Using ACLI and EDM on Avaya Ethernet Routing Switch 4900 and 5900 Series

Release 7.4
NN47211-104
Issue 06.01
April 2017

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Contents

Chapter 1: Introduction

Purpose

This document describes the conceptual and procedural information to help you navigate Avaya Command Line Interface (ACLI) and Enterprise Device Manager (EDM). Use the ACLI and EDM interfaces to configure the features and functions on the Avaya Ethernet Routing Switch 4900 Series and Avaya Ethernet Routing Switch 5900 Series.

Chapter 2: New in this document

The following sections detail what is new in *Using ACLI and EDM on Avaya Ethernet Routing Switch 4900 and 5900 Series, NN47211-104* for Release 7.3.

Other related doc changes

Information about related resources is moved to last chapter in this document.

Chapter 3: Feature licensing fundamentals

This chapter provides information to help understand, install, and manage feature licensing. Review this chapter before using licensed features or before making changes to the license configuration.

Important:

If you reset a standalone device to the default configuration, you erase the license file.

Feature licenses

This section describes the types of licenses and lists the features that require a license. Switches and licenses are purchased separately. Trial and advanced license types are supported.

To use the following features you must obtain the appropriate license:

- Open Shortest Path First (OSPF)
- Virtual Router Redundancy Protocol (VRRP)
- Equal Cost Multi Path (ECMP)
- Protocol Independent Multicast-Sparse mode (PIM-SM)
- IPv6 Forwarding
- IP Shortcuts
- Routing Information Protocol next generation (RIPng)

You can obtain a trial license to try out advanced license features for 60 days. Trial licenses are obtained from Avaya and installed using the ACLI. After the trial period expires, the licensed feature is disabled.

To minimize network and device impacts, the following events occur before the expiration of a trial license:

- A system trap is sent five days before license expiration.
- A system trap is sent one day before license expiration.
- A system trap is sent at license expiration.

For more information about license file generation and activating license entitlements, see *Getting Started with Avaya PLDS for Avaya Networking Products, NN46199-300*.

Installing a license file

Use this procedure to install a license file.

If the switch is reset to default, the license file must be reinstalled to reenable licensed features. Resetting a switch to default removes the license file from its storage area in NVRAM. Store the license file on a TFTP server accessible by the switch or stack before starting the installation procedure. For switches equipped with a USB port, you can also use a USB mass storage device to copy the license file to the switch.

About this task

Install a license file on the switch to enable licensed features.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. Enter the following command:

   ```
   copy [tftp | usb] license <tftp_ip_address> filename
   <license_file_name>
   ```

3. Restart the switch.

Example

Installing a license using USB in ERS 5900

1. Insert a USB mass storage device into a USB port on the front of the switch.
2. To copy a license from a USB mass storage device, use the following commands:

   ```
   Switch>enable
   ```

   ```
   Switch#copy usb license filename 5900.xml
   ```

   The switch generates the following message:

   ```
   License successfully downloaded.
   ```

Important:

You must restart the system to activate the license.

Installing a license file using SFTP

Before you begin

- Store the license file on an SFTP server accessible by the switch or stack before starting the installation procedure.
- For authentication using an RSA or Digital Signature Algorithm (DSA) key, the authentication key must be generated and uploaded to the SFTP server.

About this task

Follow this procedure to install a license file using SFTP.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. Use the following command to download and install the license file if you use an RSA or DSA key for authentication.

   ```
   copy sftp license address <sftp_ip_address> filename
   <license_file_name> username <user_name>
   ```

3. Use the following command to download and install the license file if you use a password for authentication.

   ```
   copy sftp license address <sftp_ip_address> filename
   <license_file_name> username <user_name> password
   ```

4. Restart the switch.

Variable definitions

Use the definitions in the following table to use the `copy sftp license` command.

Variable	Definition
<sftp_ip_address>	Specifies the address of the SFTP server.
<license_file_name>	Specifies the license file name.
<user_name>	Specifies the user name.

Displaying licenses

About this task

Follow this procedure to display installed license files

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. Enter the following command.

   ```
   show license
   ```

Deleting a license

About this task

Follow this procedure to delete an installed license.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. Enter the following command.

   ```
   clear license
   ```

Transferring a license

The switch implements Licensing Auto Unit Replacement. If a base unit fails, the other units in the stack transfer a virtual key to the new base unit to eliminate the need for transfer of a license to the new base unit. Even with this functionality in place, there are still several situations where it becomes necessary to transfer the license from one device to another. These conditions are as follows:

- Replacement of failed non-base unit.
- Incorrect MAC address entered during license file generation.
- The system displays an error message indicating the limit of MAC swaps for the license has been exceeded.

About this task

Use the following procedure to transfer a license.

Procedure

1. Use a web browser to access the licensing portal.
2. Enter the contact information in the required boxes.

   It is mandatory to enter an e-mail address.

3. Select **Replace or Swap a MAC address in an existing license file**.
4. Enter the License Authorization Code.
5. **(Optional)** Specify the License Bank name.
6. **(Optional)** Specify the License file name.

   You can rename a license file name before it is installed on a switch.

7. Click **Submit Request**.

If you exceed the MAC replacement threshold, a message appears confirming that the MAC swap is unsuccessful. Select a different LAC entry and try again. If no other LAC entries appear in the list, contact technical support.

8. After the system displays“ `MAC swap successful` ”, click **Return to License Bank Details**.
9. Select the transaction that contains the license file name with the new MAC address.
10. Click **Download**.

Special cases with software licensing

The following sections describes situations when the software license is lost or fails.

Base unit failure in a stack

Use only one MAC address for the license, regardless of number of units in a stack. The MAC address must be that of the base unit in the stack. After loading the license, reboot the stack. During the stack initialization process, the license functionality is enabled on every switch in the stack. If Base Unit fails, all units in the stack continue to function with the licensed features.

Chapter 4: User interface fundamentals

This chapter provides basic information to help you understand the interfaces you can use to configure and manage a switch. Available features depend on switch model and configuration.

ACLI concepts

Avaya Command Line Interface (ACLI) is a text-based interface that you can use for switch configuration and management. A common command line interface (CLI), ACLI follows the industry standard used for device management across Avaya products.

The command modes within ACLI are listed in order of increasing privileges and each mode is based on the user logon permission level. User logon permission is determined by a logon password as supplied by your system administrator.

You can access ACLI directly through a console connection, remotely through a dial-up modem connection, or in-band through a Telnet session.

You can use ACLI interactively or use the `configure network` command to load and execute ACLI scripts, manually loading the script in the console menu, or automatically loading the script at startup. For more information about the command, see Configuration file management procedures on page 48.

The following topics describe ACLI command modes, provide procedures to access ACLI, and describe ACLI help.

ACLI command modes

Avaya Command Line Interface (ACLI) provides the following command modes:

- User EXEC
- Privileged EXEC
- Global Configuration
- Interface Configuration
- Router Configuration
- Application Configuration

- DHCP Guard Configuration
- RA Guard Configuration

Mode access is determined by access permission levels and password protection.

If no password is set, you can enter ACLI in User EXEC mode and use the **`enable`** command to move to the next level (Privileged EXEC mode). However, if you have read-only access, you cannot progress beyond User EXEC mode, the default mode. If you have read-write access you can progress from the default mode through all of the available modes.

With sufficient permission, you can use the rules in the following table to move between the command modes.

