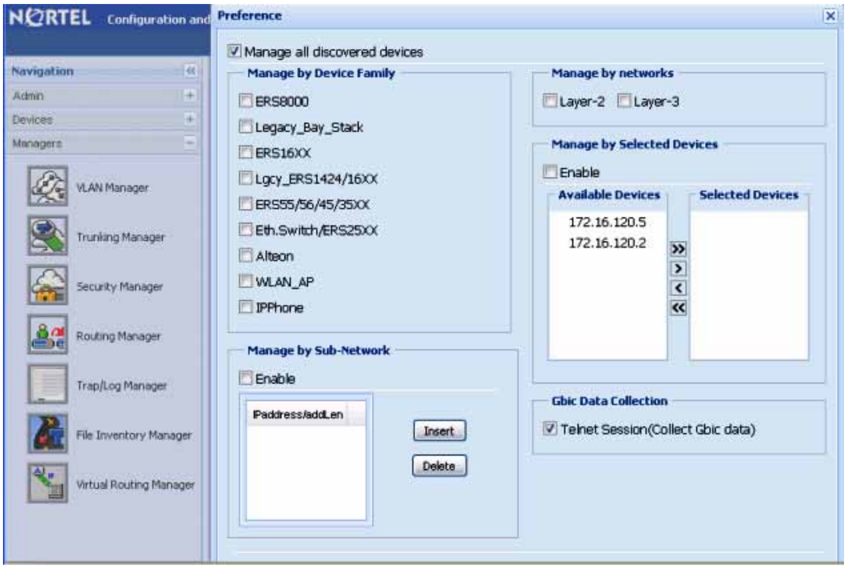
- "Setting management preferences" (page 249)
- "Setting display preferences" (page 251)

Setting device management preferences

Perform the following procedure to set the preferences for managing devices using the File Inventory Manager.

Procedure steps

Step	Action
1	Open the File Inventory Manager.
2	Select **Preferences** tab from the menu bar. The Preference dialog box appears.



Preference

☑ Manage all discovered devices

Manage by Device Family

□ ERS8000
□ Legacy_Bay_Stack
□ ERS16XX
□ Lgcy_ERS1424/16XX
□ ERS55/56/45/35XX
□ Eth.Switch/ERS25XX
□ Alteon
□ WLAN_AP
□ IPPhone

Manage by networks

□ Layer-2 □ Layer-3

Manage by Selected Devices

□ Enable

Available Devices	Selected Devices
172.16.120.5 172.16.120.2	

Manage by Sub-Network

□ Enable

IPaddress/addLen

Gbic Data Collection

☑ Telnet Session(Collect Gbic data)

3 Select or clear the check boxes to enable or disable the associated filters for managing devices. The available options are:

- **Manage by device family**—allows you to choose the supported device families: ERS 8000, ERS 16XX, Ethernet Switch/ERS 25XX, Alteon, Legacy BayStack, Legacy ERS 1424/16XX, ERS 55XX/45XX/35XX, WLAN AP, and IP Phone.
- **Manage by sub-network**—allows you to insert or delete subnetworks. If you select this option, only the assigned devices in the selected subnetworks are used in the next discovery process.
- **Manage by network layers**—allows you to manage devices based on the network layers: Layer 2 or Layer 3.
- **Manage by selected devices**—allows you to manage a particular group of devices; you can select devices from the Available Devices. If you select this option, The File inventory manager uses only the selected devices in the next discovery process.
- **GBIC Data Collection**—allows you to collect the GBIC data.

4 Click **OK** to add the changes.

—End—

Setting display preferences

Use the following procedure to select the information you want to display in the Inventory view.

Procedure steps

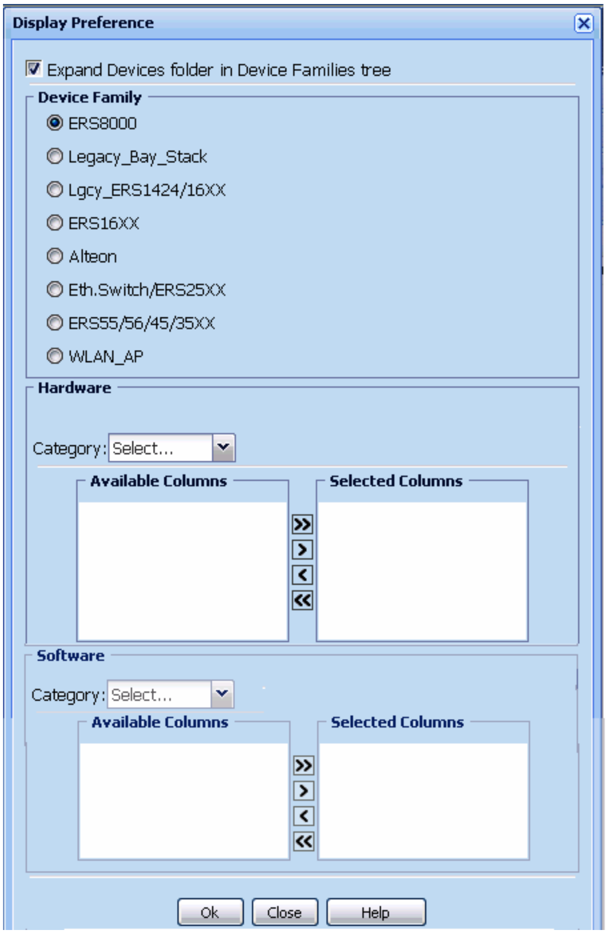
Step **Action**

1 Open the File Inventory Manager.

2 Select View from the menu bar.

3 Select Display Preferences.

The Display Preferences dialog box appears.



Display Preference

☑ Expand Devices folder in Device Families tree

Device Family

● ERS8000

○ Legacy_Bay_Stack

○ Lgcy_ERS1424/16XX

○ ERS16XX

○ Alteon

○ Eth.Switch/ERS25XX

○ ERS55/56/45/35XX

○ WLAN_AP

Hardware

Category: Select...

Available Columns

Selected Columns

Software

Category: Select...

Available Columns

Selected Columns

4 Configure the display options. The following table lists the options available.

—End—

Table 55
Parts of the Display Preferences dialog box

Part	Description
Expand Devices folder in Device Families tree	Check this check box if you want the Devices folders to appear in the Device Families tree view.
Device Family	Use these radio buttons to configure the view preferences for the device family selected in the Device Families tree view.
Hardware	Use the Category pull-down menu and Column Header list to choose the columns to show in the Hardware tables for each device family.
Software	Use the Category pull-down menu and Column Header list to choose the columns to show in the Software tables for each device family.
OK	Saves your settings and closes the dialog box.
Close	Cancels your settings and closes the dialog box.
Help	Opens online Help for the Display Preferences dialog box.

Managing files

The following sections describe how to use File Inventory Manager:

- "Downloading a file to the device" (page 252)
- "Uploading a file from device" (page 256)
- "Backing up a configuration file" (page 260)
- "Restoring a configuration File" (page 261)
- "Archiving a configuration File" (page 263)
- "Synchronizing configuration File" (page 265)
- "Upgrading device " (page 268)
- "Upgrading devices using Device Upgrade wizard " (page 270)
- "Comparing runtime configuration with existing configuration" (page 267)

Downloading a file to the device

Perform the following procedure to download configuration files and image files to devices.

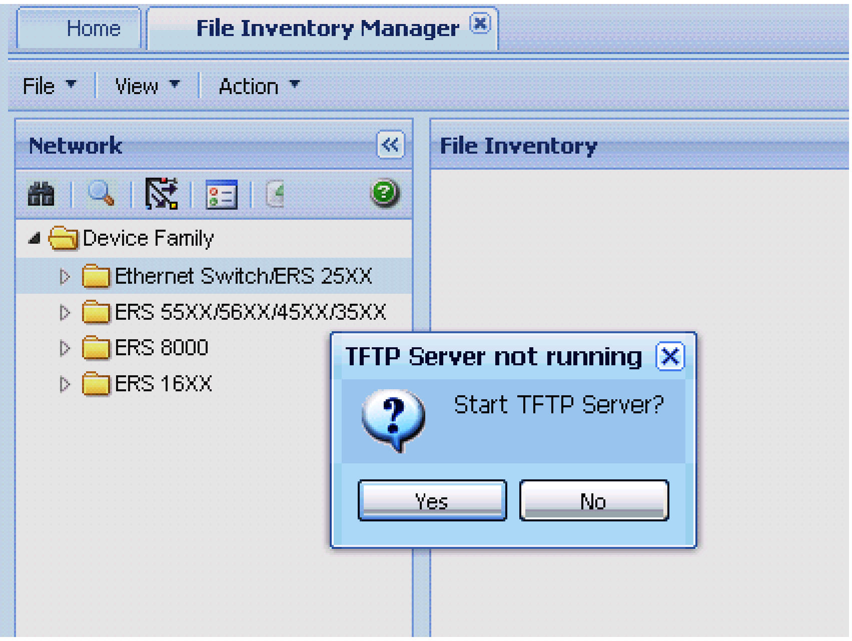
Procedure steps

Step **Action**

1 Open **File Inventory manager**.

2 Select **Action**, **Download File to Device(s)** from the menu bar.

The TFTP Server Not Running dialog box appears.

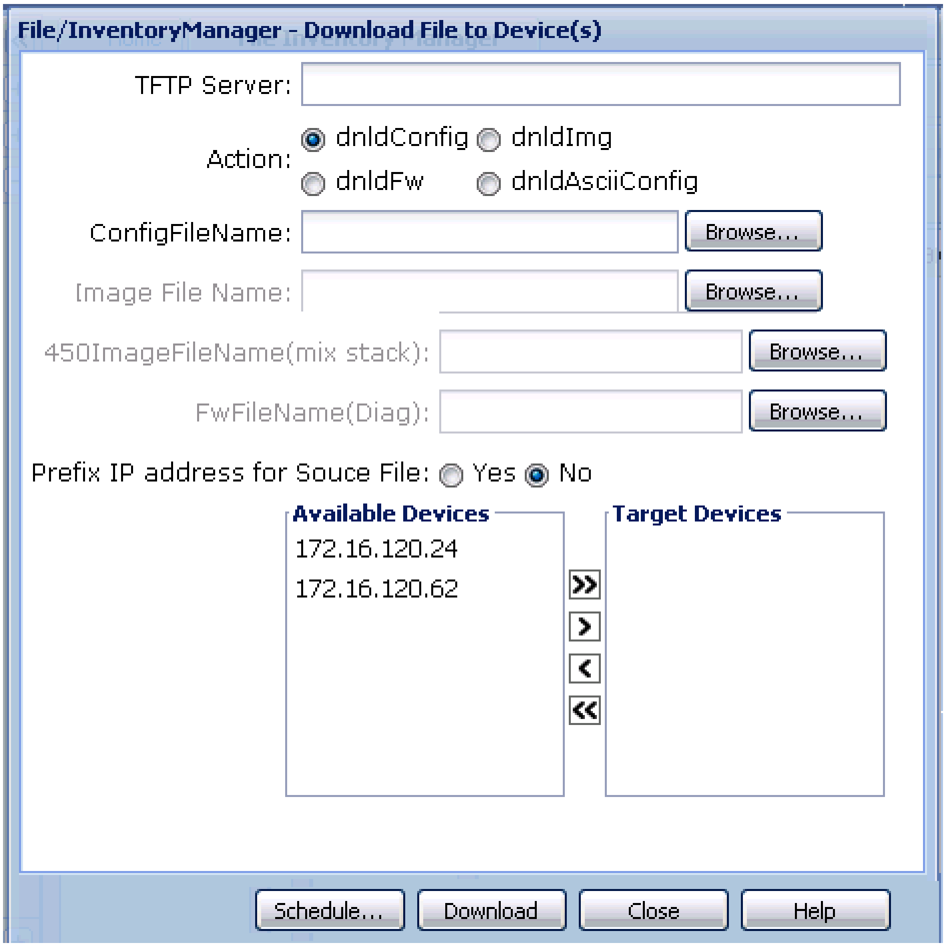


TFTP Server not running

Start TFTP Server?

3 Click **Yes** to start TFTP server.

The File/Inventory Manager - Download File to Device(s) dialog box appears.



File/InventoryManager - Download File to Device(s)

TFTP Server:

Action: ● dnldConfig ○ dnldImg ○ dnldFw ○ dnldAsciiConfig

ConfigFileName:

Image File Name:

450ImageFileName(mix stack):

FwFileName(Diag):

Prefix IP address for Souce File: ○ Yes ● No

Available Devices

172.16.120.24

172.16.120.62

Target Devices

4 In the **TFTP Server** field, enter the host name or IP address of the TFTP server for the download operation.

5 In the **ConfigFileName** field, enter the name of the base file you are downloading.

6 In the **Image File Name**, **450ImageFileName(mix stack)**, and **FwdFileName(Diag)** fields, enter the appropriate file names.

7 Use the **Prefix IP address for Source File** option to set how the filename is interpreted:

- When you choose **No**, File Inventory Manager downloads the file with the selected filename.
- When you choose **Yes**, File Inventory Manager downloads files to the selected device according to the IP address appended to the filename. For example, suppose the file name is config.cfg , and the selected device is 10.160.41.204, then the File Inventory

Manager downloads the file 10_160_41_204_config.cfg to the device.
The source directory for the download operation is determined by the settings of the TFTP server. Review the configuration settings of the TFTP server to determine the source directory.

8 In the **Available Devices** list, select one or more devices to which you want to download the selected file.

9 Click **>** to move the selected device(s) to the **Target Devices** list.
OR
Click **>>** to move all the available devices to the **Target Devices** list.
Click **<** or **<<** to move devices back to the **Available Devices** list.

10 Click **Download** to download the file.

11 A message that shows the results of the operation appears at the bottom of the dialog box.

—End—

Table 56
Parts of the Download File to Device(s) dialog box

Part	Description
TFTP Server	Allows you to enter the IP address of the TFTP server for the operation. The default setting is the TFTP server (if any) specified on the Preferences dialog box.
Source File Name	Allows you to choose a file to download to Ethernet Routing Switch 8000 devices. You can use the **Browse** button to browse the file. The source directory for the download operation is determined by the settings of the TFTP server. Review the configuration settings of the TFTP server to determine the source directory.
Destination File Name	Allows you to enter a destination filename for a Ethernet Routing Switch 8000 download operation.

Part	Description
Prefix IP address for Source File	Use the Prefix IP address for Source File options to set whether or not you are downloading files according to the IP address appended to the filename: • When you choose No, File Inventory Manager downloads the selected file to all selected devices. • When you choose Yes, File Inventory Manager downloads files to the selected devices according to the IP address appended to filename. For example, suppose the file name is config.cfg and the selected the device is 10.160.41.204. File Inventory Manager will download the file 10_160_41_204_config.cfg to 10.160.41.204. The source directory for the download operation is determined by the settings of the TFTP server. Review the configuration settings of the TFTP server to determine the source directory.
Available Devices list	Allows you to choose from all the available devices.
Target Devices list	Allows you to arrange multiple devices in the order in which you want to download the file.
>>	Allows you to move all the devices from the Available Devices list into the Target Devices list.
>	Allows you to move the selected device from the Available Devices list into the Target Devices list.
<	Allows you to move the selected device from the Target Devices list to the Available Devices list.
<<	Allows you to move all the devices in the Target Devices list to the Available Devices list.
Download	Downloads the files to the devices shown on the Target Devices list.
Stop	Terminates the ongoing operation.
Close	Discards your settings and closes the dialog box.
Help	Opens Online Help for the Download File to Device(s) dialog box.

Uploading a file from a device

Perform the following procedure to upload files from one or more devices.

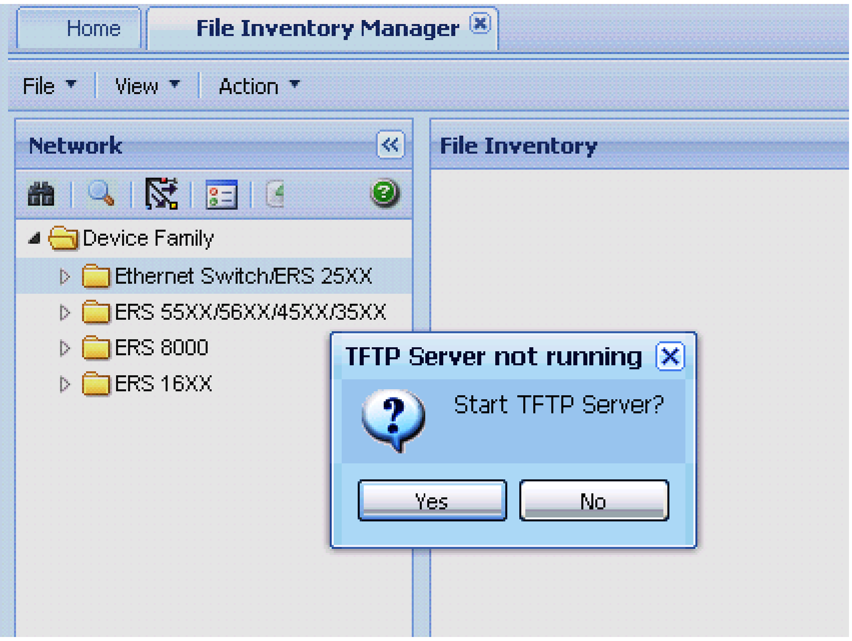
Procedure steps

Step **Action**

1 Open the File Inventory manager.

2 Select **Action**, **Upload File from Device(s)** from the menu bar.

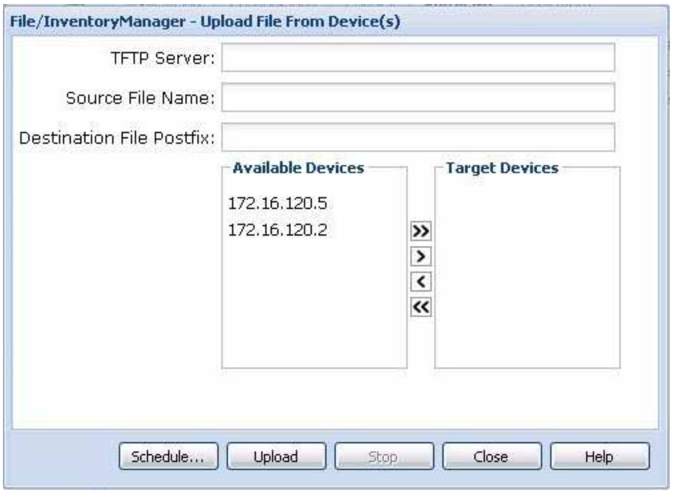
The TFTP Server Not Running dialog box appears.