Table 1: ACLI command modes

Command mode and sample prompt	Entrance commands	Exit commands

User EXEC
`Switch>`
	No entrance command, default mode	`exit`
		or
		`logout`

Privileged EXEC
`Switch#`
	`enable`	`exit`
		or
		`logout`

Global Configuration
`Switch(config)#`
	`configure terminal`	To return to Privileged EXEC mode, enter
		`end`
		or
		`exit`
		To exit ACLI completely, enter
		`logout`

Interface Configuration
`Switch(config-if)#`
You can configure the following interfaces:
• Ethernet
• Loopback
• Management
• VLAN
	From Global Configuration mode:
	To configure a port, enter `interface ethernet <port number>`.
	To configure a loopback, enter `interface loopback <loopback number>`.
	To configure a management, enter `interface mgmt <mgmt number>`
		To return to Global Configuration mode, enter
		`Exit`
		To return to Privileged EXEC mode, enter
		`end`
		To exit ACLI completely, enter
		`logout`

Table continues…

Command mode and sample prompt	Entrance commands	Exit commands
	To configure a VLAN, enter `interface vlan <vlan number>`.	
Router Configuration `Switch(configrouter)#` You can configure the following routers: • RIP • OSPF • VRRP • ISIS	From Global or Interface Configuration mode: To configure RIP, enter `router rip`. To configure OSPF, enter `router ospf`. To configure VRRP, enter `router vrrp`. To configure IS-IS, enter `router isis`.	To return to Global Configuration mode, enter `exit`. To return to Privileged EXEC mode, enter `end`. To exit ACLI completely, enter `logout`.
Application Configuration `Switch(config-app)`	From Global, Interface or Router Configuration mode, enter `application`.	To return to Global Configuration mode, enter `exit`. To return to Privileged EXEC mode, enter `end`. To exit ACLI completely, enter `logout`.
DHCP Guard Configuration `Switch(config-dhcpguard)`	From Global, Interface, Router, Application Configuration mode, enter `ipv6 dhcp guard policy <policy_name>`.	To return to Global Configuration mode, enter `exit`. To return to Privileged EXEC mode, enter `end`. To exit ACLI completely, enter `logout`.
RA Guard Configuration `Switch(config-raguard)#`	From Global, Interface, Router, Application Configuration mode, enter `ipv6 nd raguard policy <policy_name>`.	To return to Global Configuration mode, enter `exit`. To return to Privileged EXEC mode, enter `end`. To exit ACLI completely, enter `logout`.

ACLI access procedures

Before you begin

- Connect to the switch with a console cable, connected directly to the console port, or use Telnet.
- To connect to the switch remotely, through Telnet, ensure that you enable remote access, and that the switch IP address is valid.
- Use a terminal, or computer with a terminal emulator, as the ACLI command station.
- If you use a console cable and console port, ensure that the terminal emulation program conforms to settings listed in the following table.

Property	Value
Baud Rate	9600 bps
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None
Terminal Protocol	VT100 and VT100/ANSI

Opening an ACLI session

Procedure

1. Connect to the switch.
2. Enter the password, if applicable.
3. At the ACLI Banner Screen, enter `CTRL+Y`.
4. To access ACLI, from the main menu, press `c` or scroll to `Command Line Interface`.
5. Press `Enter`.

ACLI help

ACLI help is available at all levels.

ACLI list

From the User EXEC mode, the ACLI list command **`show cli list`** displays a detailed view of the ACLI commands. Additionally, the verbose command, **`show cli list verbose`** lists the CLI syntax for each command.

Command list

To obtain a list of all commands available from a prompt, enter a question mark (`?`).

Command options

To obtain a list of all options for a command, at the prompt enter a portion of a command followed by a space and a question mark (`?`).

Command names

To obtain a correct command name, at the prompt enter a portion of the command name, and then press the Tab key. The system displays the first unambiguous match for your selection. For example, when you enter `down + Tab`, the system displays `download`.

Command modes

To obtain a list of ACLI command modes available, enter `help modes`.

Commands organized by mode

To obtain a list of ACLI commands, organized by command mode, enter `help commands`. A short explanation of each command is included.

Keystroke shortcuts

To make using ACLI easier, use the keystroke shortcuts in the following table.

Key combination	Function
`Ctrl+A`	Start of line
`Ctrl+B`	Back 1 character
`Ctrl+C`	Abort command
`Ctrl+D`	Delete the character indicated by the cursor
`Ctrl+E`	End of line
`Ctrl+F`	Forward 1 character
`Ctrl+H`	Delete character left of cursor (Backspace key)
`Tab`	Command or parameter completion
`Ctrl+K` and `Ctrl+R`	Redisplay line
`Ctrl+N` or `Down arrow`	Next history command
`Ctrl+P` or `Up arrow`	Previous history command
`Ctrl+T`	Transpose characters
`Ctrl+U`	Delete entire line
`Ctrl+W`	Delete word to left of cursor
`Ctrl+X`	Delete all characters to left of cursor
`Ctrl+z`	Exit Global Configuration mode to Privileged EXEC mode
`?`	Context sensitive help
`Esc+C` and `Exc+U`	Capitalize character at cursor
`Esc+l`	Change character at cursor to lower case
`Esc+B`	Move back 1 word

Table continues…

Key combination	Function
Esc+D	Delete 1 word to the right
Esc+F	Move 1 word forward

ACLI pipe filter

Pipe (|) is used to display only a subset of information in the command output. To filter the command output, type the existing ACLI command followed by the pipe (|) symbol and then, the pipe filter command. The output contains only the lines specified in the pipe filter.

The following pipe filter functions are supported:

Filter function	Description
count	Counts the number of lines in the output of a command.
match	Displays only the output lines which match the given pattern.
except	Displays only the output lines which do not match the given pattern.
find	Displays the output of a command starting from the first line which matches the given pattern.
no-more	Temporarily disables pagination for the output of an ACLI command. When the lines of output exceed the terminal length, the entire output of the command is displayed and message does not appear to continue or quit.
head	Limits the output of a command to the first few lines. If limit is not specified, the first 10 lines appear.
tail	Limits the output of a command to the last few lines. If a number is not specified the last 10 lines are shown.

To see if a command supports the ACLI pipe filter functionality, enter the command followed by a question mark (?).

For more information about the functions, see ACLI pipe filter functions on page 53.

Enterprise Device Manager concepts

This section provides information to start and use Enterprise Device Manager (EDM) to monitor, manage, and configure the switches.

To manage the switch from a centralized location, using Configuration and Orchestration Manager (COM) 2.0 and higher, Avaya offers optional, product-specific EDM plug-ins for COM that include other features such as centralized syslog, trap viewer, troubleshooting and diagnostic tools. For more information, or to purchase plug-ins, go to www.avaya.com.

The following table compares EDM functions in the embedded version to the COM plug-in version.

Table 2: EDM functions: embedded version compared to COM plug-in version

EDM functions	Embedded version	Plug-in version
100% device configuration: device view, device-specific configuration	Yes	Yes
Stackable Device Web User Interface features	Yes	No
Centralized off-box multi-user element management: • user and device credential manager • user preference • SSO-based user access control • user-based Device Access Control (read only and read-write) • authentication through third party (RADIUS, Microsoft AD, Sun AM)	No	Yes
Centralized EM plug-in management (downloadable install and uninstall, upgrade, patch, and inventory view	No	Yes
User activity log and audit trail	No	Yes
Device performance monitoring and polling	Limited	High performance and low latency
Device-specific single-device wizards and template	No	Yes
Centralized syslog and trap viewer	No	Yes
Troubleshooting and diagnostic tools (ping, CLI*Manager, path-trace)	No	Yes

EDM is an embedded application that you can use for single-device element management and configuration through a standard web browser. Because EDM is embedded into the switch software, and the switch operates as a web server, you do not require additional client software.

Supported web browsers

The following is a list of Internet web browsers supported by EDM:

- Microsoft Internet Explorer versions 7.0 and 8.0
- Mozilla Firefox version 3.x

Memory requirements

If you install Configuration and Orchestration Manager on a computer to manage your switch, the computer must have at least 500 MB of free disk space.

There are no memory requirements to use EDM through a web browser.

Online help

Online help is context-sensitive and appears in a separate window in the web browser.

To obtain help for the current topic, click the help button on the toolbar in the work area.

If you are using EDM through a web browser, you need to download the help file to a TFTP server or a USB mass storage device and configure the EDM Help file path. For procedures, see Getting EDM online help files for embedded EDM on page 45.

Interface components

This section describes Enterprise Device Manager interface components.

The Enterprise Device Manager window includes the following parts:

- Navigation tree toolbar
- Switch Summary View
- Device Physical View
- EDM window
- Navigation tree
- Menu bar
- Toolbar
- Work area

Switch Summary View

The EDM initial view displays a Switch Summary View in the work area.

The Switch Summary tab displays basic switch information. This information-only display derives from the configuration tab **Edit** > **Chassis** > **Chassis**.

Following is a list of the fields on the **Switch Summary** tab:

- Hardware model
- Hardware version
- Firmware version
- Software version
- System up time
- System object identifier
- System contact
- System name

- System location

A Stack Information panel appears at the bottom of the Switch Summary View work area. It provides a description of your switch or the units in your switch stack.

This information includes the following:

- Unit number (for stacks) — also lists which unit is the base unit in a stack Switch type
- Description
- Running software version

Device Physical View

When you access EDM, the first panel in the work area displays a switch summary view. The tab behind the summary view is a real-time physical view of the front panel of the device or stack called the Device Physical View.

Objects in the Device Physical View are:

- Stand-alone switch, called a unit
- Switch stack, called a chassis
- Port

From the Device Physical View, you can:

- Determine the hardware operating status
- Select a switch or a port to perform management tasks on specific objects or view fault, configuration, and performance information for specific objects

Click to select an object. The system outlines the object in yellow to indicate that the object is selected.

The conventions on the device view are similar to the actual switch appearance except that LEDs in Device Physical View do not blink. The LEDs and the ports are color-coded to reflect hardware status. Green indicates the port is up and running; red indicates that the port is disabled.

From the menu bar, you can click the **Device Physical View** tab to open the Device Physical View any time during a session.

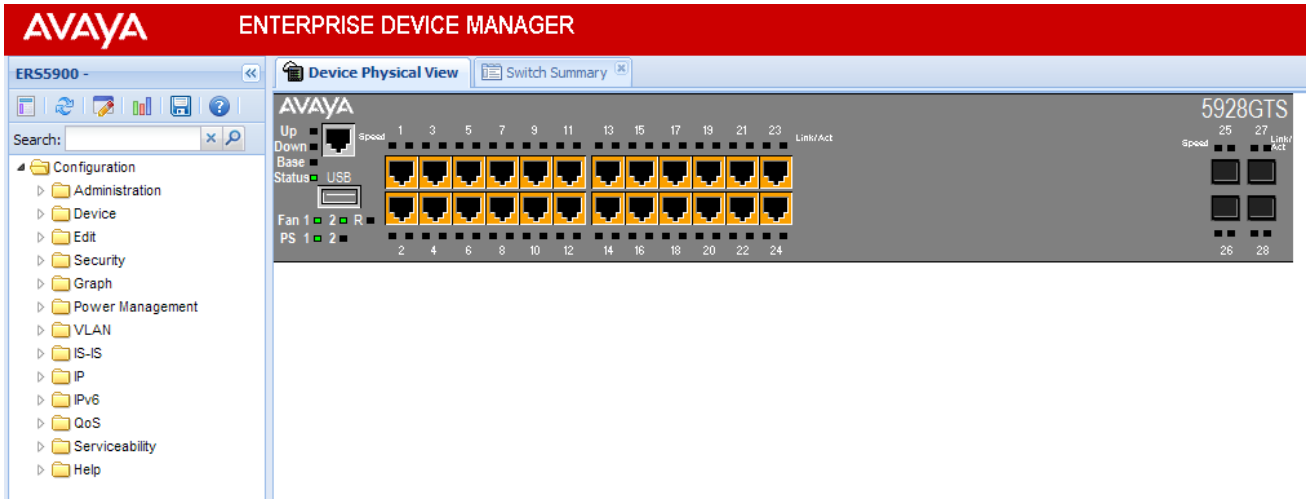


Figure 1: Device Physical View

EDM window

The EDM window contains the following parts:

1. Navigation tree—The navigation pane on the left side of the window that displays available command folders in a tree format.
2. Navigation tree toolbar—The area displays buttons for common functions.
3. Menu bar—The area at the top of the window that displays primary and secondary tabs that you accessed during the session; the tabs remain available until you close them.
4. Toolbar—The area just below the menu bar that provides quick access to the most common operational commands such as **Apply**, **Refresh**, and **Help**.
5. Work area—The main area on the right side of the window that displays the dialog boxes where you view or configure switch parameters.
6. Auto Complete Search — The area between the navigation tree toolbar and the navigation tree where you can type a partial or complete search string to find menus. When you type the search string, the navigation tree changes to display only the entries associated with your search. To return to the full navigation tree display, click the **x** beside the **Auto Complete Search** dialog box.

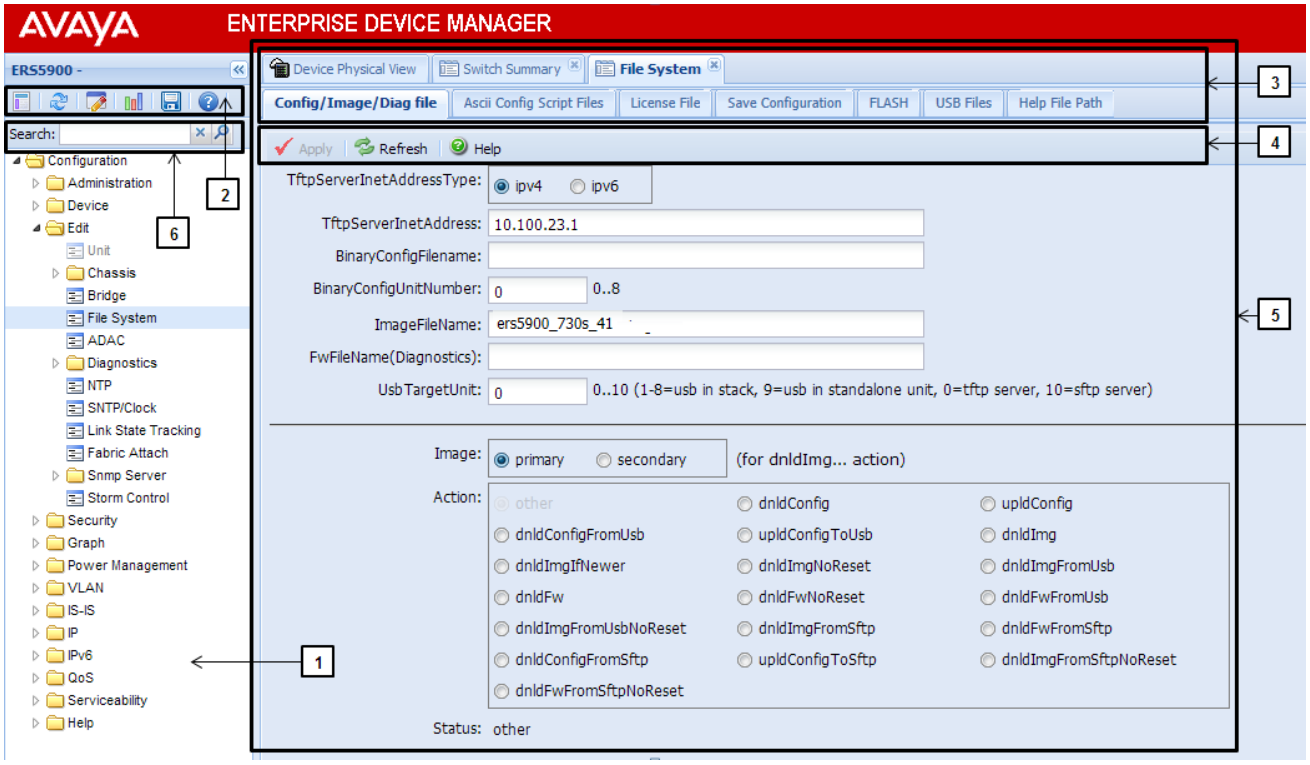


Figure 2: EDM window

Navigation tree

The navigation tree displays available command topics as folders in a tree.

To open a folder or subfolder, click the arrow to the left of the folder or double-click the folder to display the available commands tabs.

To close a folder, click the arrow once.

To access a command tab, click the selection in the navigation tree.

Navigation tree toolbar

You can use the toolbar above the navigation tree to perform common functions more easily.

Figure 3: Toolbar

The following is a description of the toolbar button functions:

Button	Description
	**Switch Summary**—You can use the **Switch Summary** toolbar button to open or reopen the Switch Summary tab.