TFTP Server not running

Start TFTP Server?

3 Click **Yes** to start TFTP server.
The File/Inventory Manager - Upload File to Device(s) dialog box appears.



File/InventoryManager - Upload File From Device(s)

TFTP Server:

Source File Name:

Destination File Postfix:

Available Devices

172.16.120.5

172.16.120.2

Target Devices

4 In the **TFTP Server** field, enter the host name or IP address of the TFTP server for the upload operation.

5 In the **Action** field, select one of the option **uplodConfig** or **upldAsciiConfig** based on the requirement for upload operation.

6 Use the **Dest File Name** option to set how the filename is interpreted:

- When you choose **No**, File Inventory Manager uploads the file with the selected filename.
- When you choose **Yes**, File Inventory Manager uploads files from the selected device according to the IP address appended to the filename. For example, suppose the file name is config.cfg , and the selected device is 10.160.41.204, then the File Inventory Manager uploads the file 10_160_41_204_config.cfg from the device.
  The source directory for the upload operation is determined by the settings of the TFTP server. Review the configuration settings of the TFTP server to determine the source directory.

7 In the **Available Devices** list, select one or more devices from which you want to upload the selected file.

8 Click **>** to move the selected device(s) to the **Target Devices** list.
OR
Click **>>** to move all the available devices to the **Target Devices** list.
Use the **<** and **<<** buttons to move devices back to the **Available Devices** list.

9 Click **Upload** to transfer the file.

File Inventory Manager opens an alert box to prompt you to confirm the upload operation.

10 Click **Yes** to continue.
A message that shows the results of the operation appears at the bottom of the dialog box.

—End—

Table 57
Parts of the Upload File from Device(s) dialog box

Part	Description
TFTP Server	Allows you to enter the IP address for the TFTP server for the operation. The default setting is the TFTP server (if any) specified on the Preferences dialog box.

Part	Description
Source File Name	Allows you to choose a file to upload.
Destination File Postfix	Allows you to enter a base filename for the destination file. Observe the following points regarding the destination filename: • During the upload operation, the IP address of the device or devices will be appended to the base filename. This feature helps you upload configuration files from multiple devices without overwriting the destination files. For example, if you enter config.cfg as the filename, and selected two devices, 10.160.41.204 and 10.160.41.229. The actual destination files will be named 10_160_41_204_config.cfg and 10_160_41_229_config.cfg. • The destination directory for the upload is determined by the settings of the TFTP server. Review the configuration settings of the TFTP server to determine the destination directory. • For Ethernet Switch, ERS 55xx/35xx, and Legacy BayStack devices, the actual destination filename is limited to a maximum of 29 characters, including the appended IP address.
Available Devices list	Allows you to choose from all the available devices.
Target Devices list	Allows you to arrange multiple devices in the order in which you want to upload the files from them.
>>	Allows you to move all the devices from the Available Devices list into the Target Devices list.
>	Allows you to move the selected device from the Available Devices list into the Target Devices list.
<	Allows you to move the selected device from the Target Devices list to the Available Devices list.
<<	Allows you to move all the devices in the Target Devices list to the Available Devices list.
Upload	Uploads the file from the devices shown in the Target Devices list and closes the dialog box.
Stop	Terminates the ongoing operation.
Close	Discards your settings and closes the dialog box.
Help	Opens online Help for the Upload File from Device(s) dialog box.

Backing up a configuration file

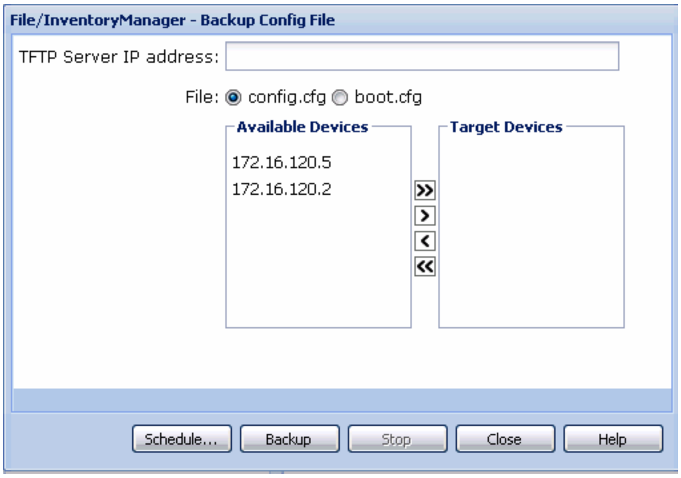
Perform the following procedure to back up configuration files from devices.

Procedure steps

Step **Action**

1 Open File Inventory Manager.

2 From the menu bar, choose **Actions, Backup Config File**.
The File/Inventory Manager - Backup Config File dialog box appears.



File: ● config.cfg ○ boot.cfg

172.16.120.5
172.16.120.2

3 In the **TFTP Server IP Address** field, enter the IP address of the TFTP server for the backup operation.

4 In the **File** field, select the type of file to back up (config.cfg or boot.cfg).

5 In the **Available Devices** list, select one or more devices whose configuration file you want to back up.

6 Click **>** to move the selected device to the **Target Devices** list.
OR
Click **>>** to move all the available devices to the **Target Devices** list.
Use the **<** or **<<** buttons to move devices back to the **Available Devices** list.

7 Click **Backup** to back up the configuration file(s) immediately.

File Inventory Manager opens an alert box to prompt you to confirm the upload operation.

8 Click **Yes** to continue.

Configuration and Orchestration Manager backs up the selected configuration file to the \backup subdirectory of the TFTP root directory.

—End—

Table 58
Parts of the Backup Config File dialog box

Part	Description
TFTP Server IP Address	Allows you to enter the IP address for the TFTP server for the operation. The default setting is the TFTP server (if any) specified on the Preferences dialog box.
File	Allows you choose whether to back up the config.cfg or boot.cfg file.
Available Devices list	Allows you to choose from all the available devices.
Target Devices list	Allows you to arrange multiple devices in the order in which you want to back up the configuration files.
>>	Allows you to move all the devices from the Available Devices list into the Target Devices list.
>	Allows you to move the selected device from the Available Devices list into the Target Devices list.
<	Allows you to move the selected device from the Target Devices list to the Available Devices list.
<<	Allows you to move all the devices in the Target Devices list to the Available Devices list.
Backup	Backs up the configuration file(s) for the devices shown in the Target Devices list and closes the dialog box.
Stop	Terminates the ongoing operation.
Close	Discards your settings and closes the dialog box.
Help	Opens Online Help for the Backup Config File dialog box.

Restoring a configuration File

Perform the following procedure to restore a configuration file to a device.

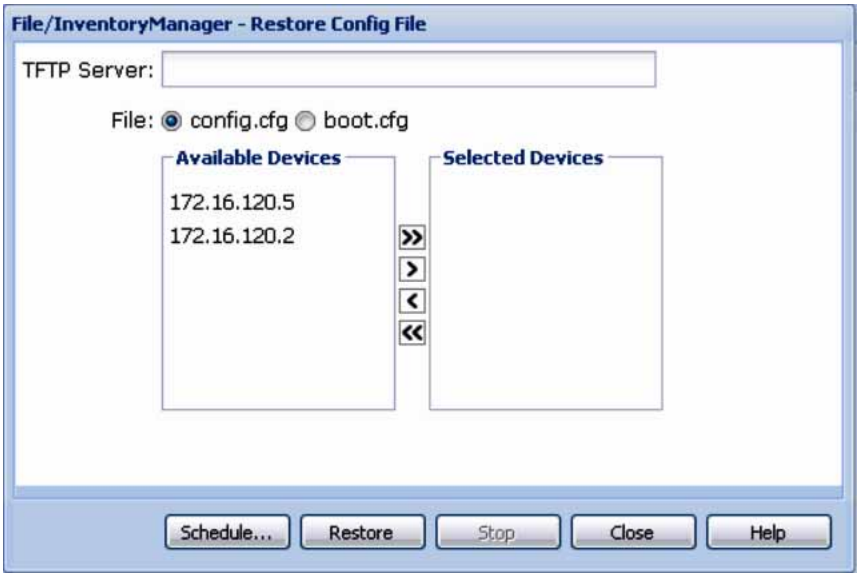
Procedure steps

Step Action

1 Open **File Inventory Manager**.

2 From the menu bar, choose **Actions, Restore Config File**.

The File/Inventory Manager - Restore Config File dialog box appears.



File/InventoryManager - Restore Config File

TFTP Server:

File: ● config.cfg ○ boot.cfg

Available Devices

172.16.120.5
172.16.120.2

Selected Devices

3 In the **TFTP Server** box, enter the host name or IP address of the TFTP server for the restore operation.

4 In the **File** field, select the type of file to restore (config.cfg or boot.cfg).

5 Click **>** to move the selected device(s) to the **Target Devices** list.
OR
Click **>>** to move all the available devices to the **Target Devices** list.
Use the **<** and **<<** buttons to move devices back to the **Available Devices** list.

6 Click **Restore** to restore the configuration files.

File Inventory Manager opens an alert box to prompt you to confirm the upload operation.

7 Click **Yes** to continue.
Configuration and Orchestration Manager restores the selected configuration file to the devices. It also logs the results of the restore operation to the selected backup log file

—End—

Table 59
Parts of the Restore Config File dialog box

Part	Description
TFTP Server	Allows you to enter the IP address for the TFTP server for the operation. The default setting is the TFTP server (if any) specified on the Preferences dialog box.
File	Allows you to choose whether to restore the config.cfg or boot.cfg file.
Available Devices list	Allows you to choose from all the available devices.
Target Devices list	Allows you to arrange multiple devices in the order in which you want to restore configuration files.
>>	Allows you to move all the devices from the Available Devices list into the Target Devices list.
>	Allows you to move the selected device from the Available Devices list into the Target Devices list.
<	Allows you to move the selected device from the Target Devices list to the Available Devices list.
<<	Allows you to move all the devices in the Target Devices list to the Available Devices list.
Restore	Restores the configuration files for the devices shown in the Target Devices list and closes the dialog box.
Stop	Terminates the ongoing operation.
Close	Discards your settings and closes the dialog box.
Help	Opens Online Help for the Restore Config File dialog box.

Archiving a configuration file

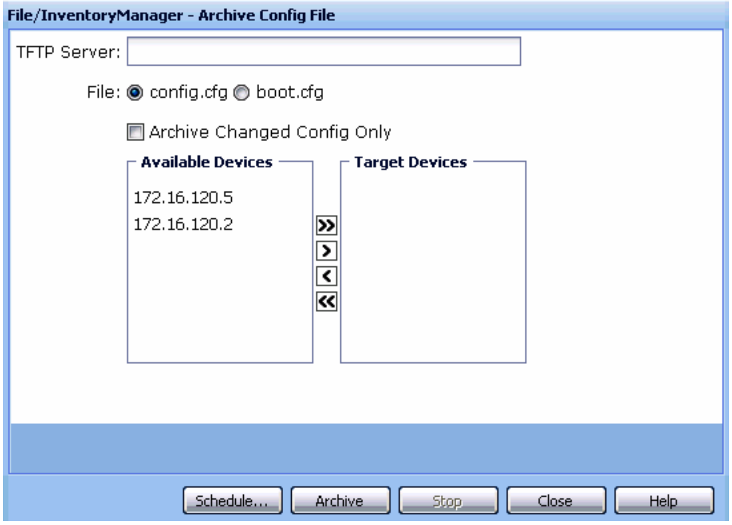
Perform the following procedure to archive a device configuration file.

Procedure steps

Step **Action**

1 Open **File Inventory Manager**.

2 From the menu bar, choose **Actions, Archive Config File**.
The File/Inventory Manager - Archive Config File dialog box appears.



File/InventoryManager - Archive Config File

TFTP Server:

File: ● config.cfg ○ boot.cfg

□ Archive Changed Config Only

Available Devices

172.16.120.5
172.16.120.2

Target Devices

3 In the **TFTP Server** field, enter the host name or IP address of the TFTP server for the archive operation.

4 Use the **File** option to select the type of file to archive (config.cfg or boot.cfg).

5 Select **Archive Changed Config Only** option to archive the configuration file only if it differs from the last saved file.

6 In the **Available Devices** list, select one or more devices whose configuration file you want to archive.

7 Click **>** to move the selected device(s) to the **Target Devices** list.
OR
Click **>>** to move all the available devices to the **Target Devices** list.
Use the **<** and **<<** buttons to move devices back to the **Available Devices** list.

8 Click **Archive** to archive the configuration files.

File Inventory Manager opens an alert box to prompt you to confirm the upload operation.

9 Click **Yes** to continue.
Configuration and Orchestration Manager archives the selected configuration file(s). It also logs the results of the archive operation to the selected archive log file.

—End—

Table 60
Parts of the Archive Config File dialog box

Part	Description
TFTP Server	Allows you to enter the IP address for the TFTP server for the operation. The default setting is the TFTP server (if any) specified on the Preferences dialog box.
File	Allows you to choose whether to archive the config.cfg or boot.cfg file.
Archive Changed Config Only	Specifies to archive the configuration only if it has changed. COM compares the latest archived file with the current configuration and saves a new file only if the current configuration is different from the archived file.
TFTP Server Base Directory	Specifies the base directory of the TFTP server. Click the **Browse** button to browse.
Available Devices list	Allows you to choose from all the available devices.
Target Devices list	Allows you to arrange multiple devices in the order in which you want to archive their configuration files.
>>	Allows you to move all the devices from the Available Devices list into the Target Devices list.
>	Allows you to move the selected device from the Available Devices list into the Target Devices list.
<	Allows you to move the selected device from the Target Devices list to the Available Devices list.
<<	Allows you to move all the devices in the Target Devices list to the Available Devices list.
Archive	Archives the configuration files for the devices shown in the Target Devices list and closes the dialog box.
Stop	Terminates the ongoing operation.
Close	Discards your settings and closes the dialog box.
Help	Opens online Help for the Archive Config File dialog box.

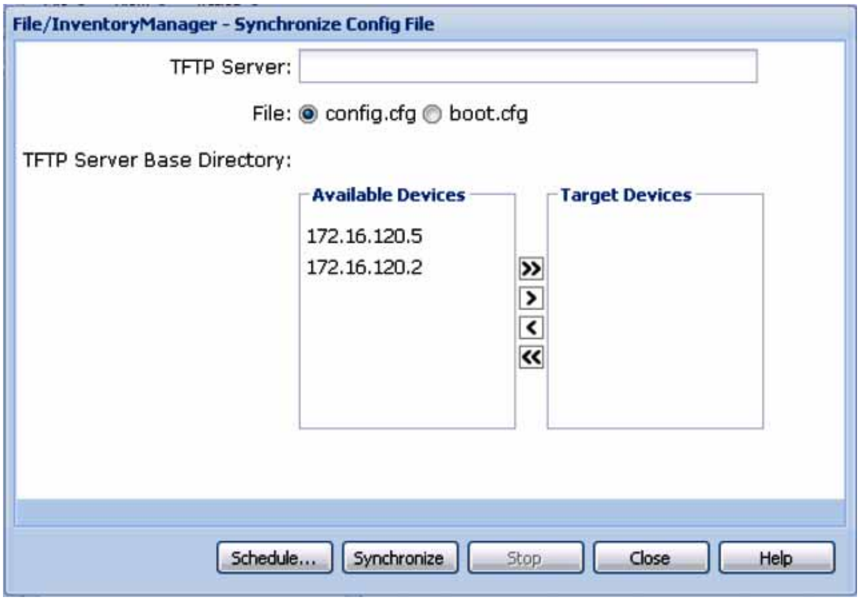
Synchronizing the configuration files on devices

Perform the following procedure to synchronize the configuration files on devices in your network. You can use this procedure to upload a current configuration or boot.cfg file of the device to the currently deployed subdirectory of the TFTP root directory.

Procedure steps

Step	Action
1	Open **File Inventory Manager**.

2 From the menu bar, choose **Actions, Synchronize Config File**. The File/Inventory Manager - Synchronize Config File dialog box appears.


File/InventoryManager - Synchronize Config File
TFTP Server Base Directory:
Available Devices
Target Devices
>>
>
<
<<
Schedule...
Synchronize
Stop
Close
Help

TFTP Server:

File: ● config.cfg ○ boot.cfg

Available Devices:
172.16.120.5
172.16.120.2

3 In the **TFTP Server** field, enter the host name or IP address of the TFTP server for the synchronize operation.

4 Use the **File** option to select the type of file to synchronize (config.cfg or boot.cfg).

5 In the **Available Devices** list, select one or more devices whose configuration file you want to synchronize.

6 Click **>** to move the selected device(s) to the **Target Devices** list.
OR
Click **>>** to move all the available devices to the **Target Devices** list.

7 Use the **<** and **<<** buttons to move devices back to the **Available Devices** list.

8 Click **Synchronize** to upload the configuration files.

File Inventory Manager opens an alert box to prompt you to confirm the upload operation.

9 Click **Yes** to continue.

—End—

Table 61
Parts of the Synchronize Config File dialog box

Part	Description
TFTP Server	Allows you to enter the IP address for the TFTP server for the operation. The default setting is the TFTP server (if any) specified on the Preferences dialog box.
File	Allows you choose whether to synchronize the config.cfg or boot.cfg file.
TFTP Server Base Directory	Specifies the base directory of the TFTP server.
Available Devices list	Allows you to choose from all the available devices.
Target Devices list	Allows you to arrange multiple devices in the order in which you want to synchronize their configuration files.
>>	Allows you to move all the devices from the Available Devices list into the Target Devices list.
>	Allows you to move the selected device from the Available Devices list into the Target Devices list.
<	Allows you to move the selected device from the Target Devices list to the Available Devices list.
<<	Allows you to move all the devices in the Target Devices list to the Available Devices list.
Synchronize	Uploads the configuration files for the device(s) shown in the Target Devices list to the currently deployed subdirectory of the TFTP root directory and closes the dialog box.
Stop	Terminates the ongoing operation.
Close	Discards your settings and closes the dialog box.
Help	Opens Online Help for Synchronize Config File dialog box.

Comparing runtime configuration with existing configuration

Perform the following procedure to compare the runtime configuration with an existing configuration.

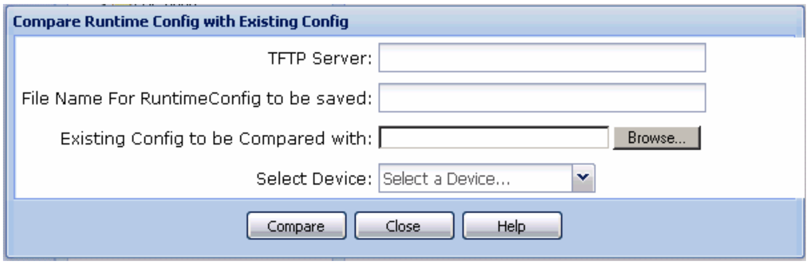
Procedure steps

Step **Action**

1 Open the **File Inventory manager**.

2 From the menu bar, choose **Action**, **Compare Runtime Config with Existing Config**.

The Compare Runtime Config With Existing Config dialog box appears.


Compare Runtime Config with Existing Config
TFTP Server:
File Name For RuntimeConfig to be saved:
Existing Config to be Compared with:
Browse...
Select Device:
Select a Device...
Compare
Close
Help

3 Complete the fields as described in the following table

Field	Description
TFTP Server	Specifies the host name or IP address of the TFTP server for the compare operation.
File Name For RuntimeConfig to be saved	Specifies the name of the runtime configuration file that is saved for the compare operation.
Existing Config to be Compared with	Specifies the existing configuration file to compare against the runtime configuration. Click the **Browse** button to browse the file.
Select Device	Specifies the selected device.

4 Click **Compare** to perform the operation.

—End—

Upgrading a device

Perform the following procedure to upgrade the image file on a device.

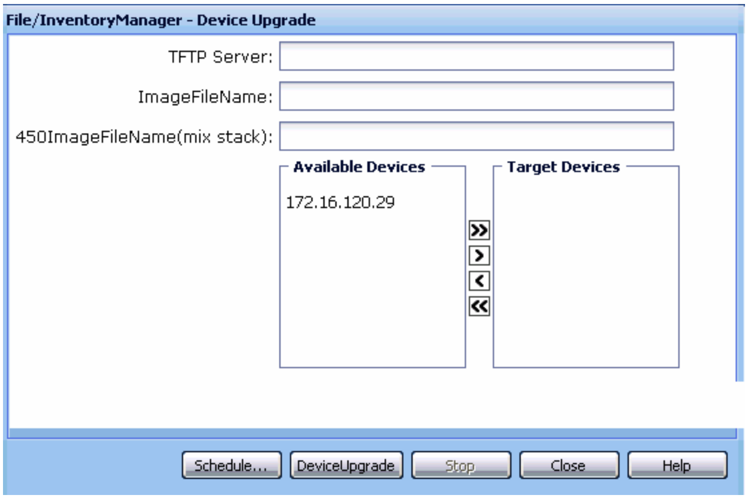
Procedure steps

Step Action

1 Open **File Inventory Manager**.

2 From the menu bar, choose **Actions**, **Device Upgrade**.

The File/Inventory Manager - Device Upgrade dialog box appears.



File/InventoryManager - Device Upgrade

TFTP Server:

ImageFileName:

450ImageFileName(mix stack):

3 In the **TFTP Server** field, enter the host name or IP address of the TFTP server for the upgrade operation.

4 In the **ImageFileName** field, enter the name of the image file to download.

5 In the **450ImageFileName(mix stack)**field, enter the name of the 450image (mix stack).

6 In the **Available Devices** list, select one or more devices to upgrade.

7 Click **>** to move the selected device(s) to the **Target Devices** list.
OR
Click **>>** to move all the available devices to the **Target Devices** list.
Use the **<** and **<<** buttons to move devices back to the **Available Devices** list.

8 Click **DeviceUpgrade** to upgrade the devices immediately.

File Inventory Manager opens an alert box to prompt you to confirm the upload operation.

9 Click **Yes** to continue.

—End—

Table 62
Parts of the Device Upgrade dialog box

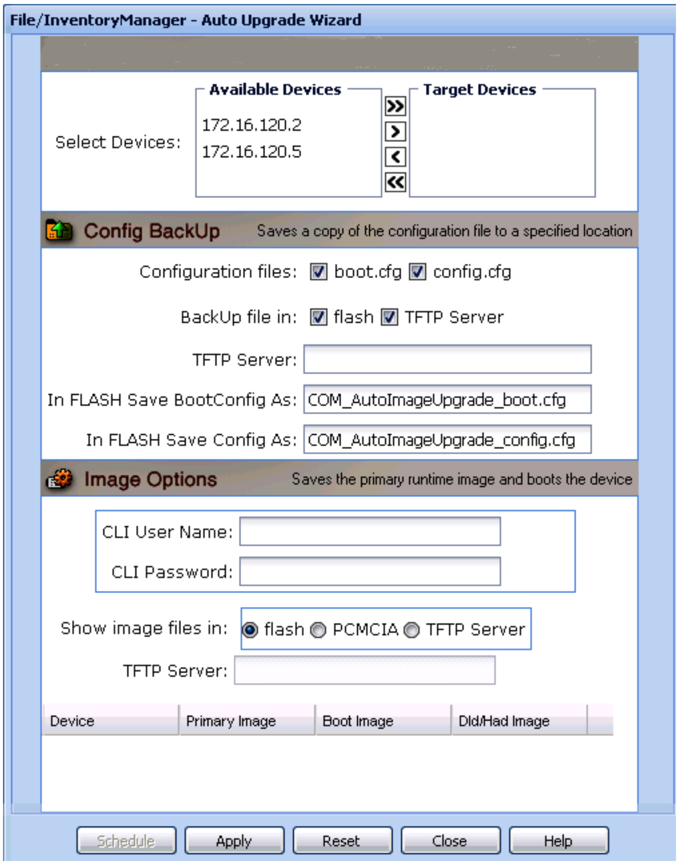
Part	Description
TFTP Server	Allows you to enter the IP address for the TFTP server for the operation. The default setting is the TFTP server (if any) specified on the Preferences dialog box.
ImageFileName	Allows you to enter the name of the file to download.
Available Devices list	Allows you to choose from all the available devices.
Target Devices list	Allows you to arrange multiple devices in the order in which you want to upgrade them.
>>	Allows you to move all the devices from the Available Devices list into the Target Devices list.
>	Allows you to move the selected device from the Available Devices list into the Target Devices list.
<	Allows you to move the selected device from the Target Devices list to the Available Devices list.
<<	Allows you to move all the devices in the Target Devices list to the Available Devices list.
DeviceUpgrade	Downloads the selected image file to the device(s) shown in the Target Devices list and closes the dialog box.
Stop	Terminates the ongoing operation.
Close	Discards your settings and closes the dialog box.
Help	Opens Online Help for Device Upgrade dialog box.

Upgrading devices using Device Upgrade wizard

For ERS 8000 device family, you can update a device using the Device Upgrade Wizard.

Procedure steps

Step	Action
1	Open **File Inventory manager**.
2	From the menu bar, select **Action >> Device Upgrade Wizard**. The File/Inventory Manager - Auto Upgrade Wizard appears.



File/InventoryManager - Auto Upgrade Wizard

Select Devices:

Available Devices:
172.16.120.2
172.16.120.5

Target Devices:

Config BackUp — Saves a copy of the configuration file to a specified location

Configuration files: ☑ boot.cfg ☑ config.cfg

BackUp file in: ☑ flash ☑ TFTP Server

TFTP Server:

In FLASH Save BootConfig As: COM_AutoImageUpgrade_boot.cfg

In FLASH Save Config As: COM_AutoImageUpgrade_config.cfg

Image Options — Saves the primary runtime image and boots the device

CLI User Name:

CLI Password:

Show image files in: ● flash ○ PCMCIA ○ TFTP Server

TFTP Server:

Device	Primary Image	Boot Image	Dld/Had Image

3 Click **>** to move the selected device(s) to the **Target Devices** list.
OR
Click **>>** to move all the available devices to the **Target Devices** list.
Use the **<** and **<<** buttons to move devices back to the **Available Devices** list.

4 In the **Config Backup** pane, specify the following parameters for the backup operation:

- In the **Configuration files** field, select the file types to back up; you can choose config.cfg or boot.cfg, or both.
- In the **BackUp files in** field, select the destination for the backup files; you can choose flash or TFTP Server or both.
- If you are uploading to TFTP, enter the host name or IP address of the TFTP server for the upload operation in the **TFTP Server** field.
- If you are backing up the boot.cfg file to flash, enter a filename for the backup boot.cfg file (by default,

COM_AutoImageUpgrade_boot.cfg) in the **In FLASH Save Bootconfig As** field.

- If you are backing up the config.cfg file to flash, enter a filename for the backup config.cfg file (by default, COM_AutoImageUpgrade_config.cfg) in the **In FLASH Save Config As** field.

> **ATTENTION**
>
> If you do not specify a location in the BackUp files in field and you click Apply, COM automatically instructs the device to save a backup of the boot.cfg file in flash as COM_AutoImageUpgrade_boot.cfg. This is because a workable boot.cfg file is required in case of malfunction during the booting process.

5 In the **Image Options** pane, enter a valid CLI user name and password in the **CLI User Name** and **CLI Password** fields.

> **ATTENTION**
>
> This CLI user name and password applies to all devices in the Image Options table. To update all listed devices at the same time, they must all have the same CLI user name and password.

6 In the **Show Image Files in** field, choose the source location for the image file. If you choose TFTP Server as the image location, enter the host name or IP address of the **TFTP server** in the provided field.

7 For each device listed in the **Image Options** table, you must specify both the desired primary runtime image and the desired boot image as follows:

- In a device row, double-click the Boot Image, Primary Image, or Dld/Had Image field. A dialog box appears displaying the available images from the specified location. (If TFTP Server is selected, a Find File dialog box appears allowing you to browse to and select a file.) To display the available images from a different source location, close the dialog box and choose a different location from the Show images files in field, then double-click the Boot Image, Primary Image, or Dld/Had Image field again.
- Select the desired image from the list.
- Click **Add**.
  The selected image file is inserted into its respective column. Repeat these steps for the boot image, primary image, and dld/had image of each device in the list. If you make any

mistakes when choosing the desired images, you can click Reset to set the Upgrade Wizard to the default view.

8 After you have specified all desired primary runtime images, boot images, loadable images, and backup parameters, click **Apply**.

> **ATTENTION**
>
> If there is a version difference between the primary runtime image and the boot image, a warning message dialog box appears before you can proceed. To properly upgrade images on a device, Nortel recommends that a device have the same version of boot and runtime images.

COM performs the following, one device at a time, according to the listed order of devices:

- backs up the configuration files on the device
- validates and sets the new primary runtime image and boot image
- validates and sets the new loadable image
- resets the device

This operation takes time to complete (approximately 3 minutes to complete for one switch). The logs for the image upgrades are generated in the file AutoImageUpgrade.log under the COM home folder.

—End—

Managing inventory

File Inventory Manager allows you to work with inventory files and view inventory information. The following sections contain information about how to work with and view inventory information.

- "Working with inventory files" (page 273)
- "Viewing inventory information" (page 277)

Working with inventory files

You can save network inventory information to inventory files. Later, you can reload the inventory information back into File Inventory Manager, or into third-party spreadsheet or database applications.

You can create two different types of files with File Inventory Manager. The following table describes the file types.

Table 63
Files types supported by File Inventory Manager

File type	Description
Inventory file (.inv)	Allows you to save inventory information that you can later reload back into File Inventory Manager.
Tab-delimited text file	Allows you to save inventory information in tab-delimited text file format that you can later load into third-party spreadsheet and database applications.

The following sections describe the various operations that you can perform with inventory files.

Saving inventory information to a file

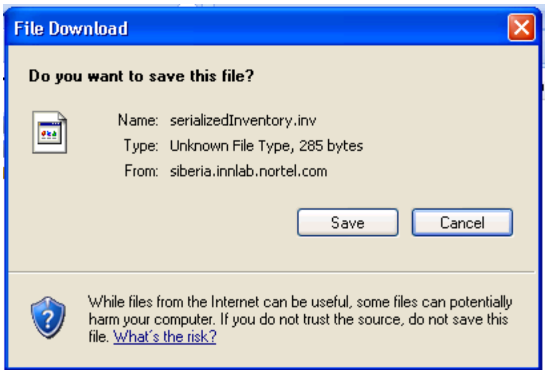
File Inventory Manager allows you to save inventory information to a file. You can use this feature to create inventory files that you can load again later. Perform the following procedure to save the network inventory to a file.

Procedure steps

Step **Action**

1 From the **File Inventory Manager** menu bar, choose **File, Save Inventory Info**.

The File Download dialog box appears.



File Download

Do you want to save this file?

Name: serializedInventory.inv
Type: Unknown File Type, 285 bytes
From: siberia.innlab.nortel.com

While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not save this file. What's the risk?

2 Click **Save**.

3 Browse the folder where you want to save the inventory information.

4 In the **File name** box, enter a name for the file. The default file name extension is .inv. You can change the extension if you prefer.

5 Click **Save**. File Inventory Manager saves the inventory information in the specified folder and file.

—End—

Saving inventory information in a tab delimited text file

File Inventory Manager allows you to save network inventory information in a tab-delimited text file. You can use this feature to export network inventory information to spreadsheet or database software applications.

Perform the following procedure to save the network inventory to a tab-delimited text file.

Procedure steps

Step	Action
1	From the **File Inventory Manager** menu bar, choose **File, Save Inventory in Tab delimited text file**. A Save dialog box appears.
2	Click **Save** to save the file. OR Click **Open** to view the file.
3	Browse the folder where you want to save the inventory information.
4	In the **File Name** field, enter a name for the file. The default filename extension is .txt. You can use a different extension also.
5	Click **Save**. File Inventory Manager saves the inventory information in the specified folder and file.

—End—

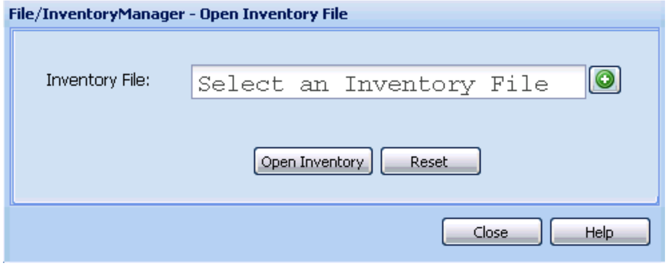
Loading inventory information from a file

File Inventory Manager allows you to load inventory information from inventory files that you previously created. You can use this feature to quickly load inventory information without having to poll it from the network devices. You can also use it to load inventory information for previous network configurations, or for devices that no longer appear on the network.

Perform the following procedure to load inventory information from a file.

Procedure steps

Step	Action
1	From the **File Inventory Manager** menu bar, choose **File, Open Inventory File**.
	The File/Inventory Manager - Open Inventory File dialog box appears.



Step	Action
2	Click the + (plus sign) to browse the folder that contains the inventory file you want to open.

ATTENTION

By default, the Open File dialog box filters for files with the filename extension .inv. If you have saved your inventory files using a different extension, replace .inv in the File name box with the actual filename extension.

3 Click **Open Inventory**.

4 If there is any inventory information already loaded in File Inventory Manager, an alert box prompts you whether you want to keep the current inventory data or not.

5 Do one of the following:

- Click **Yes** to add the data in the file to the currently loaded inventory data. However, any data in the file about devices in the current inventory is discarded, and does not overwrite data in the current inventory.
- Click **No** to discard all of the currently loaded inventory data and then load the inventory data from the file.

File Inventory Manager loads the inventory information from the file.

—End—

Viewing inventory information

This section provides information about how to view inventory information using File Inventory Manager. Use the information in this section to perform the following tasks:

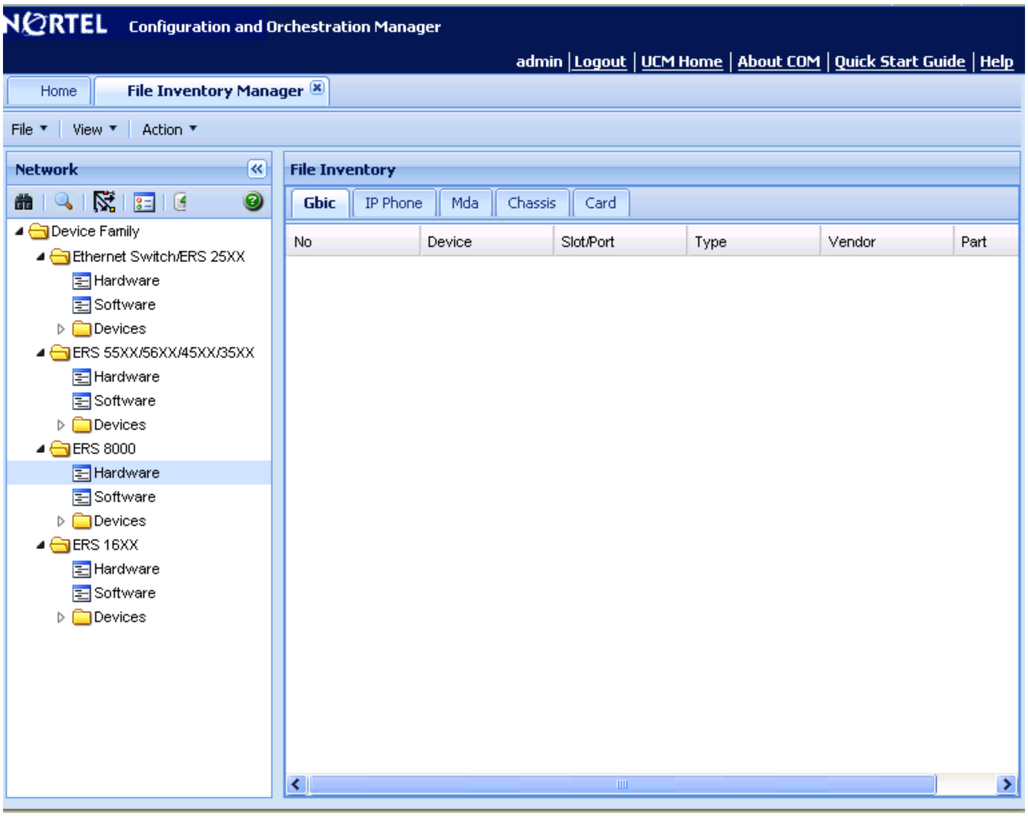
- "Viewing hardware configuration information" (page 277)
- "Viewing software configuration information" (page 279)
- "Updating the inventory" (page 280)
- "Highlighting inventory on the topology map" (page 281)

Viewing hardware configuration information

Perform the following procedure to view hardware configuration.