Table continues…

Button	Description
	Refresh Status—In addition to the existing refresh methods you can use the **Refresh Status** toolbar button to refresh the device status
	Edit Selected—In addition to the existing edit methods, and depending on which object you select on the Device Physical View, you can use this toolbar button to open **Edit > Chassis**, **Edit > Unit**, or **Edit > Ports** tabs. If you do not select an object from the Device Physical View and you click the **Edit Selected** toolbar button, the **Edit > Chassis** tab opens.
	Graph Selected—Depending on which object you select on the Device Physical View, you can use this toolbar button to open **Graph > Chassis** or **Graph > Port** tabs. If you do not make a selection on the Device Physical View, or if you select Unit, the **Graph > Chassis** tab opens.
	Save Config—You can use the **Save Config** toolbar button to save the configuration to flash memory.
	Help Setup Guide—This button connects you to the help setup guide for embedded EDM and it replaces the link that appeared on the top right of work panes.

Menu bar

The menu bar appears above the work area and consists of two rows of tabs.

The top row displays tabs that were accessed from the navigation tree during the active session. The tabs in this row, called primary tabs, are docked and available to reopen on demand. The docked tabs appear in the sequence that you accessed them.

When you click a primary tab from the menu bar, the associated secondary tabs appear in the second row and the default dialog box appears in the work area. Click any secondary tab to display its associated dialog box.

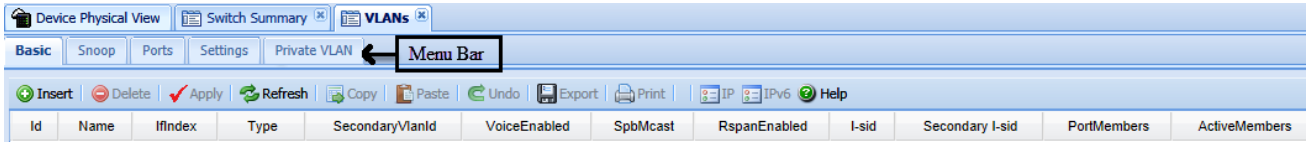


Figure 4: Menu bar

If you want to open a dialog box without displacing the current open dialog box, you can go to the tab on the menu bar and undock the tab by using your mouse to drag and drop it into the work area. You can drag the dialog box to any location on the screen and you can toggle between the open dialog boxes to compare information and make changes. When you no longer need the undocked tab, you can use the three buttons on the upper right side of the tab to temporarily shrink it, re-dock it, or close it.

Important:

When you undock a tab to make changes, and then return to another open tab, in order to see the effects of the changes you must click the **Refresh** button on the tool bar.

In both rows of the menu bar, arrows can appear on the left and right sides when the number of open tabs exceeds the available space. You can use the arrows to scroll to a tab, or you can select the tab from the navigation tree.

To reduce the number of open tabs, click the **X** button on the top right of a tab to close it.

Tool bar

The tool bar, located below the menu bar, contains buttons that provide quick access to commonly used operational commands. Depending on the tab selected, different buttons can appear.

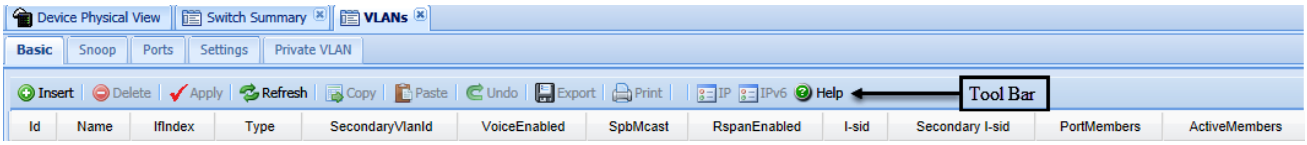


Figure 5: Tool bar

The following table describes common tool bar buttons.

Table 3: Common tool bar buttons

Button	Name	Description
	Apply	Executes parameter changes.
	Refresh	Refreshes screen data.
	Help	Displays context-sensitive online help for the current dialog box.
	Insert	Opens an insert dialog box. Submits the entry from the insert dialog box. The insert buttons appear only on panes where you can insert entries.
	Delete	Removes a selected entry.

Work area

The work area, on the right side of the EDM page, displays the switch Device Physical View and dialog boxes related to the menu selections in the navigation tree. You can use the work area to view and configure switch parameters from the dialog boxes that appear in the work area.

See the following figure for an example of the work area for the **Edit** > **File System** > **Config/Image/Diag file** dialog box.

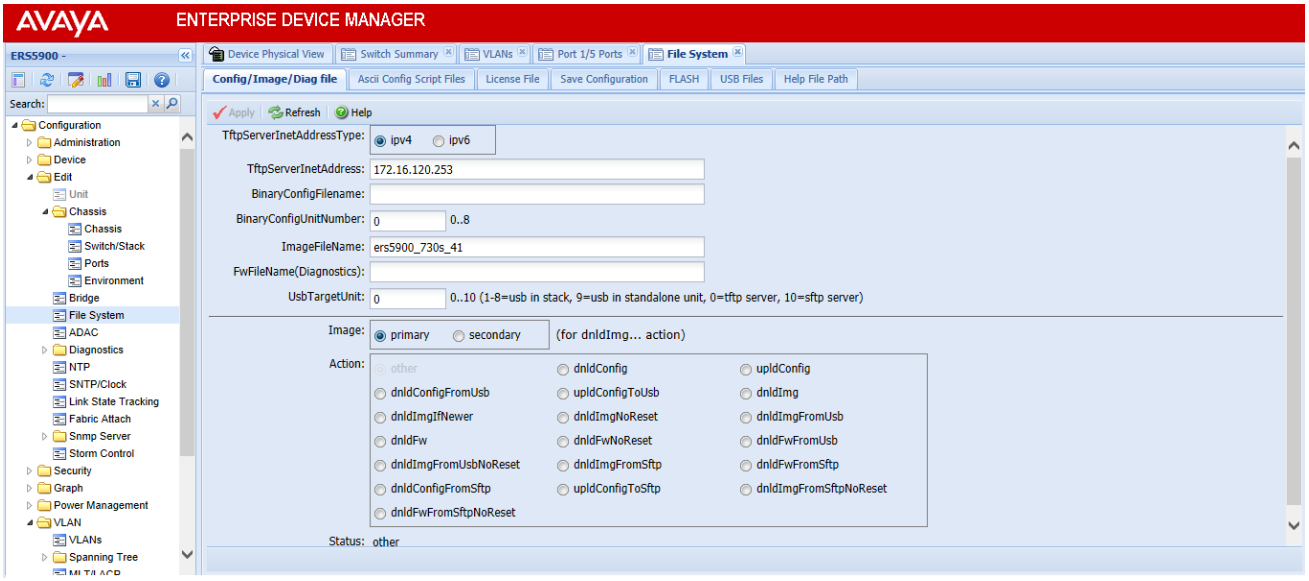


Figure 6: EDM work area

Single-port configuration for EDM

You can apply configuration changes to single ports by using one of the following methods:

- From the Device Physical View, right-click a port, select **Edit** from the drop-down menu, and then click the appropriate tab.

  The following figure displays the drop-down menu for the selected port in the Device Physical View.

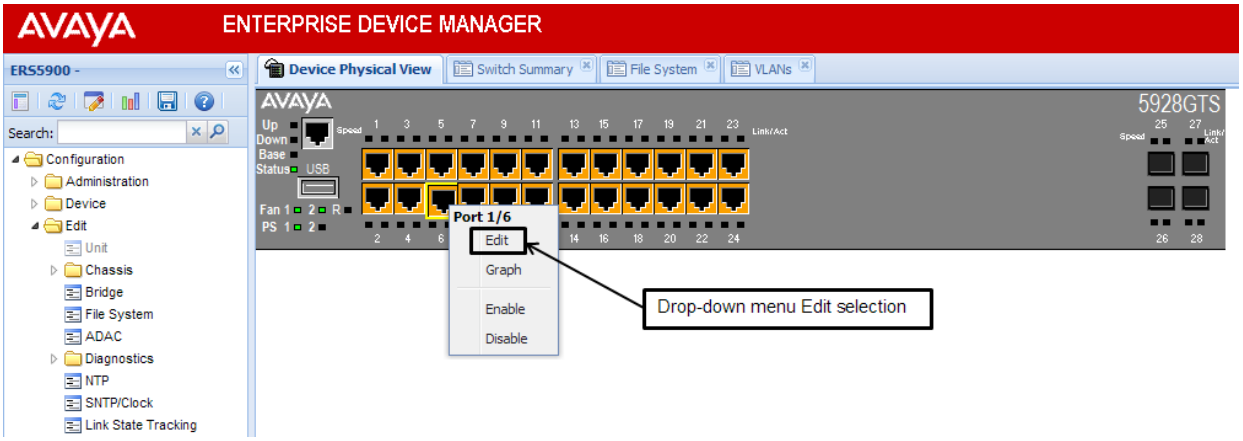


Figure 7: Device Physical View - port edit

The following figure displays the port edit work area with the **VLAN** tab selected.