Procedure steps

Step	Action
1	Open the **File Inventory Manager**.
2	Select **Hardware** from any device family folder on the Navigation pane. The hardware information appears in the Contents panel. The following figure shows the hardware information of ERS 8000.



No	Device	Slot/Port	Type	Vendor	Part

Content pane displays Gbic, IP Phone, Mda, Card, and Chassis information in different tabs.

—End—

Viewing hardware configuration of a specific device Perform the following procedure to view the hardware configuration of a specific device.

Procedure steps

Step	Action
1	Open **File Inventory Manager**.
2	On the Navigation pane, select the target device from any **Device family** folder.
3	Click the **Hardware** tab.

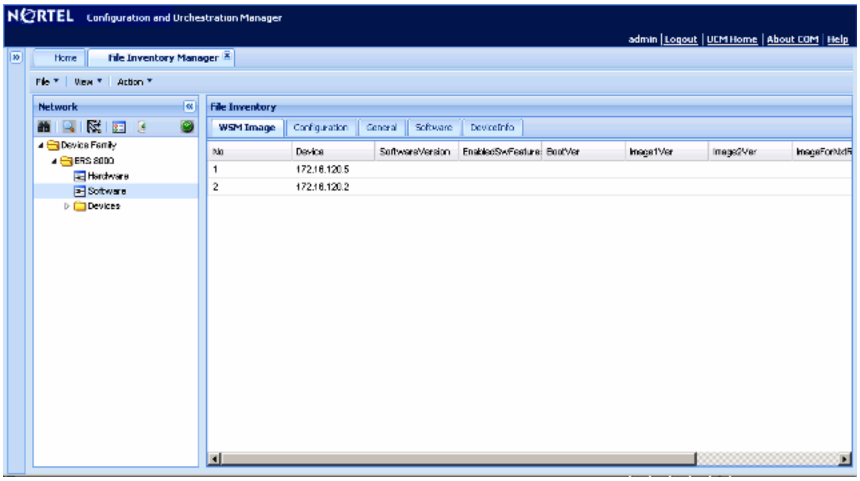
—End—

Viewing software configuration information

Perform the following procedure to view software configuration.

Procedure steps

Step	Action
1	Open **File Inventory Manager**.
2	Select **Software** from any**Device family** folder on the Navigation pane. The software information appears in the Contents pane. The following figure shows the software information of ERS 8000.



No	Device	SoftwareVersion	EnabledSwFeature	BootVer	Image1Ver	Image2Ver	ImageForNxtR
1	172.16.120.5						
2	172.16.120.2						

Content pane shows WSM Image, Configuration, General, Software, and DeviceInfo information in different tabs.

Content pane shows General and Image/Config information in different tabs.

—End—

Viewing software information of a specific device Perform the following procedure to view the software formation of a specific device.

Procedure steps

Step	Action
1	Open File Inventory manager.

2 In Navigation pane, select the target device from any **Device family** folder.

3 Click the **Software** tab.

—End—

Updating the inventory

File Inventory Manager allows you to refresh the information in the window with inventory information polled from the network devices. You can use this feature to load any updated information that took effect since you opened File Inventory Manager.

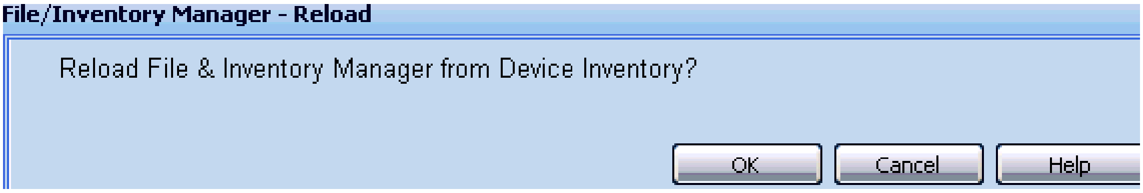
Perform the following procedure to reload the inventory.

Procedure steps

Step **Action**

1 On the File Inventory Manager toolbar, click the **Reload/Discover** icon Or, choose **File, Reload**.

A File/Inventory Manager - Reload confirmation dialog box appears.



File/Inventory Manager - Reload

Reload File & Inventory Manager from Device Inventory?

2 Click **OK**.

3 In the **Available Devices** list, select one or more devices to which you want to download the selected file.

4 Click **>** to move the selected device(s) to the **Target Devices** list.
OR
Click **>>** to move all the available devices to the **Target Devices** list.
Click **<** or **<<** to move devices back to the **Available Devices** list.

5 Click **Query Now**.

COM reloads topology information from the network devices, and refreshes the File Inventory Manager window with it.

—End—

Highlighting inventory on the topology map

As with Trunking Manager and VLAN Manager, the File Inventory Manager supports device highlighting on the Topology map.

Perform the following procedure to highlight file inventory devices on the Topology Map.

Procedure steps

Step	Action
1	Select a device or device parent node from the File Inventory Manager Navigation pane.
2	Click **Highlight on Topology** icon from the toolbar. Click the Highlight on Topology icon automatically navigate you to the COM Dashboard tab, and displays the selected devices in green highlighting.

—End—

ATTENTION

Both the Dashboard tab and the File Inventory Manager tabs can be undocked from the main COM content panel and aligned side by side. Undocking and aligning the two tabs within view allows you to scroll up and down the navigation tree and see the highlighted devices come into focus.

Using Virtual Routing and Forwarding Manager

Virtual Routing and Forwarding (VRF) Manager is a feature that you can use to configure and manage virtual routing and forwarding on Nortel Ethernet Routing Switch 8600 (ERS 8600) devices. You can use VRF Manager to set the VRF configuration for each device, as well as manage VRF configurations across multiple devices.

The ERS 8600 devices support different VRF contexts. The contexts determine the level of access that you have to the switch. Configuration and Orchestration Manager (COM) discovers the VRF information using the GlobalRouter (VRF0) context, which allows the COM administrator to access and manage the entire switch. When the COM administrator assigns users the ability to use VLAN Manager, the COM administrator can control access to the ERS 8600 device and its functionality by assigning the appropriate VRF context:

- VRF0—If the administrator assigns you the GlobalRouter privilege (VRF0), you can create VRF, and update the VRF table.
- Non-zero VRF—If the administrator assigns you non-GlobalRouter privilege (non-Zero VRF), some features can be disabled for you as you do not have sufficient credentials to perform certain operations.
- No VRF—If no VRF is assigned, then you will default to the GlobalRouter privilege.

A user with the GlobalRouter privilege can choose to switch-to a different context for a device, and behave as that context for that particular session. When you switch to a different context, you can manage only those functions and components that are assigned to that specific VRF. The switched-to context is relevant and applies to the other managers, like Routing Manager and EDM plug-ins.

When an administrator configures a context, the context applies to the access that you have in COM, and also determines the level of access that you have in the device manager.

In addition to the privileges, the method of access to the ERS 8600 device is associated with a context:

- For SNMPv2 access, you need to have GlobalRouter privilege to operate the VRF manager correctly.
- For SNMPv3 access, a specific VRF needs to be assigned to the user for the device.

Virtual Routing and Forwarding

VRF allows multiple instances of a routing table to coexist within the same router at the same time. The routing instances are independent; the same or overlapping IP addresses are used without conflicting with each other. In VRF-supported devices, you can configure more than one VRF.

Prerequisites

- You must have the VRF Manager assigned in the **MultiElementManager Assignment** tab by the administrator.
- You must have devices assigned by the administrator.

Navigation

- "Starting VRF in the COM" (page 284)
- "Adding VRF on a device or multiple devices" (page 285)
- "Setting VRF content for devices" (page 287)
- "Viewing all the VRFs and its statistics configured for a specific device" (page 287)
- "Editing a single configuration or multiple VRF configurations" (page 288)
- "Deleting a VRF configuration from a device" (page 289)

Starting VRF in the COM

Perform the following procedure to start the VRF.

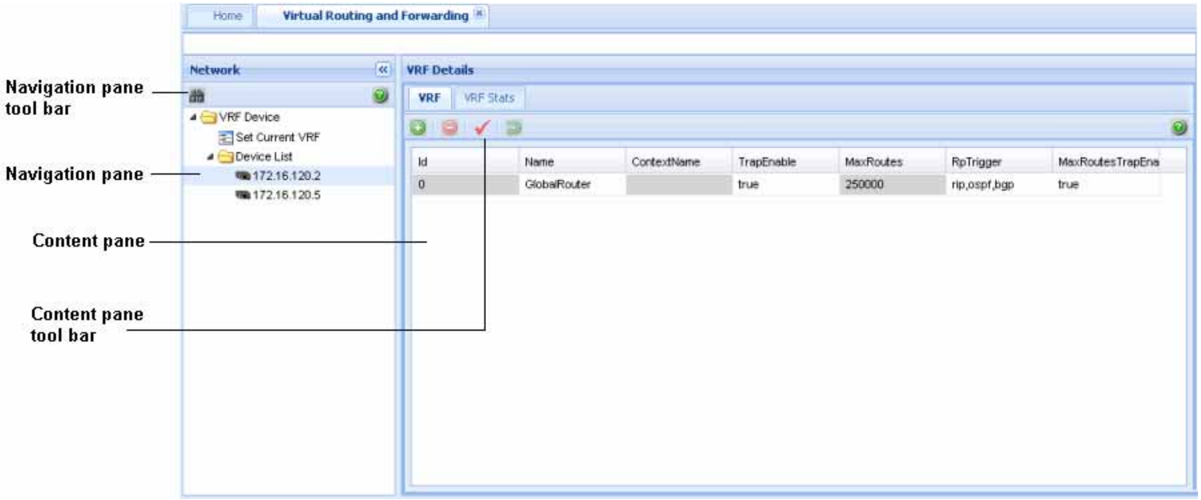
Procedure steps

Step	Action
1	In the **Configuration and Orchestration Manager Navigation** tree, expand **Managers**, and then click **Virtual Routing Manager** icon. The Virtual Routing and Forwarding discovery is triggered, and result of discovery operation is displayed.
2	Click **Ok** to view the Virtual Routing and Forwarding window. **OR**

Click **Details** to view the errors and warnings, if any.

3 In the VRF navigation pane, expand the **VRF Device** folder and the **Device List** folder.

The VRF Details dialog box appears.



Id	Name	ContextName	TrapEnable	MaxRoutes	RpTrigger	MaxRoutesTrapEna
0	GlobalRouter		true	250000	rip,ospf,bgp	true

—End—

The following table describes the parts of Virtual Routing and Forwarding window.

Table 64
Virtual Routing and Forwarding window parts

Parts	Description
Navigation pane	Lists the navigation tree, and the functions that you can perform on Virtual Routing and Forwarding devices.
Navigation pane tool bar	Provides Discover VRF and Help tools.
Content pane	Displays information about the Virtual Routing and Forwarding devices.
Content pane tool bar	Provides quick access to commonly used Virtual Routing and Forwarding commands.

Adding VRF on a device or multiple devices

Perform the following procedure to add the VRF on a device or multiple devices.

Procedure steps

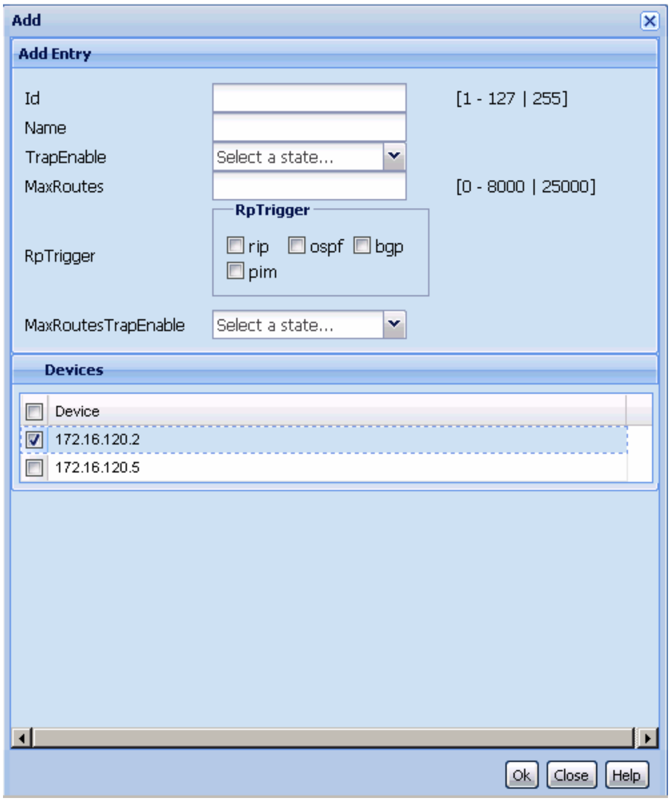
Step Action

1 In the navigation pane of Virtual Routing and Forwarding window, expand the **Device List** folder, and select the target device from the navigation tree.

The VRF information appears in the contents pane.

2 In the **Contents** toolbar, click **Create Entry**.

The Add Entry dialog box appears.



Add

Add Entry

Id [1 - 127 | 255]

Name

TrapEnable Select a state...

MaxRoutes [0 - 8000 | 25000]

RpTrigger — RpTrigger: □ rip □ ospf □ bgp □ pim

MaxRoutesTrapEnable Select a state...

Devices

□	Device
☑	172.16.120.2
□	172.16.120.5

3 Set the parameters as appropriate.

4 In the **Devices** table, select the target device or devices.

If you select multiple devices, then the VRF Manager creates the same VRF configuration on the target devices.

ATTENTION

VRF functionality applies only to the core router devices, therefore only the relevant 8600/8300 devices are listed in the Device table.

5 Click **Ok**.

—End—

Setting VRF content for devices

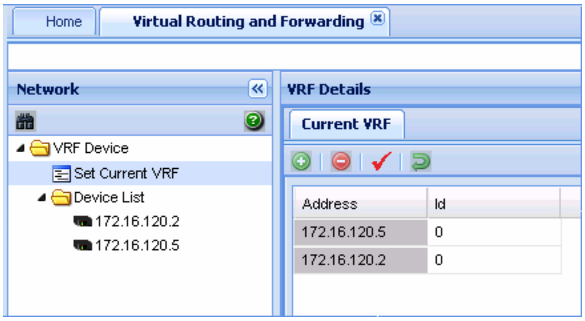
Perform the following procedure to set the VRF content for devices that are used by the COM.

Procedure steps

Step **Action**

1 In the navigation pane of Virtual Routing and Forwarding window, expand the **Device List** folder, click **Set Current VRF** to assign a VRF to the target device.

The Current VRF table appears in the content pane.



Address	Id
172.16.120.5	0
172.16.120.2	0

2 For the target devices, change the VRF Id in the **Id** field.

3 Click **Apply Changes**.

> **ATTENTION**
> If you assign a VRF Id as the current VRF for a device, the other managers display only the information specific to that VRF.

—End—

Viewing all the VRFs and its statistics configured for a specific device

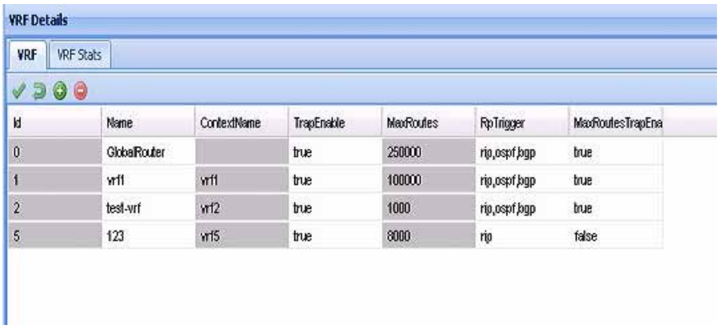
Perform the following procedure to view all the VRFs and its statistics configured for a specific device that is used by the COM.

Procedure steps

Step	Action

1 In the navigation pane of Virtual Routing and Forwarding window, expand the **Device List** folder, and select a device from the navigation tree.

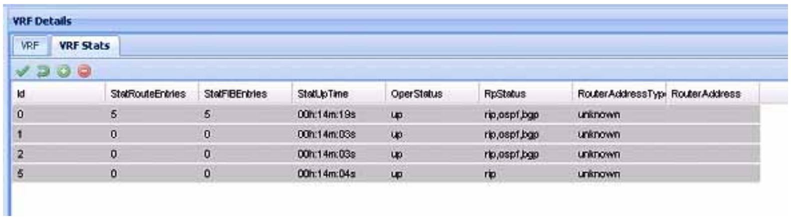
The VRF information appears in the contents pane.



Id	Name	ContextName	TrapEnable	MaxRoutes	RpTrigger	MaxRoutesTrapEna
0	GlobalRouter		true	250000	rip,ospf,bgp	true
1	vrf1	vrf1	true	100000	rip,ospf,bgp	true
2	test-vrf	vrf2	true	1000	rip,ospf,bgp	true
5	123	vrf5	true	8000	rip	false

2 To see the VRF statistics in the contents pane, click the **VRF Stats** tab.

The VRF statistics information appears in the contents pane.



Id	StatRouteEntries	StatFIBEntries	StatUpTime	OperStatus	RpStatus	RouterAddressTyp	RouterAddress
0	5	5	00h:14m:19s	up	rip,ospf,bgp	unknown	
1	0	0	00h:14m:03s	up	rip,ospf,bgp	unknown	
2	0	0	00h:14m:03s	up	rip,ospf,bgp	unknown	
5	0	0	00h:14m:04s	up	rip	unknown	

—End—

Editing a single configuration or multiple VRF configurations

Perform the following procedure to edit a single VRF configuration or multiple VRF configurations on a specific device.

Procedure steps

Step	Action

1 In the navigation pane of Virtual Routing and Forwarding window, expand the **Device List** folder, and select the target device from the navigation tree.

The VRF information appears in the contents pane.

2 In the non-greyed fields, make the changes.

3 Click **Apply Changes** to confirm the changes you made.

4 Click **Revert Changes** to revert all the changes made in the VRF table.

—End—

Deleting a VRF configuration from a device

Perform the following procedure to delete a VRF configuration from a device.

Procedure steps

Step **Action**

1 In the navigation pane of Virtual Routing and Forwarding window, expand the **Device List** folder, and select the target device from the navigation tree.

The VRF information appears in the contents pane.

2 Select the VRF configuration that you want to delete.

3 Click **Delete Entry**.

The VRF configuration confirmation dialog box appears.

4 Click **Yes**.

—End—

VRF enhancement—VLAN and routing

Multicast and routing managers use the selected VRF ID from the VRF manager to discover the protocol information. Protocols are virtualized based on the supported devices and enabled protocols for the particular VRF.

VRF - based discovery

COM discovers the information using GlobalRouter (VRF0) and not the non-zero VRF of the device. This enhancement provides support to access and configure the non-zero VRF also (along with the GlobalRouter). The discovery occurs based on the VRF you select (vrf-n) where n is the VRF ID. VLAN Manager uses the VRF ID to communicate with the device. The

VLAN Manager has a column for the VRF ID (called VrfId). You can change the VLAN to a different VRF. The Routing Manager is aware of the VRF. The Routing Manager displays routing tables and views that show the VRF.

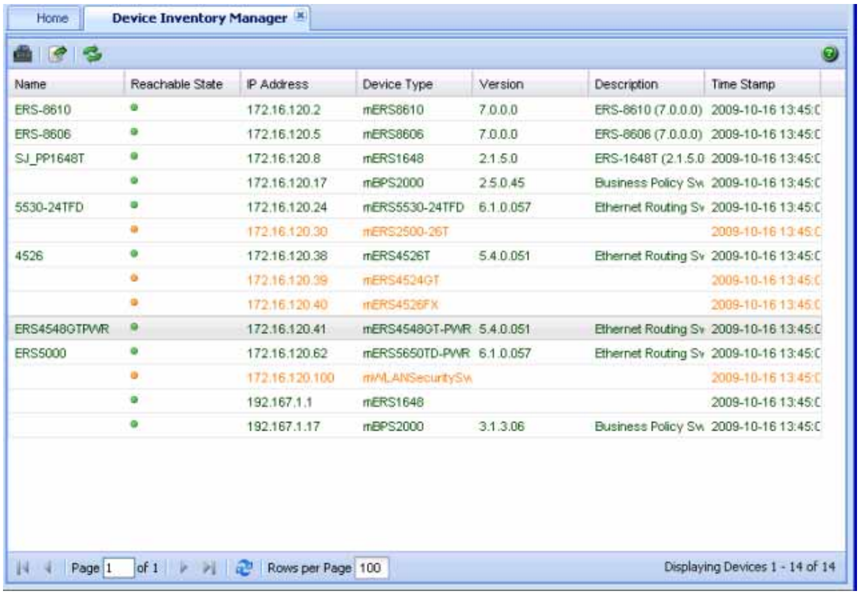
Configuration of devices

Device Inventory Manager enables you to manage the Configuration and Orchestration Manager (COM) inventory.

Device Inventory interface

This section details the Device Inventory Manager interface as shown in the following figure.

Figure 12
Device Inventory interface



Name	Reachable State	IP Address	Device Type	Version	Description	Time Stamp
ERS-8610	●	172.16.120.2	mERS8610	7.0.0.0	ERS-8610 (7.0.0.0)	2009-10-16 13:45:C
ERS-8606	●	172.16.120.5	mERS8606	7.0.0.0	ERS-8606 (7.0.0.0)	2009-10-16 13:45:C
SJ_PP1648T	●	172.16.120.8	mERS1648	2.1.5.0	ERS-1648T (2.1.5.0	2009-10-16 13:45:C
	●	172.16.120.17	mBPS2000	2.5.0.45	Business Policy Sw	2009-10-16 13:45:C
5530-24TFD	●	172.16.120.24	mERS5530-24TFD	6.1.0.057	Ethernet Routing Sv	2009-10-16 13:45:C
	●	172.16.120.30	mERS2500-26T			2009-10-16 13:45:C
4526	●	172.16.120.38	mERS4526T	5.4.0.051	Ethernet Routing Sv	2009-10-16 13:45:C
	●	172.16.120.39	mERS4524GT			2009-10-16 13:45:C
	●	172.16.120.40	mERS4526FX			2009-10-16 13:45:C
ERS4548GTPWR	●	172.16.120.41	mERS4548GT-PWR	5.4.0.051	Ethernet Routing Sv	2009-10-16 13:45:C
ERS5000	●	172.16.120.62	mERS5650TD-PWR	6.1.0.057	Ethernet Routing Sv	2009-10-16 13:45:C
	●	172.16.120.100	mWLANSecuritySw			2009-10-16 13:45:C
	●	192.167.1.1	mERS1648			2009-10-16 13:45:C
	●	192.167.1.17	mBPS2000	3.1.3.06	Business Policy Sw	2009-10-16 13:45:C

The following table describes the parts of the device inventory interface.

Table 65
Device inventory parts

Command	Toolbar button	Description
Launch Element Manager	🖥	Opens a new web page with the Element Manager for a device.
Add	⊕	Opens the Insert dialog box, where you can manually add a device to the inventory.
Edit	✎	Edit a device from the inventory.
Delete	⊖	Deletes the selected VRF from a specific device.
Import/Export inventory	📄	Imports/Exports the inventory from/to a XML file.
Refresh	🔄	Refreshes the Device Inventory information.

> **ATTENTION**
> The Add, Delete, and Edit buttons are displayed only in COM software with basic license.

Navigation

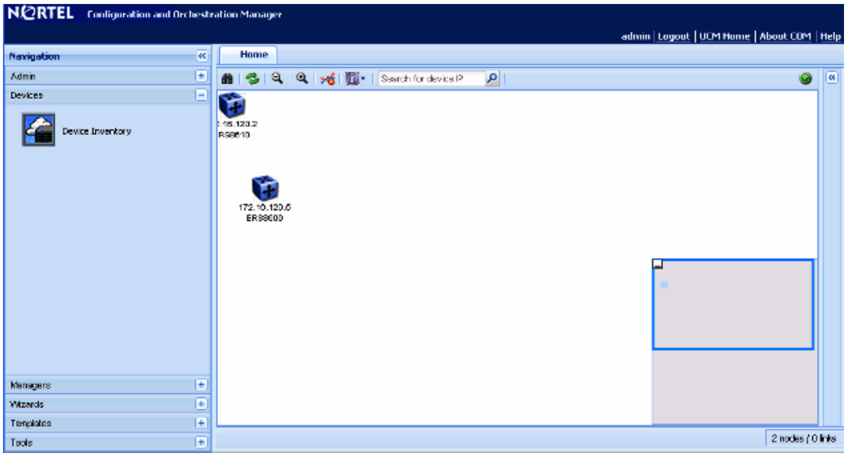
- "Viewing a device inventory manager" (page 292)
- "Adding a device" (page 293)
- "Editing a device" (page 294)
- "Deleting a device" (page 294)
- "Launching an Element Manager" (page 295)
- "Importing a device" (page 296)
- "Exporting a device" (page 297)

Viewing a device inventory manager

Perform the following procedure to view a device inventory manager.

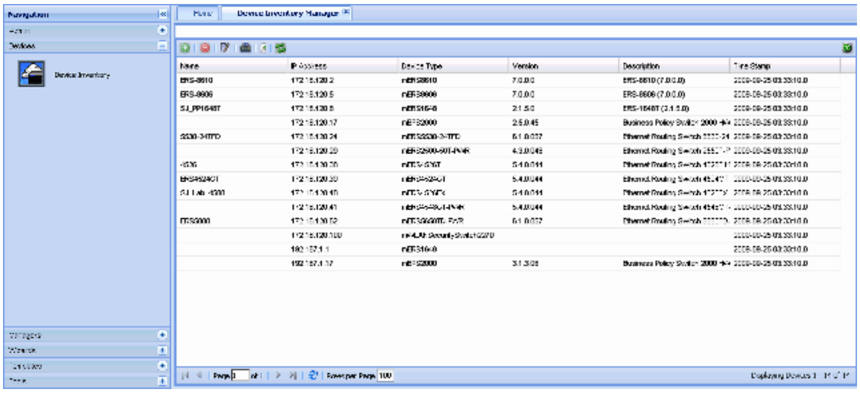
Procedure steps

Step	Action
1	From the **Configuration and Orchestration Manager Navigation** pane, select **Devices**. The Devices panel appears.



2 From the **Devices** panel, click **Device Inventory** icon.

The Device Inventory Manager dialog box appears.



Name	IP Address	Device Type	Version	Description	Time Stamp
ERS-8610	172.16.120.2	nERS8610	7.0.0.0	ERS-8610 (7.0.0.0)	2008-08-25 03:33:10.0
ERS-8606	172.16.120.5	nERS8606	7.0.0.0	ERS-8606 (7.0.0.0)	2008-08-25 03:33:10.0
SJ_PP1648T	172.16.120.8	nERS1648	2.1.5.0	ERS-1648T (2.1.5.0)	2008-08-25 03:33:10.0
	172.16.120.17	nBPS2000	2.5.0.45	Business Policy Switch 2000 +V	2008-08-25 03:33:10.0
5530-24TFD	172.16.120.24	nERS5530-24TFD	6.1.0.037	Ethernet Routing Switch 5530-24	2008-08-25 03:33:10.0
	172.16.120.29	nERS2500-50T-PWR	4.3.0.048	Ethernet Routing Switch 2550T-P	2008-08-25 03:33:10.0
4526	172.16.120.28	nERS4526T	5.4.0.044	Ethernet Routing Switch 4526T	2008-08-25 03:33:10.0
ERS4524GT	172.16.120.30	nERS4524GT	5.4.0.044	Ethernet Routing Switch 4524GT	2008-08-25 03:33:10.0
SJ Lab 4500	172.16.120.40	nERS4526FX	5.4.0.044	Ethernet Routing Switch 4526FX	2008-08-25 03:33:10.0
	172.16.120.41	nERS4548GT-PWR	5.4.0.044	Ethernet Routing Switch 4548GT-	2008-08-25 03:33:10.0
ERS5000	172.16.120.52	nERS5698TFD-PWR	6.1.0.037	Ethernet Routing Switch 5698TFD-	2008-08-25 03:33:10.0
	172.16.120.100	nF4LAN SecuritySwitch2270			2008-08-25 03:33:10.0
	192.167.1.1	nERS1648			2008-08-25 03:33:10.0
	192.167.1.17	nBPS2000	3.1.3.08	Business Policy Switch 2000 +V	2008-08-25 03:33:10.0

—End—

Adding a device

Perform the following procedure to add a device to inventory.

Prerequisites

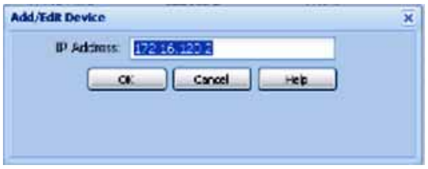
- You must be a base license user to manually add devices to inventory.

Procedure steps

Step	Action

1 From the **Device Inventory** toolbar, click **Add a Device** button.

The Add/Edit Device dialog box appears.



IP Address: 172.16.120.2

2 Enter the IP address of the new device in the **IP Address** field.

3 Click **OK**.

If the entered IP address is valid with proper credentials assigned, the device is added to the Device table.

—End—

Editing a device

Perform the following procedure to update a device in the inventory.

Prerequisites

- You must be a base license user to manually add devices to inventory.

Procedure steps

Step **Action**

1 From the **Device Inventory** toolbar, click **Edit a Device** button.

The Add/Edit Device dialog box appears.

2 Change the IP address of the device in the **IP Address** field.

3 Click **OK**.

If the entered IP address is valid with proper credentials assigned, the device is added to the Device table.

—End—

Deleting a device

Perform the following procedure to delete a device from the inventory.

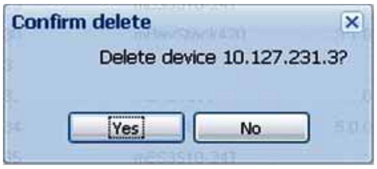
Prerequisites

- You must be a base license user to manually add devices to inventory.

Procedure steps

Step	Action
1	Select a device from the Device table.
2	From the **Device Inventory** toolbar, click the **Delete a Device** icon.

The Confirm Delete dialog box appears.



Confirm delete

Delete device 10.127.231.3?

Step	Action
3	Click **Yes**.

The selected device is deleted.

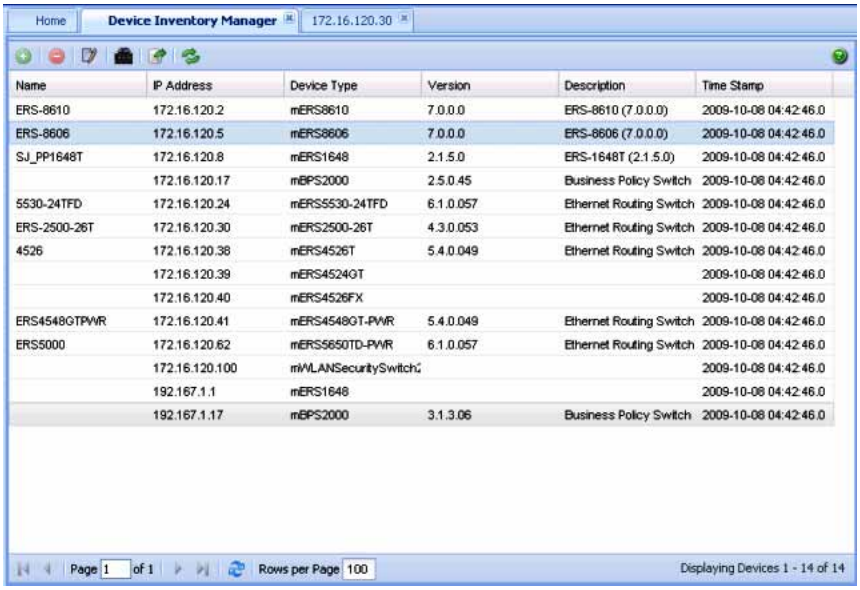
—End—

Launching an Element Manager

Perform the following procedure to launch an element manager.

Procedure steps

Step	Action
1	Select a device from the Device table.

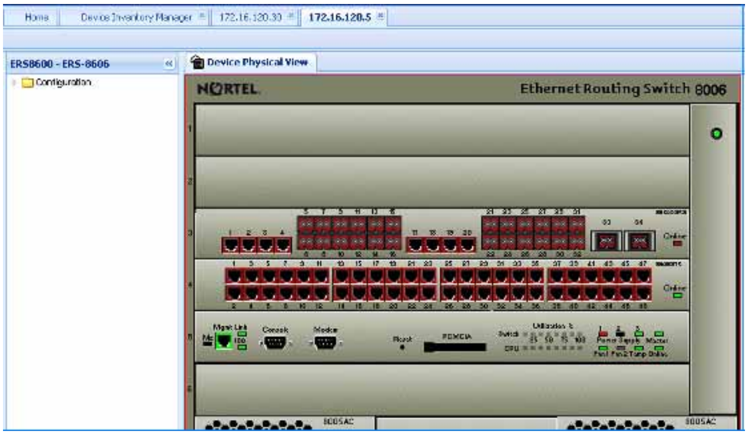


Name	IP Address	Device Type	Version	Description	Time Stamp
ERS-8610	172.16.120.2	mERS8610	7.0.0.0	ERS-8610 (7.0.0.0)	2009-10-08 04:42:46.0
ERS-8606	172.16.120.5	mERS8606	7.0.0.0	ERS-8606 (7.0.0.0)	2009-10-08 04:42:46.0
SJ_PP1648T	172.16.120.8	mERS1648	2.1.5.0	ERS-1648T (2.1.5.0)	2009-10-08 04:42:46.0
	172.16.120.17	mBPS2000	2.5.0.45	Business Policy Switch	2009-10-08 04:42:46.0
5530-24TFD	172.16.120.24	mERS5530-24TFD	6.1.0.057	Ethernet Routing Switch	2009-10-08 04:42:46.0
ERS-2500-26T	172.16.120.30	mERS2500-26T	4.3.0.053	Ethernet Routing Switch	2009-10-08 04:42:46.0
4526	172.16.120.38	mERS4526T	5.4.0.049	Ethernet Routing Switch	2009-10-08 04:42:46.0
	172.16.120.39	mERS4524GT			2009-10-08 04:42:46.0
	172.16.120.40	mERS4526FX			2009-10-08 04:42:46.0
ERS4548GTPWR	172.16.120.41	mERS4548GT-PWR	5.4.0.049	Ethernet Routing Switch	2009-10-08 04:42:46.0
ERS5000	172.16.120.62	mERS5650TD-PWR	6.1.0.057	Ethernet Routing Switch	2009-10-08 04:42:46.0
	172.16.120.100	mWLANSecuritySwitch2			2009-10-08 04:42:46.0
	192.167.1.1	mERS1648			2009-10-08 04:42:46.0
	192.167.1.17	mBPS2000	3.1.3.06	Business Policy Switch	2009-10-08 04:42:46.0

Page 1 of 1 Rows per Page 100 Displaying Devices 1 - 14 of 14

2 From the **Device Inventory Manager** toolbar, click the **Launch Element Manager** icon.

The corresponding Device Physical View tab appears.