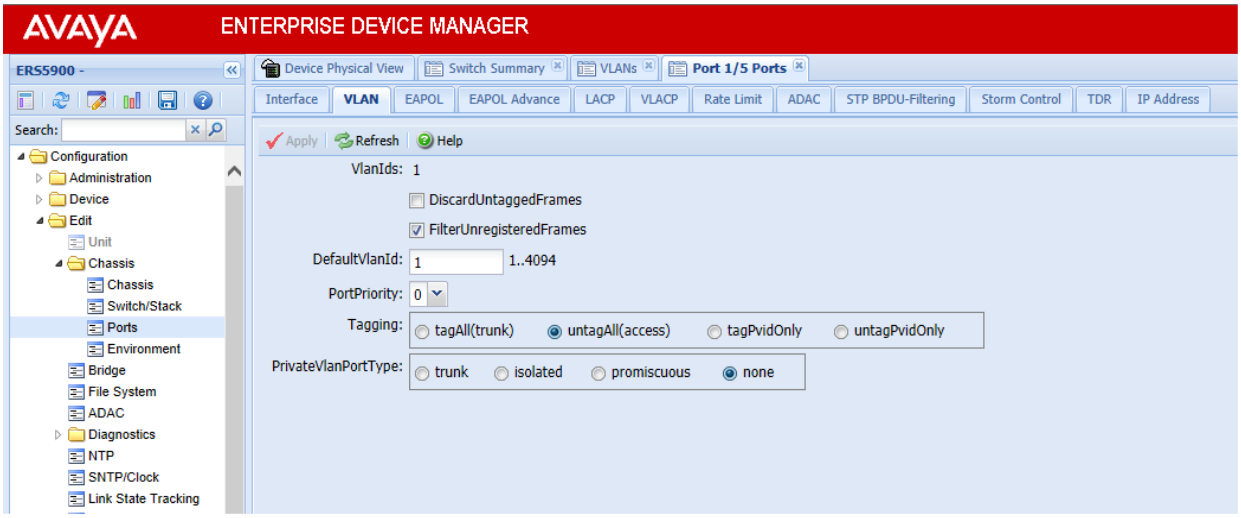


Figure 8: Port edit—VLAN tab

- From the Device Physical View, click a port, and then from the navigation tree select any tab from the **Edit** > **Chassis** > **Ports** work flow, and modify editable parameters.

  The following figure displays the **Edit** > **Chassis** > **Ports** work area with the **Interface** tab selected.

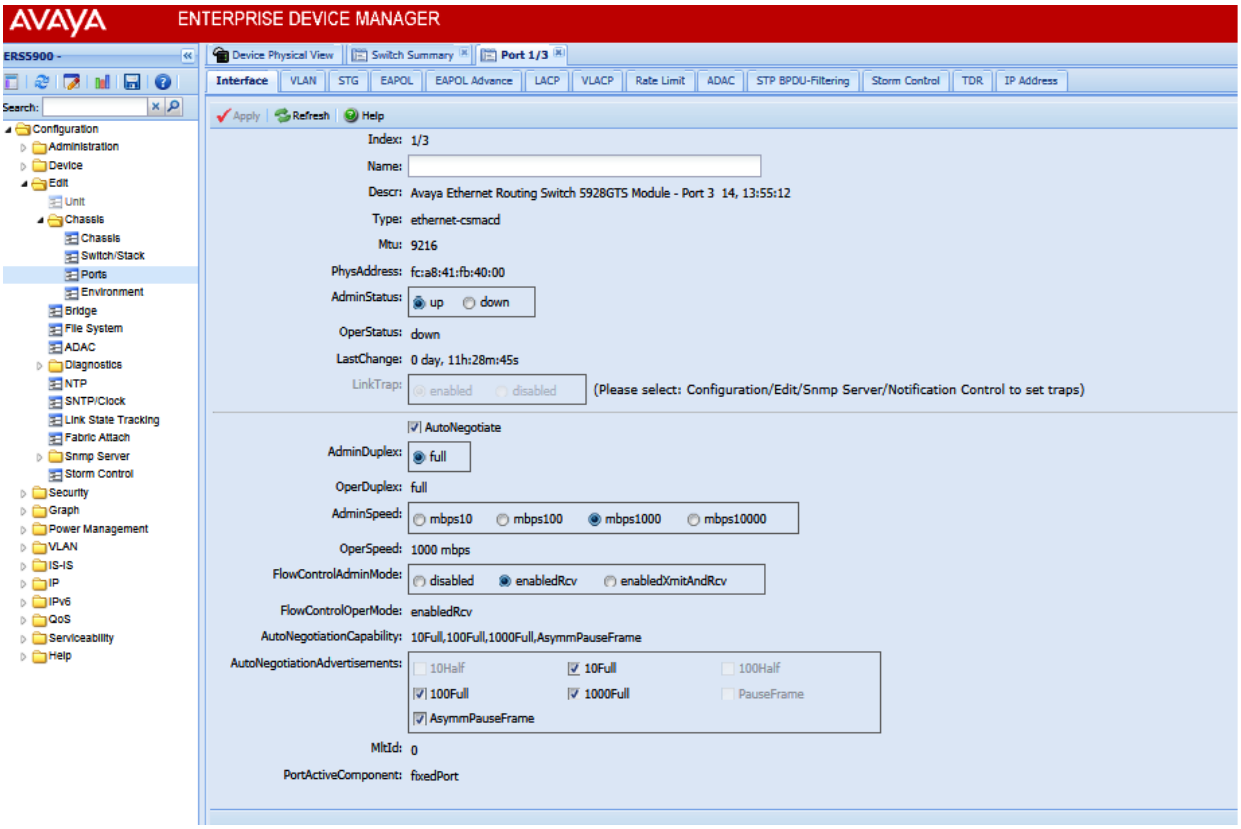


Figure 9: Edit > Chassis > Ports—Interface tab

- From the navigation tree, select a port-related tab from a specific, applicable feature work area (for example, VLAN, VLANs, Ports), and double-click a cell under an editable parameter column heading in the appropriate port row of the table.

  The following figure displays the **VLAN** > **VLANs** > **Ports** tab work area.

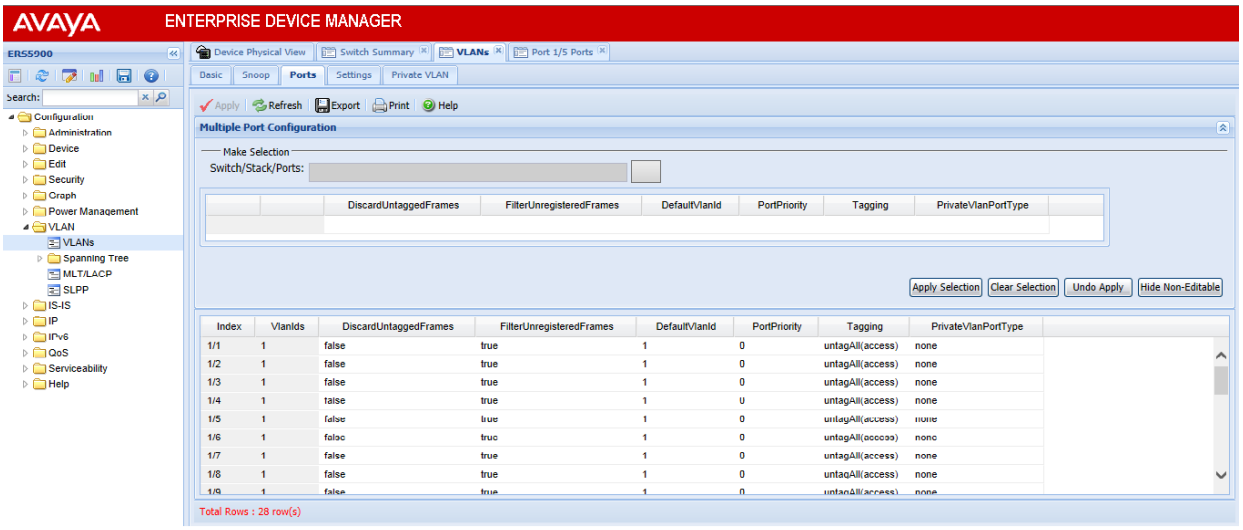


Figure 10: VLAN > VLANs—Ports tab

Multiple Port Configuration for EDM

When you need to apply the same configuration changes to more than one port, you can use the Multiple Port Configuration function in any the following ways:

- In the **Device Physical View**, hold down the **Ctrl** key and click the ports. Then select the appropriate tab in the **Edit** > **Chassis** > **Ports** work area to configure the ports.
- In the **Device Physical View**, hold down the **Ctrl** key and click the ports you want to configure. Then right-click and select **Edit** from the menu.
- In the **Device Physical View** click and drag to surround a group of related ports. Then select the appropriate tab in the **Edit** > **Chassis** > **Ports** work area to configure the ports.
- In the **Device Physical View**, click and drag to surround a group of related ports. Then right-click and select **Edit** from the menu.

The system can generate error messages if you apply a change to all ports when some ports in the list do not support the change. The error messages provide only the error information and do not list individual ports.

The following sections use the **Edit** > **Chassis** > **Ports** > **Interface** tab work area to describe the available Multiple Port Configuration functions.

In the work area for any of the **Edit** > **Chassis** > **Ports** tabs, the following two panes appear in the default view:

- Multiple Port Configuration pane—Provides port selection for one port, several ports, or all ports, and configurable port parameters

- Tab work pane—Displays existing configuration information for the feature and configurable cells for individual ports

With Multiple Port Configuration you can perform the following:

- Hide non-editable fields from the multiple configuration pane so that you choose to view only those fields that can be configured.
- Select an individual port or a group of ports from the Port Editor.
- Select all ports from the Port Editor, if you are on a feature tab. If you used **Edit** > **Chassis** > **Ports** you already selected the ports on the Device Physical View.
- Double-click any or all of the editable fields to change the configuration parameter.
- Clear your selections.
- Apply your selections.
- Undo the application of your selections.

You can expand or collapse the Multiple Port Configuration pane by clicking the Multiple Port Configuration task bar. The Multiple Port Configuration pane is expanded by default.

The following figure displays the tabs available in the **Edit** > **Chassis** > **Ports** work flow, with the **Interface** tab selected and the **Multiple Port Configuration** pane expanded.

The following figure displays the **Edit** > **Chassis** > **Ports** > **Interface** tab with the **Multiple Port Configuration** pane collapsed.