ATTENTION

If you select a device that does not support EDM, then by default the Java Device Manager (JDM) of the corresponding device opens up. If Java Virtual Machine (JVM)1.6 application is not already installed in your system, the COM application prompts you to install the application.

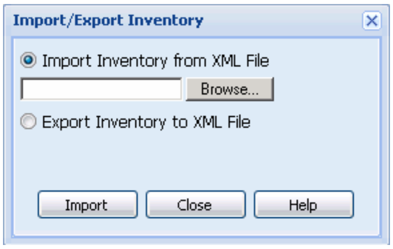
—End—

Importing a device

Perform the following procedure to import an inventory from the XML file.

Procedure steps

Step	Action
1	Select a device from the Device table.
2	From the **Device Inventory Manager** toolbar, press the **Import/Export Inventory** button. The Import/Export Inventory dialog box appears.


Import/Export Inventory
● Import Inventory from XML File
Browse...
○ Export Inventory to XML File
Import
Close
Help

3 Click the **Browse** button to select the path of the .xml file.

4 Click **Import**. The COM imports the devices and auto refreshes the inventory table.

—End—

Exporting a device

Perform the following procedure to export an inventory to the XML file.

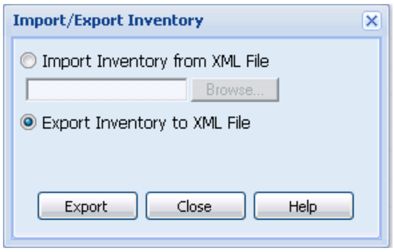
Procedure steps

Step **Action**

1 Select a device from the Device table.

2 From the **Device Inventory Manager** toolbar, press the **Import/Export Inventory** button.

The Import/Export Inventory dialog box appears.


Import/Export Inventory
○ Import Inventory from XML File
Browse...
● Export Inventory to XML File
Export
Close
Help

3 Select **Export** option. The COM exports the inventory to the .xml file.

—End—

Configuration of wizards

Configuration and Orchestration Manager (COM) configuration wizards help you to configure complex network by using few steps. These wizards hide the network complexity and make multi device configuration easier and simple.

Navigation

- "VLAN wizard" (page 299)
- "SMLT wizard" (page 306)

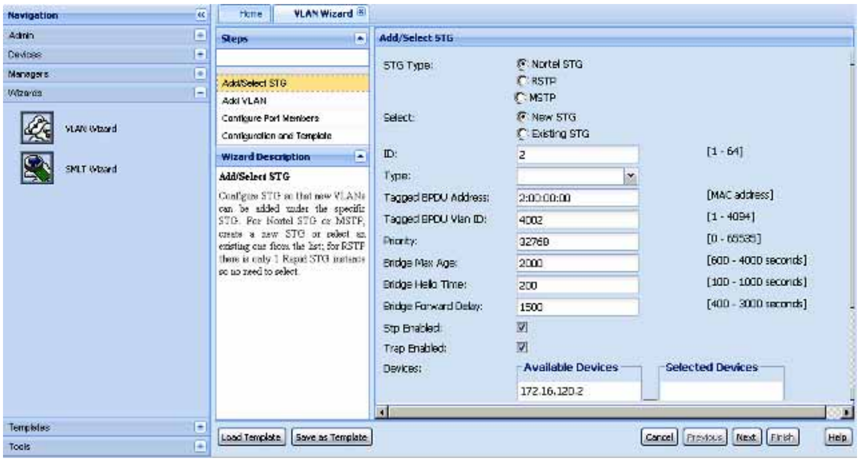
VLAN wizard

VLAN wizard has the following three sections as shown in the following figure:

- Steps—shows the current wizard step
- Wizard Description—shows the wizard description of current step

While running the wizard, you can select to save the wizard configuration as a template at any point. You can save it as a new template, or update an existing template. The access control of wizards depends on the specific Multi Element Manager. For example, if you have access to VLAN Manager, then you can also run VLAN Wizard. Similarly, the users who have access to Mulitlink Trunking Manager can also run SMLT Wizard.

Figure 13
VLAN Wizard



Add/Select STG

Configure STG so that new VLANs can be added under the specific STG. For Nortel STG or MSTP, create a new STG or select an existing one from the list; for RSTP there is only 1 Rapid STG instance so no need to select.

Add/Select STG

STG Type: ● Nortel STG ○ RSTP ○ MSTP

Select: ● New STG ○ Existing STG

ID:	2	[1 - 64]
Type:		
Tagged BPDU Address:	2:00:00:00	[MAC address]
Tagged BPDU Vlan ID:	4002	[1 - 4094]
Priority:	32768	[0 - 65535]
Bridge Max Age:	2000	[600 - 4000 seconds]
Bridge Hello Time:	200	[100 - 1000 seconds]
Bridge Forward Delay:	1500	[400 - 3000 seconds]
Stp Enabled:	☑	
Trap Enabled:	☑	

Devices: Available Devices: 172.16.120.2 Selected Devices:

VLAN wizard functionality

VLAN wizard is used to configure spanning tree groups (STG) and VLAN in multiple devices. Following are the VLAN wizard functionalities:

- Add/select an STG
- Add one or multiple VLANs
- Configure Port members
- Configuration and template

VLAN wizard can run in a standalone mode. The VLAN data which is used in VLAN wizard can be created on fly or loaded from a VLAN template.

The following table describes the buttons available on VLAN wizard.

Table 66
VLAN wizard buttons

Button	Description
Load Template	Allows you to upload the data from a saved template.
Save as Template	Allows you to save the current data as a template.
Cancel	Allows you to cancel the current step.
Previous	Allows you to move to the previous step.
Next	Allows you to move to the next step.
Finish	Allows you to finish the current step.
Help	Opens Online Help file.

VLAN Wizard

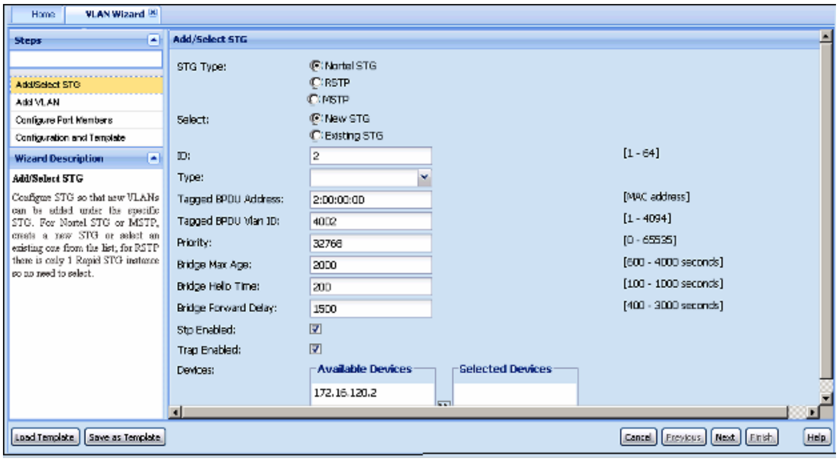
Perform the following procedures to use the VLAN Wizard.

Adding or selecting an STG

Perform the following procedure to add or select an STG in the VLAN wizard.

Procedure steps

Step	Action
1	From the **Configuration and Orchestration Manager** navigation pane, select **Wizards**, and then click the **VLAN Wizard** icon. The VLAN Wizard dialog box appears.
2	In the **VLAN Wizard** dialog box, click **Add/Select STG**. The Add/Select STG dialog box appears on the right side of the COM window.



Add/Select STG

Configure STG so that new VLANs can be added under the specific STG. For Nortel STG or MSTP, create a new STG or select an existing one from the list; for RSTP there is only 1 Rapid STG instance so no need to select.

Add/Select STG

STG Type:	● Nortel STG ○ RSTP ○ MSTP	
Select:	● New STG ○ Existing STG	
ID:	2	[1 - 64]
Type:		
Tagged BPDU Address:	2:00:00:00	[MAC address]
Tagged BPDU Vlan ID:	4002	[1 - 4094]
Priority:	32768	[0 - 65535]
Bridge Max Age:	2000	[600 - 4000 seconds]
Bridge Hello Time:	200	[100 - 1000 seconds]
Bridge Forward Delay:	1500	[400 - 3000 seconds]
Stp Enabled:	☑	
Trap Enabled:	☑	
Devices:	Available Devices: 172.16.120.2	Selected Devices:

Step	Action
3	Select the **STG Type** from the list of STG Types.
4	To add a new STG, choose **New STG** in **Select** field. **OR** To select an STG, choose **Existing STG** in **Select** field.
5	Choose the devices you wish to add from the **Available Devices** list, and then click **>** to move them to the **Selected Devices** list.
6	Enter appropriate values in all the fields, and then click **Next** to move on Add VLAN page.

—End—

Adding a VLAN

Perform the following procedure to add a VLAN in the wizard.

Procedure steps

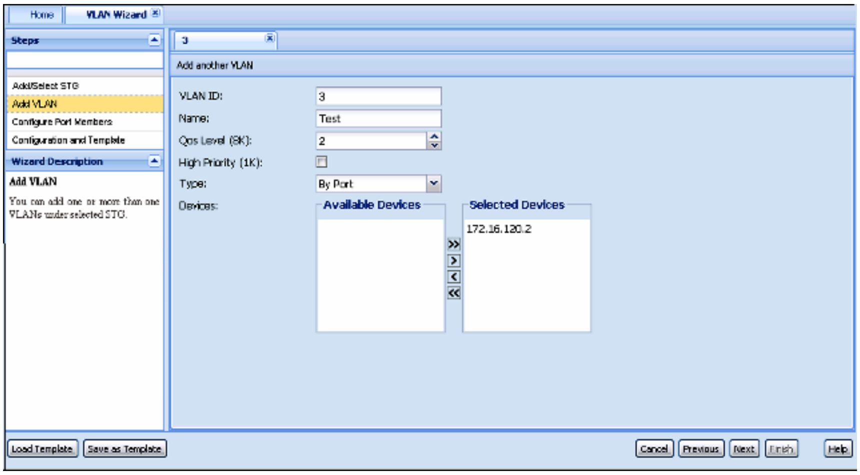
Step Action

1 From the **Configuration and Orchestration Manager** navigation pane, select **Wizards**, and then click the **VLAN Wizard** icon.

The VLAN Wizard dialog box appears.

2 Enter appropriate values in all the fields of Add/Select STG page, and then click **Next** to move on Add VLAN page.

The Add VLAN screen appears.



Add VLAN

You can add one or more than one VLANs under selected STG.

VLAN ID: 3
Name: Test
Qos Level (8K): 2
High Priority (1K): □
Type: By Port
Devices:
Selected Devices: 172.16.120.2

3 Enter all the fields in the **Add VLAN** page to add a VLAN in the wizard.

4 Choose the devices you wish to add from the **Available Devices** list, and then click **>** to move them to the **Selected Devices** list.

5 Click **Add another VLAN** to add more VLANs. Repeat steps 3 and 4 as necessary.

6 Click **Next** to move on Configure Port Members page.

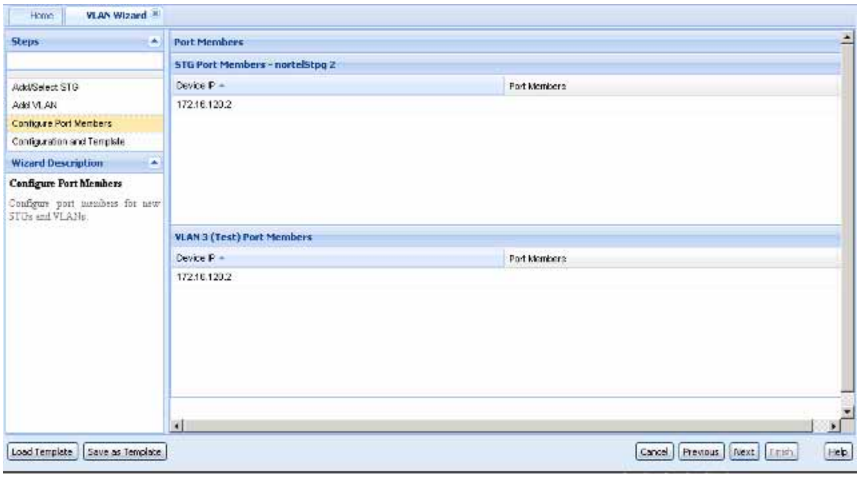
—End—

Configuring port members

Perform the following procedure to view the configured port members.

Procedure steps

Step	Action
1	From the **Configuration and Orchestration Manager** navigation pane, select **Wizards**, and then click the **VLAN Wizard** icon. The VLAN Wizard dialog box appears.
2	Enter appropriate values in all the fields of Add VLAN page, and then click **Next** to move on Configure Port Members page. The Configure Port Members page appears.



Configure Port Members

Configure port members for new STGs and VLANs.

STG Port Members - nortelStpg 2

Device IP	Port Members
172.16.120.2	

VLAN 3 (Test) Port Members

Device IP	Port Members
172.16.120.2	

Step	Action
3	Click **Next** to move on Configuration and Template page.

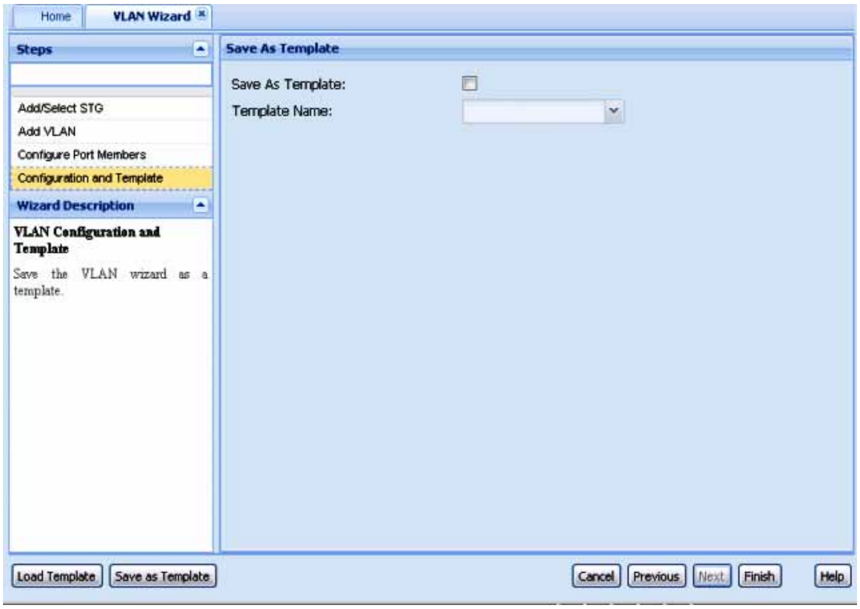
—End—

Saving the VLAN configuration

Perform the following procedure to save the configuration as a template.

Procedure steps

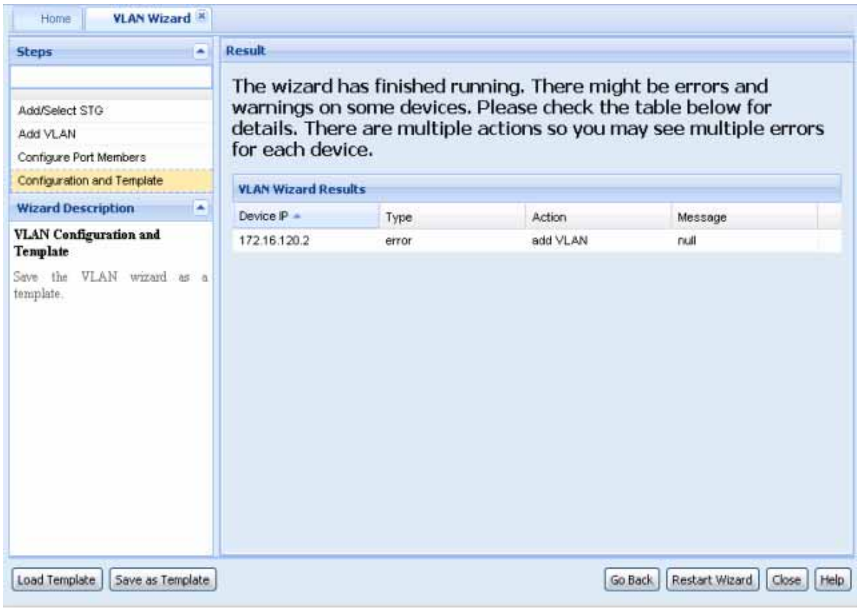
Step	Action
1	From the **Configuration and Orchestration Manager** navigation pane, select **Wizards**, and then click the **VLAN Wizard** icon. The VLAN Wizard dialog box appears.
2	In Configure Port Members page, click **Next** to move on Configuration and Template page. The Configuration and Template page appears.



3 Select the **Save As Template** check box to save the configuration as a template.

4 Enter the name of the template file in **Template Name** field, and then click **Finish**.

The result of VLAN wizard configuration appears, as shown in the following figure.



The wizard has finished running. There might be errors and warnings on some devices. Please check the table below for details. There are multiple actions so you may see multiple errors for each device.

VLAN Wizard Results

Device IP	Type	Action	Message
172.16.120.2	error	add VLAN	null

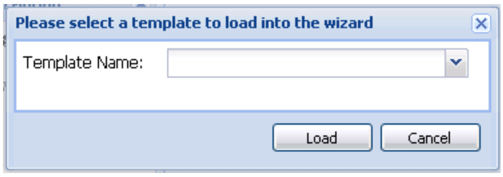
—End—

Loading a template

Perform the following procedure to load a template.

Procedure steps

Step	Action
1	From the **Configuration and Orchestration Manager** navigation pane, select **Wizards**, and then click the **VLAN Wizard** icon. The VLAN Wizard dialog box appears.
2	Click **Load Template**. The **Please select a template to load into the wizard** dialog box appears.


Please select a template to load into the wizard

Template Name:

Step	Action
3	Enter the name of the template file in **Template Name** field, and then click **Load** to load the selected template.

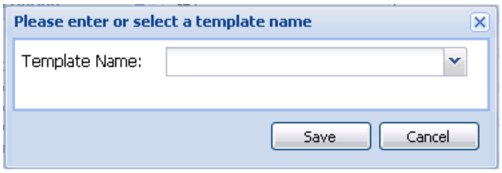
—End—

Saving as template

Perform the following procedure to save the current configuration as template.

Procedure steps

Step	Action
1	From the **Configuration and Orchestration Manager** navigation pane, select **Wizards**, and then click the **VLAN Wizard** icon. The VLAN Wizard dialog box appears.
2	Click **Save as Template**. The **Please enter or select a template name** dialog box appears.



Please enter or select a template name

Template Name:

3 Enter the name of the template file in **Template Name** field, and then click **Save** to save the current configuration as template.

—End—

SMLT wizard

The SMLT wizard is a simplified and workflow driven wizard in the Configuration and Orchestration Manager interface. The Wizard walks you through various trunk configuration, and simplifies the steps involved in the SMLT setup. It helps in reducing the complexity. Using this feature, you can configure as a single workflow.

For more information about the SMLT configuration wizard, see the following sections.

Navigation

- "SMLT wizard functionality" (page 306)
- "Launching SMLT Wizard" (page 307)

SMLT wizard functionality

The SMLT Wizard helps you to create various trunk configurations like, VLANs creation, protocol enabling and miscellaneous device settings. The SMLT wizard functions are divided in to three steps:

- Selecting the device type and the targeted devices—represents the current supported device types, retrieves those devices from the inventory, and assigns to a current user.
- Creating interswitch trunking (IST)—provides the necessary Inter-Switch Trunk configuration to define SMLT Topology Objects (Triangles).
- Creating SMLT/SLT—helps you to create multiple trunks on the selected devices. The selections can be saved into a template, and reused if necessary.

SMLT configuration wizard has the following advantages over manual configuration:

- efficient configuration

- higher consistency of configuration
- consistent and easy CLI commands and steps across devices
- configures as a single workflow
- ability to save and restore configuration
- ability to apply the configuration to devices and view results

Launching SMLT Wizard

The screens given in the procedure are not the latest one. The updated screens will be provided in the subsequent release.

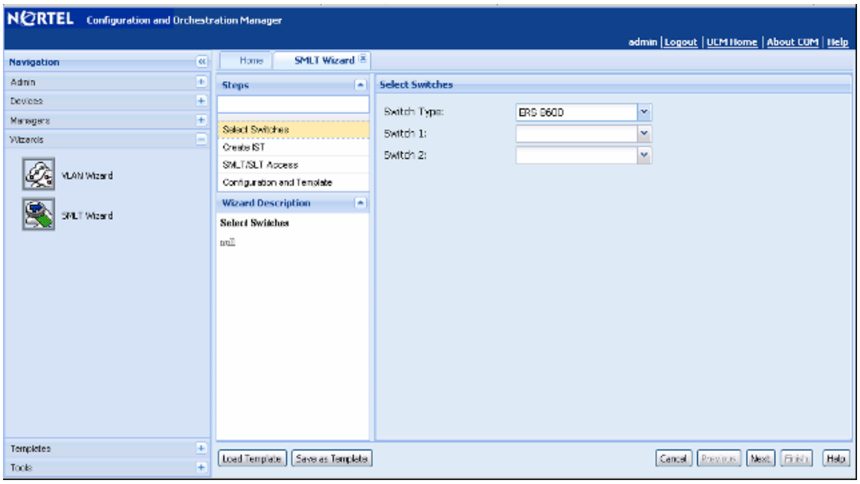
Perform the following procedure to launch the SMLT Wizard.

Procedure steps

Step **Action**

1 From the **Configuration and Orchestration Manager** navigation pane, select **Wizards**, and then click the **SMLT Wizard** icon.

The SMLT Wizard dialog box appears.



Select Switches

Select Switches

null

Switch Type: ERS 8600

Switch 1:

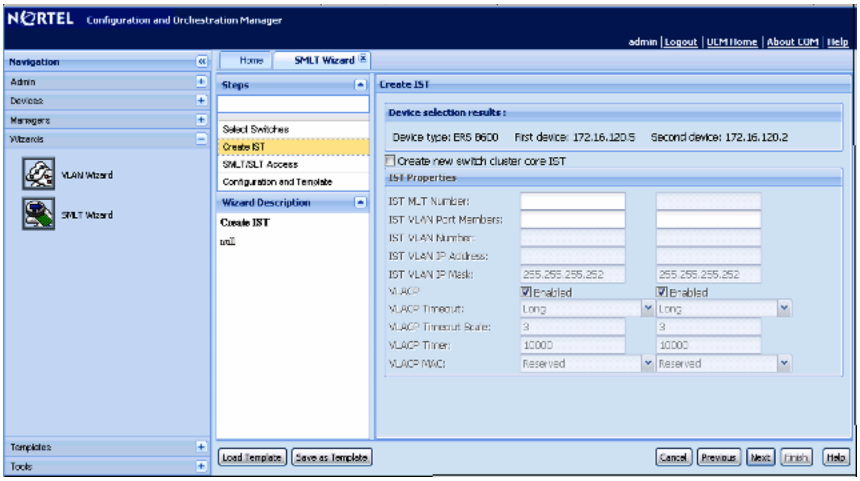
Switch 2:

2 Choose the type of the switch from **Switch Type** field.

3 Choose the **Switch 1** and **Switch 2** from the drop down lists provided.

4 Click **Next**.

The Create IST dialog box appears.



Create IST

Device selection results :

Device type: ERS 8600 First device: 172.16.120.5 Second device: 172.16.120.2

□ Create new switch cluster core IST

IST Properties

IST MLT Number:		
IST VLAN Port Members:		
IST VLAN Number:		
IST VLAN IP Address:		
IST VLAN IP Mask:	255.255.255.252	255.255.255.252
VLACP	☑ Enabled	☑ Enabled
VLACP Timeout:	Long	Long
VLACP Timeout Scale:	3	3
VLACP Timer:	10000	10000
VLACP MAC:	Reserved	Reserved

Create IST

null

5 Select the **Create new switch cluster core IST** check box.

6 Enter the values for creating the IST in the fields provided.

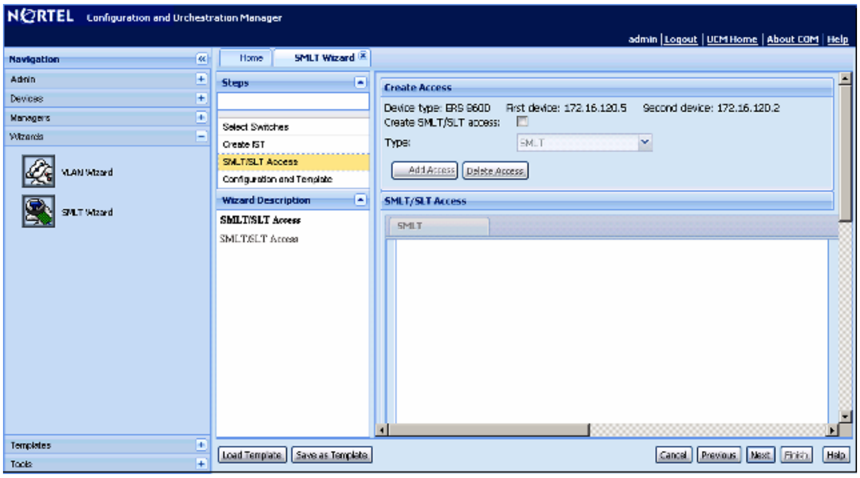
Some of the fields are common for both the switches. For the second switch, the value of the common fields are filled automatically as you enter the value for the first switch.

ATTENTION

Prepopulated values are available in some fields.

7 Click **Next**.

The SMLT/SLT access dialog box appears.



Create Access

Device type: ERS 8600 First device: 172.16.120.5 Second device: 172.16.120.2

Create SMLT/SLT access: □

Type: SMLT

SMLT/SLT Access

SMLT/SLT Access

SMLT/SLT Access

8 Select the **Create SMLT/SLT access** check box , choose the access type from the **Type** list, and then click **Add Access** to provide access to a new SMLT.

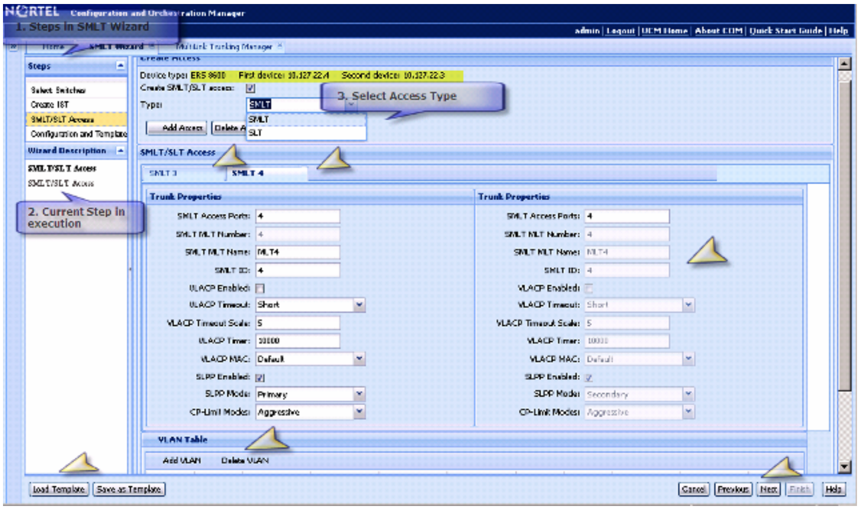
A New Access dialog box appears asking for a SMLT ID or SLT ID.

> **ATTENTION**
> To disable the access of an SMLT you can click **Delete Access**

9 Enter the ID of the new SMLT or SLT in the field of the New Access dialog box.

10 Click **OK**.

The SMLT Access or SLT Access forms are enabled. Depending on the SMLT and SLT, two forms are created.



Device type: ERS 8600 First device: 10.127.22.4 Second device: 10.127.22.3
Create SMLT/SLT access: ☑
Type: SMLT (SMLT, SLT)

Trunk Properties

	SMLT 4	
SMLT Access Ports:	4	4
SMLT MLT Number:	4	4
SMLT MLT Name:	MLT4	MLT4
SMLT ID:	4	4
VLACP Enabled:	□	□
VLACP Timeout:	Short	Short
VLACP Timeout Scale:	5	5
VLACP Timer:	10000	10000
VLACP MAC:	Default	Default
SLPP Enabled:	☑	☑
SLPP Mode:	Primary	Secondary
CP-Limit Modes:	Aggressive	Aggressive

The SMLT/SLT Access form includes

- Trunk Properties table—specifies the trunk properties.
- VLAN Table—specifies the VLANs you want to create or use for the SMLT/SLT accesses.

11 Enter the values of trunk properties to create an SMLT/SLT access.

12 Click **Add VLAN** in VLAN Table to specify the properties of VLANs that you want to create or use for SMLT Access.

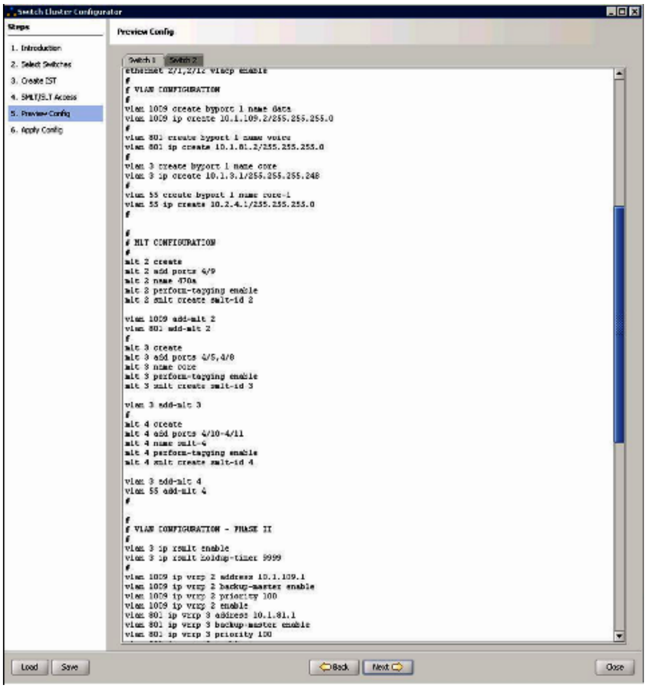
13 Enter the VLAN ID. If you provide a VLAN ID that does not exist, the Wizard creates the VLAN appropriately.

14 Select VLAN check box for the VLAN to be used for each access.

15 Click **Add Access Appropriately** to create multiple accesses at the same time.

16 Click **Next**.

The Preview Config dialog box appears.



```
ethernet 2/1,2/12 vlacp enable
#
# VLAN CONFIGURATION
#
vlan 1009 create byport 1 name data
vlan 1009 ip create 10.1.109.2/255.255.255.0
#
vlan 801 create byport 1 name voice
vlan 801 ip create 10.1.81.2/255.255.255.0
#
vlan 3 create byport 1 name core
vlan 3 ip create 10.1.3.1/255.255.255.248
#
vlan 55 create byport 1 name core-1
vlan 55 ip create 10.2.4.1/255.255.255.0
#


#
# MLT CONFIGURATION
#
mlt 2 create
mlt 2 add ports 4/9
mlt 2 name 470a
mlt 2 perform-tagging enable
mlt 2 smlt create smlt-id 2

vlan 1009 add-mlt 2
vlan 801 add-mlt 2
#
mlt 3 create
mlt 3 add ports 4/5,4/8
mlt 3 name core
mlt 3 perform-tagging enable
mlt 3 smlt create smlt-id 3

vlan 3 add-mlt 3
#
mlt 4 create
mlt 4 add ports 4/10-4/11
mlt 4 name smlt-4
mlt 4 perform-tagging enable
mlt 4 smlt create smlt-id 4

vlan 3 add-mlt 4
vlan 55 add-mlt 4
#


#
# VLAN CONFIGURATION - PHASE II
#
vlan 3 ip rsmlt enable
vlan 3 ip rsmlt holdup-timer 9999
#
vlan 1009 ip vrrp 2 address 10.1.109.1
vlan 1009 ip vrrp 2 backup-master enable
vlan 1009 ip vrrp 2 priority 100
vlan 1009 ip vrrp 2 enable
vlan 801 ip vrrp 3 address 10.1.81.1
vlan 801 ip vrrp 3 backup-master enable
vlan 801 ip vrrp 3 priority 100
```

17 Click the **Switch 1** tab to view the switch based CLI commands.

18 Click the **Switch 2** tab to view the switch based CLI commands generated by the wizard.

19 Click **Next**.

The Apply Config dialog box appears.

You can view the CLI commands executed by the CLI command log wizard.

20 Click **Start Configuration** to execute the commands on both devices.

The wizard runs the command to show the SMLT/MLT configuration.

—End—

Job aid

The following table describes the fields of Truck properties screen:

Table 67
Trunk properties

Field	Description
SMLT Access Ports	Specifies the SMLT access port.
SMLT MLT Number	Specifies the SMLT MLT number.
SMLT MLT Name	Specifies the SMLT MLT name.
SMLT ID	Specifies the SMLT ID.
VLACP Enabled	Specifies whether VLACP is enabled or disabled.
VLACP Timeout	Specifies the VLACP timeout.
VLACP Timeout Scale	Specifies the VLACP timeout scale.
VLACP Timer	Specifies the VLACP timer.
VLACP MAC	Specifies the VLACP MAC.
SLPP Enabled	Specifies whether SLPP is enabled or disabled.
SLPP Mode	Specifies the SLPP mode.
CP-Limits Modes	Specifies the CP-Limit mode.

Job aid

The following table describes the fields of VLAN table.

Table 68
VLAN Table

Field	Description
VLAN ID	Specifies the VLAN ID.
Use VLAN	Allows you to use the VLAN for each access.
Add Access Appropriately	Allows you to create multiple accesses at the same time.

You can modify the value of VLAN Table entries using in-line edit modes.

Configuration of Templates

The template contains a set of configuration attributes. Templates can be created by running the COM configuration wizards. While executing the wizard you can save the wizard configurations as a template. The saved templates can be viewed in the Templates window and can be used later to easily perform the same or similar configurations.

For more information on how to access the Templates Manager, see "Starting Templates Manager" (page 314).

Using Templates Manager, you can:

- view template name, type, last modified user, and last modified time
- filter template by template type
- view template details
- add new VLAN or SMLT template by launching the specific wizard
- load and apply an existing template into the specific wizard
- delete a template
- import a template from an XML file format
- export a template

For more information about Templates Manager, see the following sections.