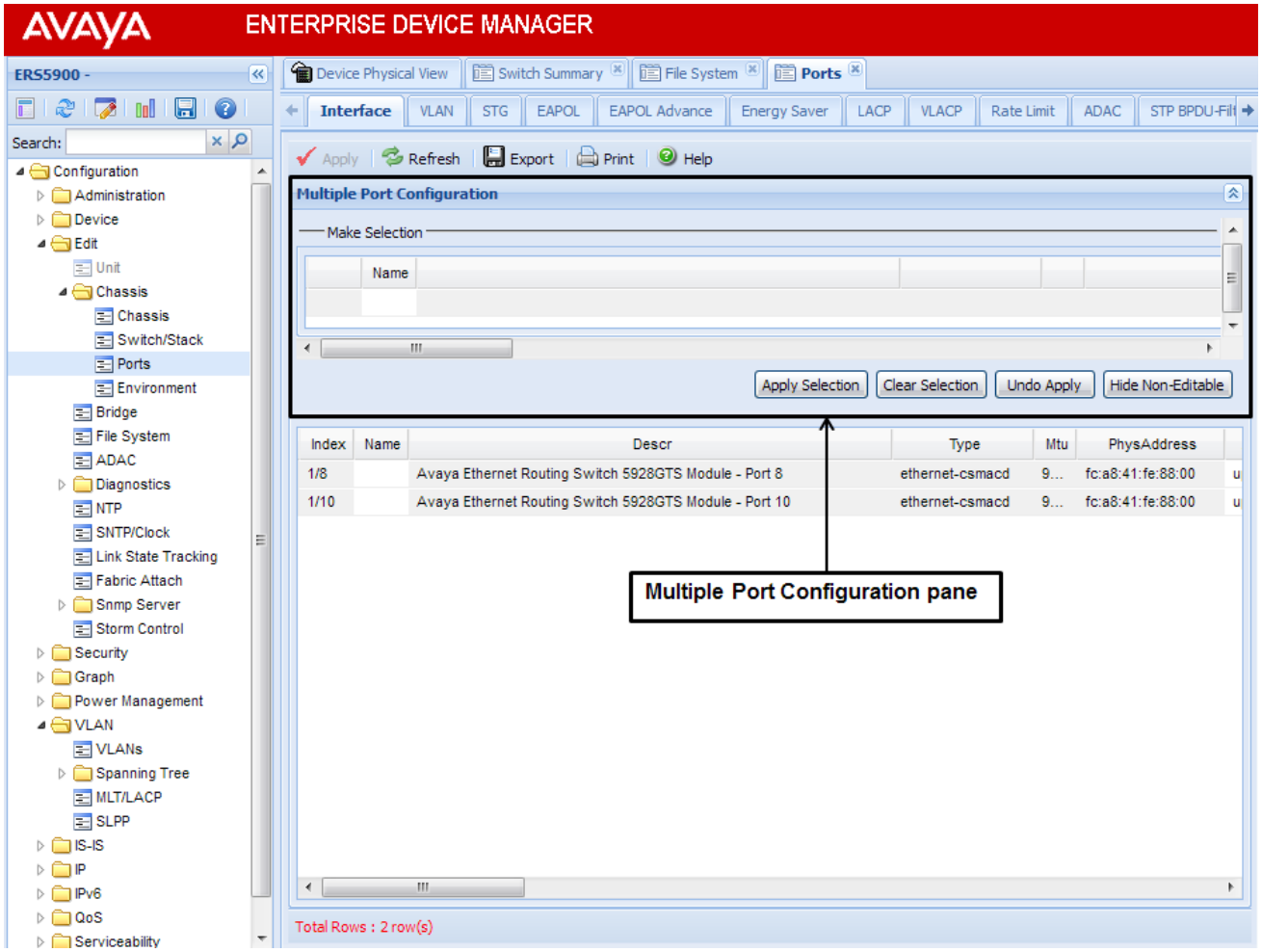


Figure 11: Interface tab—Multiple Port Configuration pane expanded

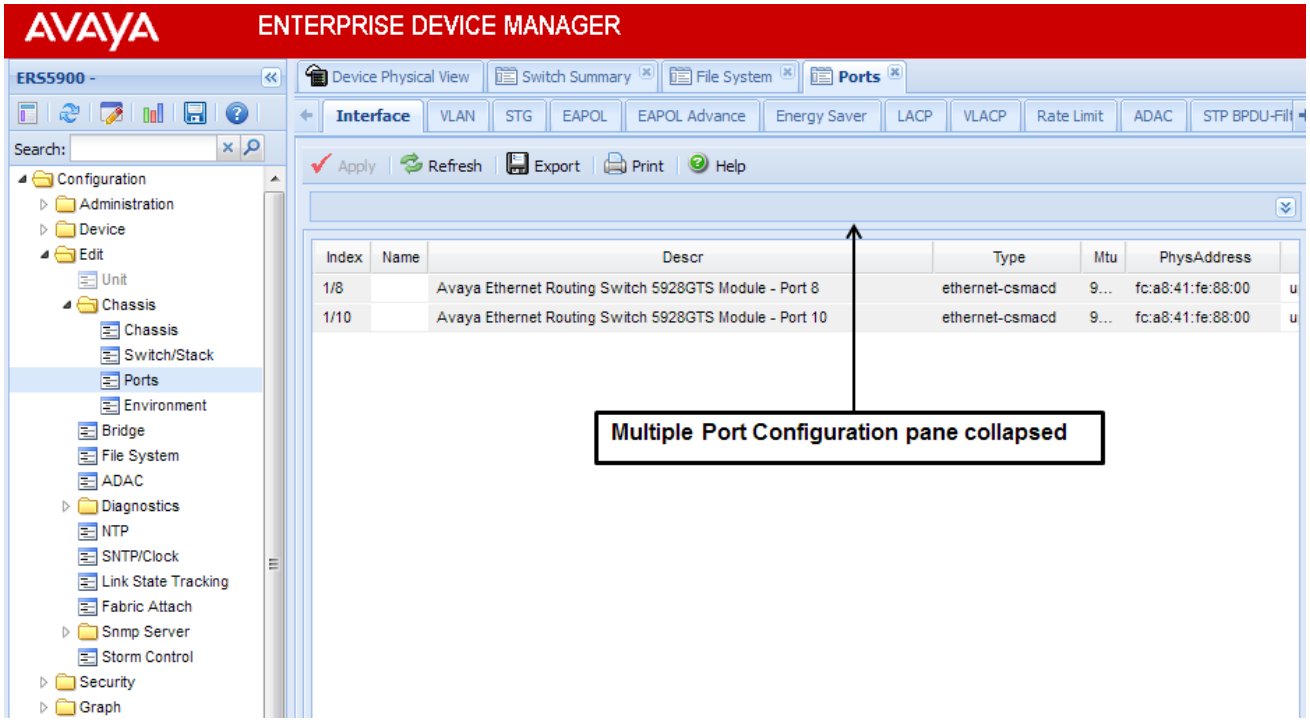


Figure 12: Interface tab—Multiple Port Configuration pane collapsed

Changes you make to a port configuration using Multiple Port Configuration are applied to the switch configuration only after you click **Apply** on the work area toolbar.

The following figure displays the location of the **Apply** button on the work area toolbar.

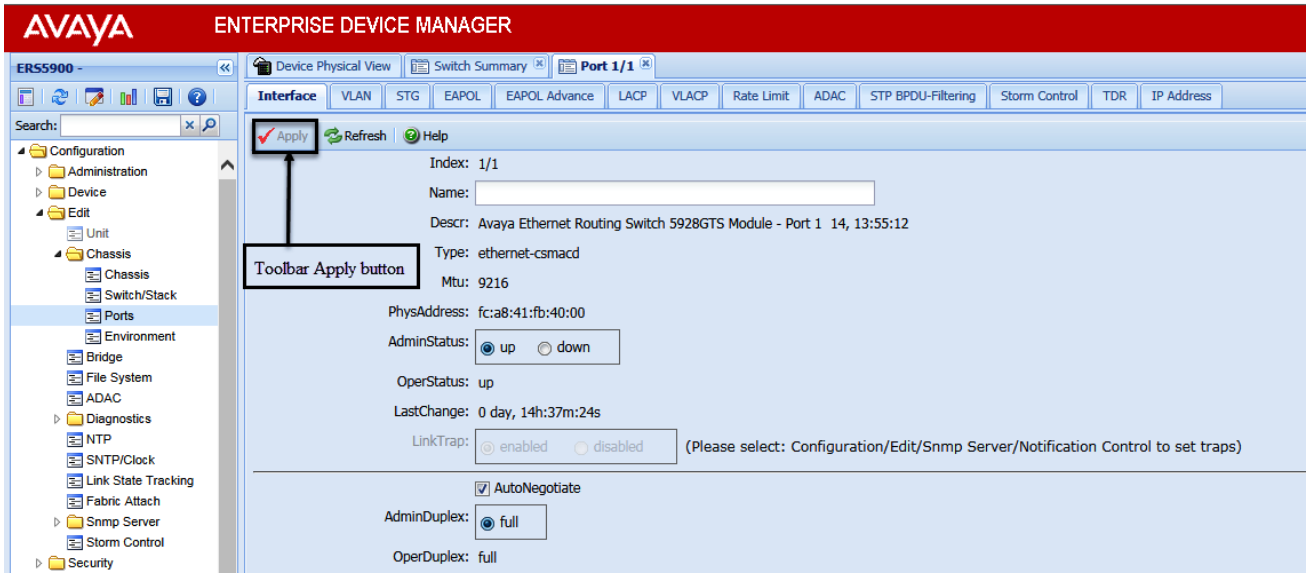


Figure 13: Toolbar Apply button

Enterprise Device Manager procedures

About this task

This section contains procedures for starting and using Enterprise Device Manager (EDM) on your switch. You can use EDM software on the switch; you do not need to install a client-based application on your computer.

Configuring EDM through ACLI

This section describes how to enable and configure the Enterprise Device Manager (EDM) using ACLI.

Enabling the web server using ACLI

About this task

The web server is enabled by default. If you assigned an IP address to the switch, you can access EDM.

If you have disabled the web server, you can use the following procedure to enable and manage the web server using ACLI. After you enable the web server, you can start EDM.

For more information about the web server, see *Configuring Security on Avaya Ethernet Routing Switch 4900 and 5900 Series, NN47211-505*.

Procedure

1. Enter Global Configuration mode:

   ```
   enable

   configure terminal
   ```

2. To enable the web server, enter the following command:

   ```
   web-server enable
   ```

Disabling the web server using ACLI

About this task

Use the following procedure to disable the web server using ACLI. After you disable the web server, you cannot start EDM.

Procedure

1. Enter Global Configuration mode:

   ```
   enable

   configure terminal
   ```

2. To disable the web server, enter the following command:

   ```
   web-server disable
   ```

Displaying the web server status using ACLI

About this task

Use the following procedure to display the web server status using ACLI.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

2. To display the web server status, enter the following command:

   ```
   show web-server
   ```

Variable definitions

Use the definitions in the following table to use the `show web-server` command

Variable	Definition
disable	Disable HTTP access.
enable	Enable HTTP access.
show	Show web server status.

Starting EDM

To configure and maintain your switch through a web-based graphical user interface, use the following procedure to start EDM.

Before you begin

- Ensure that the switch is running.
- Note the switch IP address.
- Ensure that the web server is enabled.
- Note the user name.
- Note the password.
- Open one of the supported web browsers.

About this task

Follow this procedure to open an EDM session on your switch.

Procedure

1. In a supported web browser, enter the IP address of the switch using one of the following formats:
   - `http://<IP Address>`
   - `https://<IP Address>`

2. Enter the user name.
3. Enter the password.
4. Click **Log On**.

Using shortcut menus

About this task

In the EDM Device Physical View, you can use shortcut menus to edit objects and apply changes.

Procedure

1. In the **Device Physical View**, select an object.
2. Right-click the object.
3. Select a function from the list.

Variable definitions

Use the descriptions in the following table to use the Device Physical View.

Field	Description
Unit	
Edit	Displays the Edit unit dialog box and tabs.
Refresh Status	Refreshes switch status.
Refresh PoE Status	Refreshes the PoE status only to units equipped with Power over Ethernet.
Refresh Port Tooltips	Refreshes the port tooltip data. Port tooltip data contains the Slot/Port, PortName, and PortOperSpeed.
Identify Unit	Identifies the switch units.
Port	
Edit	Displays the Edit port dialog box and tabs.
Graph	Displays the graph port dialog box and tabs.
Enable	Enables the port administratively.
Disable	Shuts down the port administratively.

Opening folders and tabs

The following section describes how to navigate around Enterprise Device Manager (EDM) and open folders and tabs.

Navigating EDM

About this task

Use the following procedure to navigate EDM.

Procedure

1. In the navigation pane, click the arrow located to the left of a folder to display the subfolders in the tree.
2. If there is a subfolder, double-click the folder or click the arrow to open the subfolder.
3. The primary tabs appear under the folders and subfolders. Click a tab to open it in the work area.