Navigation

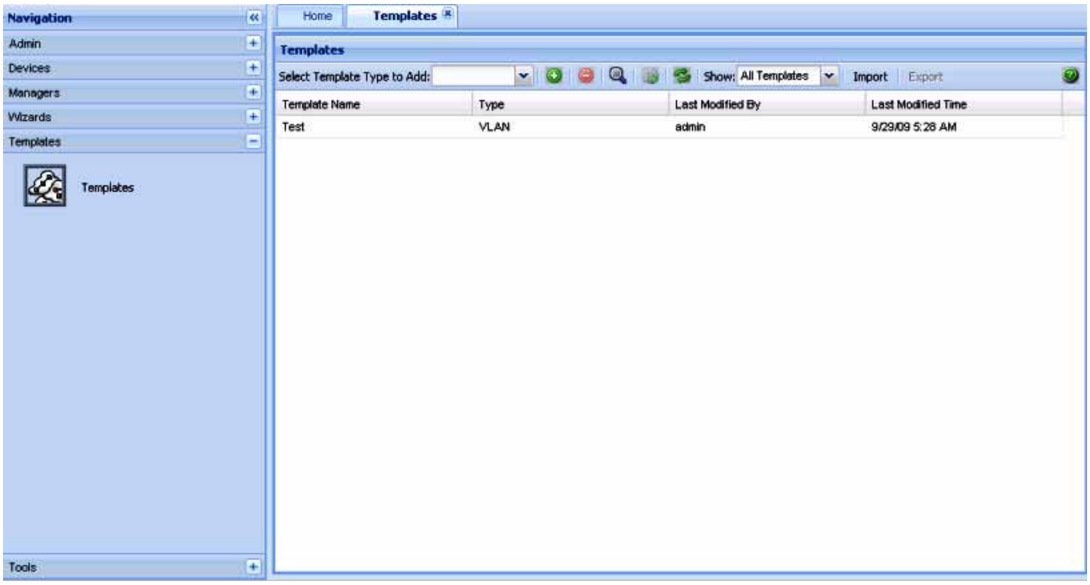
- "Running a template" (page 322)

Starting Templates Manager

Perform the following procedure to start the Templates Manager.

Procedure steps

Step	Action
1	In the **Configuration and Orchestration Manager** navigation pane, select **Templates**. The navigation pane appears.
2	Click the **Templates** icon. The Templates window appears.



Show: All Templates

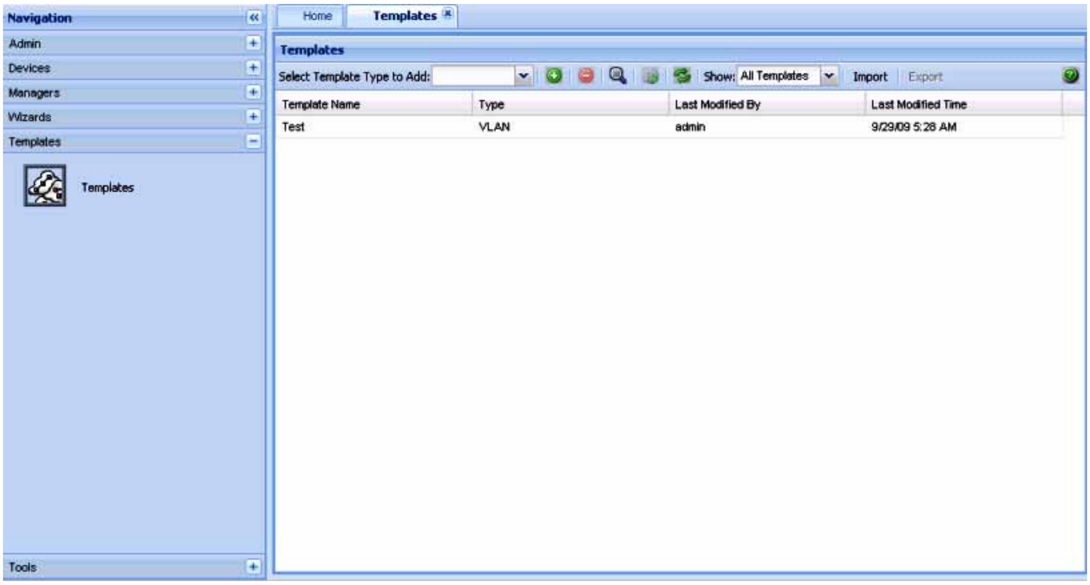
Template Name	Type	Last Modified By	Last Modified Time
Test	VLAN	admin	9/29/09 5:28 AM

—End—

Templates window

The following figure shows the Templates window.

Templates Window



Template Name	Type	Last Modified By	Last Modified Time
Test	VLAN	admin	9/29/09 5:28 AM

The following table explains the parts of the Templates window:

Table 69
Parts of the Templates window

Part	Description
Tool bar	Provides quick access to commonly used Template commands. For more information, see "Tool bar buttons" (page 315).
Contents pane	Displays details of the templates. For more information, see "Contents pane" (page 316).

Tool bar buttons

The following table explains the different buttons on the tool bar.

Table 70
Description of tool bar buttons

Command	Tool bar button	Description
Select Template type to Add	Select Template Type to Add: VLAN	Displays the list of the types of VLANs that can be created. The values are VLAN and SMLT.
Add new template	⊕	Add a new VLAN or SMLT template.
Delete template	⊖	Deletes a selected template.
View selected template	🔍	Displays details of the selected template.

Command	Tool bar button	Description
Run selected template	⚙	Runs the selected template.
Refresh	⟳	Refreshes the view and displays the newly created templates, if any.
Show	Show: All Templates ▾	Displays the templates depending on the value selected. The available values are as follows: • All Templates • VLAN only • SMLT only
Import	Import	Imports the template from a specified file.
Export	Export	Exports the template to a specified file.
Help	?	Opens Online help for the current folder or tab.

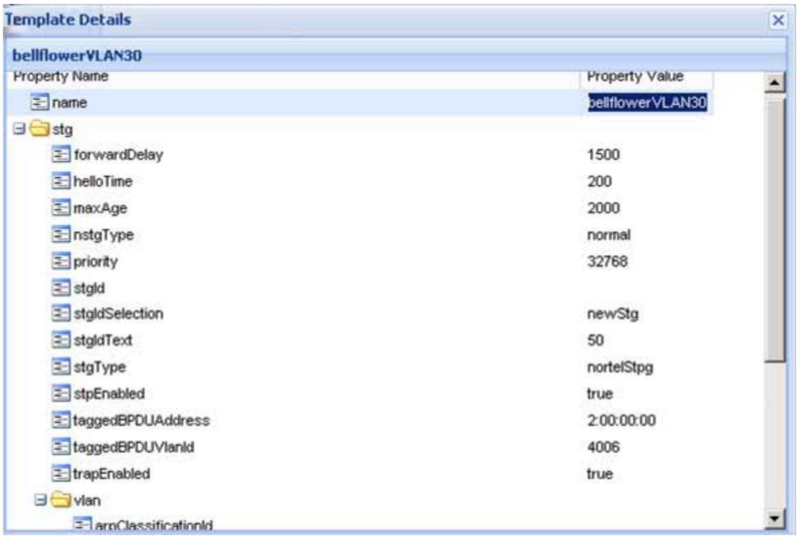
Contents pane

The Contents pane displays the details of the template based on the filter criteria set. The following details of the template appear:

- Template Name
- Type
- Last Modified By
- Last Modified Time

If you double-click on a particular template, you can view the details of it in the **Template Details** dialog box.

Template Details dialog box



Template Details

bellflowerVLAN30

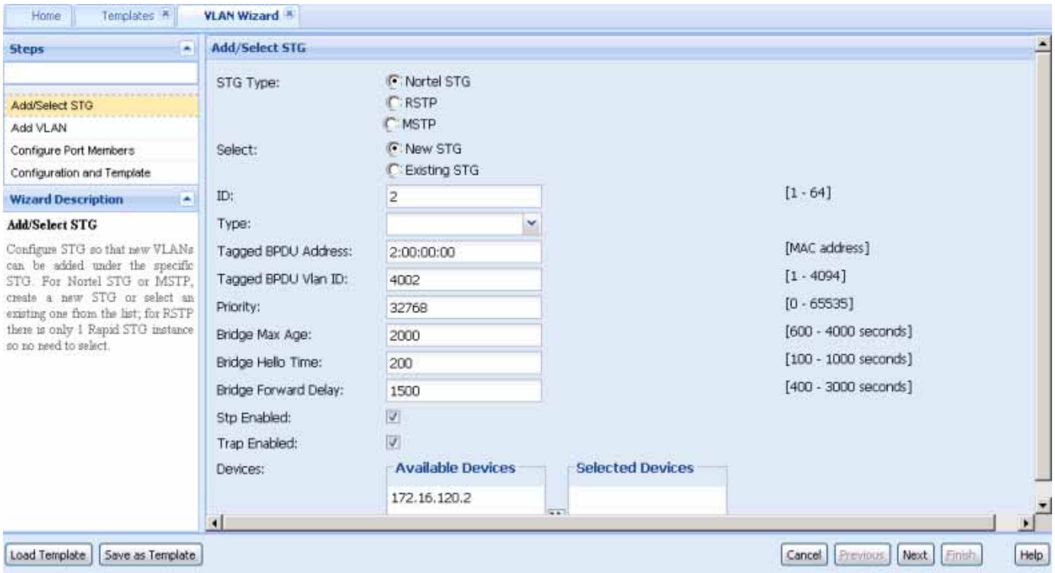
Property Name	Property Value
name	bellflowerVLAN30
stg	
forwardDelay	1500
helloTime	200
maxAge	2000
nstgType	normal
priority	32768
stgId	
stgIdSelection	newStg
stgIdText	50
stgType	nortelStpg
stpEnabled	true
taggedBPDUAddress	2:00:00:00
taggedBPDUVlanId	4006
trapEnabled	true
vlan	
arpClassificationId	

Adding a VLAN template

Perform the following procedure to add a VLAN template.

Procedure steps

Step	Action
1	In the **Templates** window, select the VLAN template type from the **Select Template Type to Add** field.
2	Click the **Add new template using wizard** button ((+) sign). The VLAN Wizard discovery is triggered, and "Loading wizard data ..." message is displayed. Once the VLAN wizard discovery is complete, the VLAN Wizard window appears.



Add/Select STG

Configure STG so that new VLANs can be added under the specific STG. For Nortel STG or MSTP, create a new STG or select an existing one from the list; for RSTP there is only 1 Rapid STG instance so no need to select.

Add/Select STG

STG Type:	● Nortel STG ○ RSTP ○ MSTP	
Select:	● New STG ○ Existing STG	
ID:	2	[1 - 64]
Type:		
Tagged BPDU Address:	2:00:00:00	[MAC address]
Tagged BPDU Vlan ID:	4002	[1 - 4094]
Priority:	32768	[0 - 65535]
Bridge Max Age:	2000	[600 - 4000 seconds]
Bridge Hello Time:	200	[100 - 1000 seconds]
Bridge Forward Delay:	1500	[400 - 3000 seconds]
Stp Enabled:	☑	
Trap Enabled:	☑	
Devices:	Available Devices 172.16.120.2	Selected Devices

3 Enter the required values in the corresponding fields of Add/Select STG page.

4 Choose the devices you wish to add from the **Available Devices** list, and then click **>** to move them to the **Selected Devices** list, and click **Next**.

The Add VLAN page appears.

5 In Add VLAN page, enter the required values in the corresponding fields, choose the devices you wish to add from the **Available Devices** list, and then click **>** to move them to the **Selected Devices** list.

6 Click **Next** to move on Configure Port Members page to view configuration details.

7 Click **Next** to move on Configuration and Template page.

8 Click **Save as Template** to save the configurations as a VLAN template.

For the more information on adding a VLAN template, see Link to VLAN Wizard.

9 From the Template window, click **Refresh** to view the newly added template.

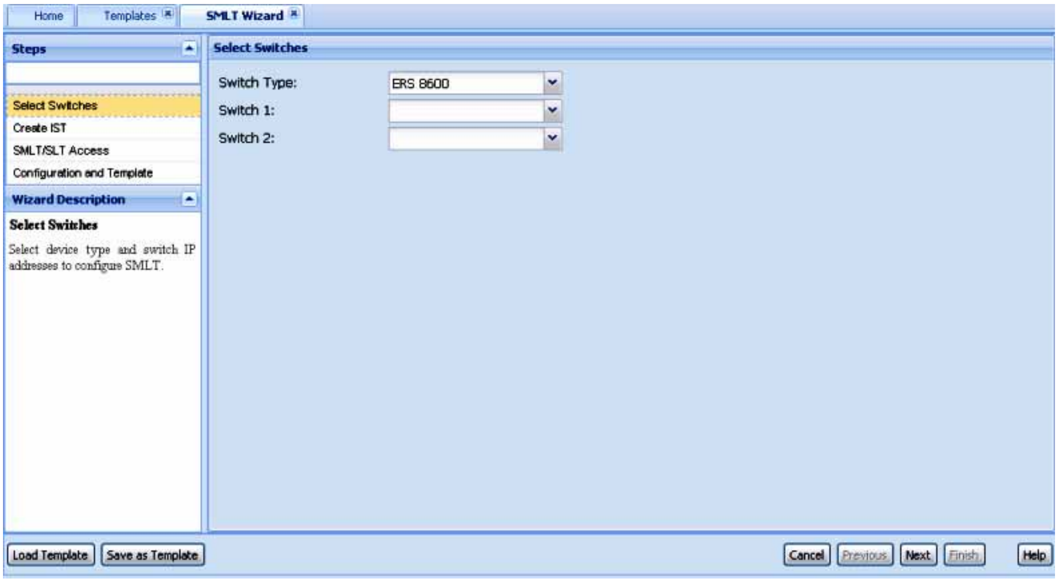
—End—

Adding a SMLT template

Perform the following procedure to add a SMLT template.

Procedure steps

Step	Action
1	In the **Templates** window, select the SMLT template type from the **Select Template Type to Add** field.
2	Double click **Add new template using wizard** (+) sign. The SMLT Wizard dialog box appears.

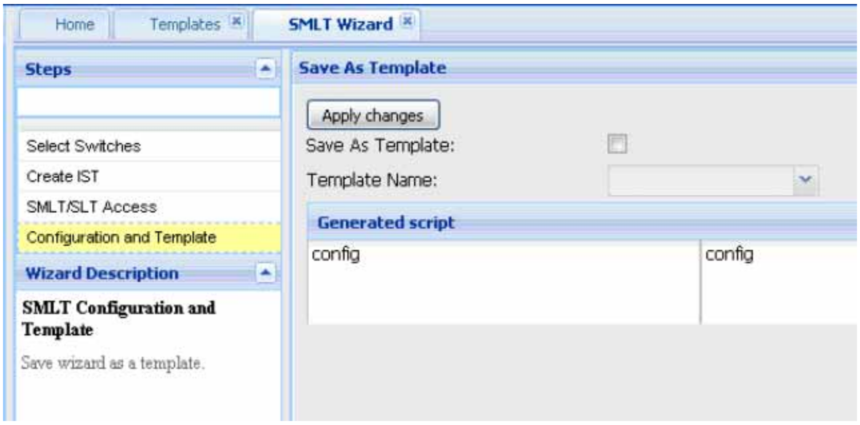


Switch Type: ERS 8600

Switch 1:

Switch 2:

Step	Action
3	In the Select Switches page, enter the required value in the corresponding fields, and then click **Next** to move on Create IST page.
4	In the Create IST page, enter the values for creating the IST in the fields provided, and then click **Next** to move on SMLT/SLT Access page.
5	IN SMLT/SLT Access page, enter the required value in the corresponding fields, and then click **Next** to move on Configuration and Template page.
6	To save the configuration as a template, do one of the following: • In the Configuration and Template window, select the check box corresponding to **Save as Template**, enter the file name in **Template Name** field, and then click **Finish**.



SMLT Configuration and Template

Save wizard as a template.

Save As Template: □

Template Name:

config

config

- Click **Save as Template** button, type the name of the template in the dialog box that pops up and click **Save**.

7 Click **Refresh** to view the new template.

For more information on adding an SMLT wizard, see Link to SMLT Wizard.

—End—

Deleting an existing template

Perform the following procedure to delete an existing template.

Procedure steps

Step	Action
1	In the **Templates** window, click **Delete template** icon ((-) sign button) from the toolbar to delete the selected template. The selected template is deleted from the list.

—End—

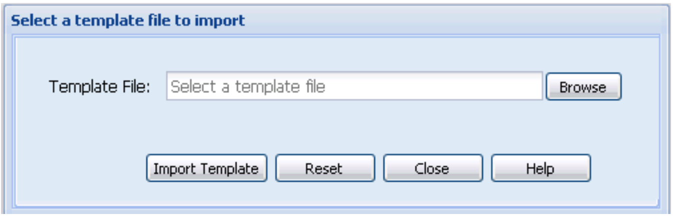
Importing a template

Perform the following procedure to import a template in to the COM.

Procedure steps

Step	Action
1	In the **Templates** window, click the **Import** from the toolbar.

The Select a template file to import dialog box appears.



Select a template file to import

Template File: Select a template file

2 Enter the template file (in .xml format) you want to import in **Template File** field. Or click **Browse** to navigate to the file.

3 Click **Import Template** to import the selected file.

—End—

Exporting a template

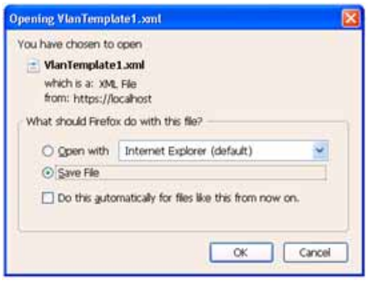
Perform the following procedure to export a template.

Procedure steps

Step	Action

1 In the **Templates** window, select the template file you want to export and then click the **Export** button from the toolbar.

The Opening Vlan template file dialog box appears.



Opening VlanTemplate1.xml

You have chosen to open

VlanTemplate1.xml

which is a: XML File

from: https://localhost

What should Firefox do with this file?

○ Open with Internet Explorer (default)

● Save File

□ Do this automatically for files like this from now on.

2 Choose the **Open with** option to view the template file.
OR
Choose the **Save File** option to save the file on your desired location.

3 Click **OK**.

The selected template is exported from the COM.

—End—

Running a template

Perform the following procedure to run a template.

Procedure steps

Step	Action
1	Select the required template from the **Templates** window.
2	Click **Run selected template**. The corresponding VLAN or SMLT wizard is launched with the template values.

—End—

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Nortel Configuration and Orchestration Manager

Administration — Utilities

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