Undocking tabs

About this task

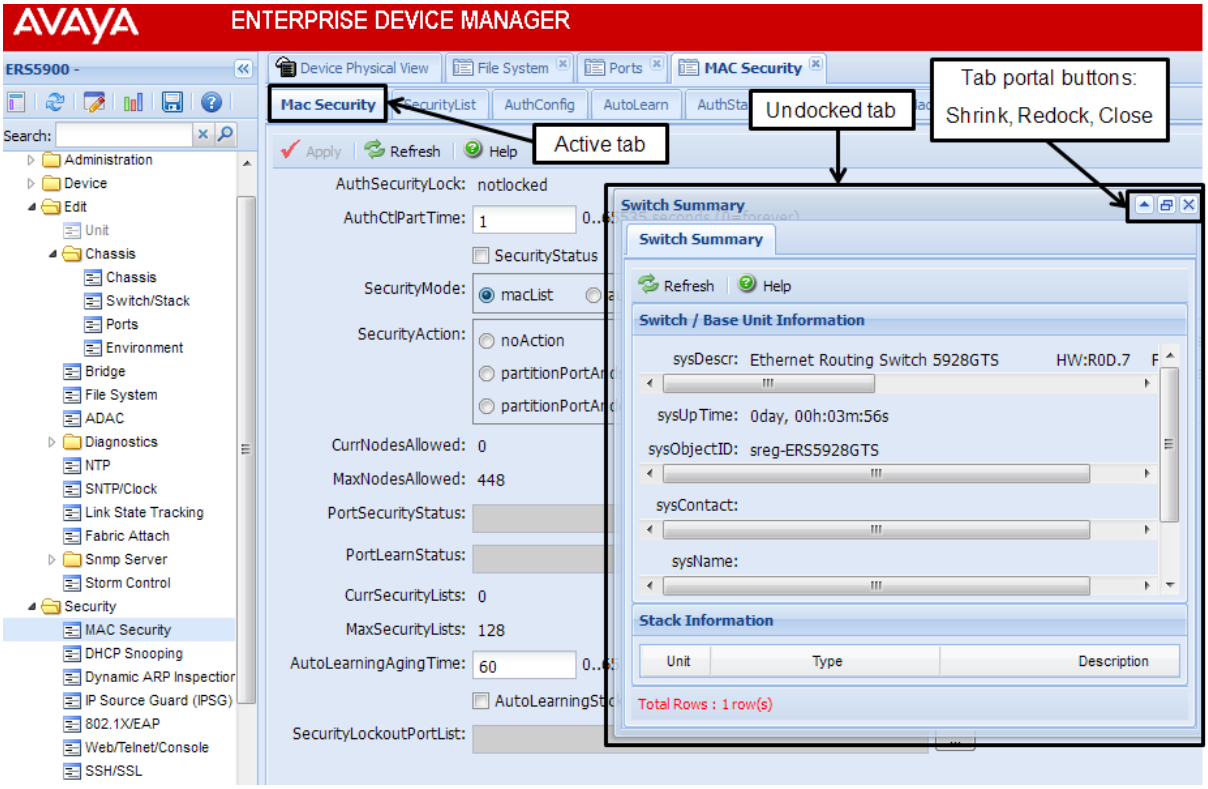
To improve certain types of configuration, you can view more than one tab at a time. To view more than one tab, you use the undock function to activate a previously-opened tab from the menu bar.

Important:

When you undock a tab to make changes, then return to another open tab, in order to see the effects of the changes you must click the **Refresh** button on the tool bar.

Procedure

1. From the menu bar, drag and drop the tab you want to open.
2. To reposition the tab in the work area, click and drag the title bar of the tab.



Docking tabs

About this task

You can re-dock an undocked tab using either of the following methods.

Procedure

To re-dock a tab, do one of the following:

- On the undocked tab, click the dock-back button (the middle button on the top right of the panel).
- On the undocked tab, click the collapse button (left button on the top right of the panel) to temporarily minimize the panel.

Using dialog boxes

Many EDM dialog boxes contain editable fields where you can enter parameter values.

Some of those parameters have predetermined values. For example, you can enable or disable a port.

Other parameter values are ranges of values or user-determined values. For example, the value for the Location on the **Base Unit Info** tab is a location name you can choose and enter.

Editable fields in EDM dialog boxes appear in white.

EDM dialog box buttons

The following table describes buttons that appear in the EDM dialog boxes and tabs. Not all buttons appear in all dialog boxes.

Table 4: EDM dialog box buttons

Button	Description
Apply	Apply the changes you entered in fields on a tab or dialog box. The button is unavailable until you change a parameter.
Insert	Open a dialog box to create a new entry for a table; then, from the dialog box, insert the new entry in the table.
Delete	Delete a selected entry.
Refresh	Refresh the information in the window. Every time you click **Refresh**, the switch polls the system and displays new information.
Close	Close the tab or dialog box and discard changes you made to fields.
Help	Open context-sensitive Online Help.
Stop	Stop the current action.
Copy	Copy selected items to your computer memory clipboard.
Paste	Paste the contents of your computer clipboard.
Undo	Undo last action.
Export	Copy data to external media.
Print	Print the contents of any displayed table.
Graph	Graph selected data.
Export (on Graph dialog boxes)	Save the current table in ASCII format in a file you specify. The table contains tabs that you can use to import this file into a text editor or spreadsheet for further analysis.
Clear Counters	Clear the existing number of counters and restart the counters.
Clear all	Clear the numbers of all statistics and restart the count.

Editing a dialog box

About this task

Use the following procedure to edit a dialog box.

Procedure

1. In the work area, double-click the field you want to edit.
2. Select a value from the list of predetermined values or enter the value for a field without preset values.

   Important:

   Enter an IP address in decimal format: <xxx>.<xxx>.<xxx>.<xxx>.

   Enter a MAC address in hexadecimal format: xx:xx:xx:xx:xx:xx.

Time is a value based on the delta from the switch boot-up time.

3. Click **Apply**.

Inserting an entry in a dialog box

About this task

Use the following procedure to insert an entry in a dialog box.

Procedure

1. On the tool bar, click **Insert** .
2. Enter changes in the Insert dialog box.
3. Click **Insert** to submit the entry and return to the active tab in the work area.
4. On the toolbar, click **Apply** to commit the change to the configuration. The system refreshes the view and errors display in a browser pop-up window.

Deleting an entry from a dialog box

About this task

Use the following procedure to delete an entry from a dialog box.

Procedure

1. Highlight the entry.
2. Click **Delete**.

Editing objects

You can edit objects in the Device Physical View from the navigation tree or the shortcut menu. Changes are not applied to the running configuration until you click **Apply**.

Editing an object using the shortcut menu

About this task

Use the following procedure to edit an object using the shortcut menu.

Procedure

1. On the Device Physical View, you can:
   - Right-click an object.
   - Press **Ctrl+click** to select several objects; then right-click.
   - Click and drag to select a group of objects; then right-click.
   - Click an entire device; then right-click.
2. From the list, click **Edit**.

3. Edit the applicable tab in the work area.
4. Click **Apply**.

Editing file system elements

About this task

Use the procedure and job aid in this section to edit file system elements.

Procedure

1. Click the **Edit** arrow to open the Edit menu.
2. Click **File System** to open the File System tab in the work area.

   For more information about configuration files and licensing, see “Configuration files fundamentals” and “Feature licensing fundamentals” in *Using ACLI and EDM on Avaya Ethernet Routing Switch 4900 and 5900 Series, NN47211-104*.

Job aid—File System

The following table describes the tabs in the File System work area.

Tab	Description
Config/Image/Diag file	Use this tab to view information about and acquire image, configuration, and firmware files.
Ascii Config Script File	Use this tab to acquire ASCII configuration files.
License File	Use this tab to view and manage software licensing.
Save Configuration	Use this tab to save the current configuration manually or automatically.
FLASH	Use this tab to view the current number of erase or writes on a unit or stack.
USB Files	Use this tab to view the configuration files stored on a USB device.
Help File Path	Use this tab to designate the file path to the EDM help files. You can use a USB mass storage device or a TFTP server.

Job aid—navigation tree

The following table describes the folders and subfolders in the navigation tree.

Folder	Description
Administration	Use the tabs associated with the sub-folders in the Administration folder to perform the following functions: • Quick Start—Set up IP/Community/VLAN and Trap Receiver.

Table continues…

Folder	Description
	• Remote Access—Enable or disable telnet, SNMP, web page, and SSH. • Run Script—Configures parameters for the switch, according to Avaya best practices. Run Scripts are available for IP Office, LLDP, and ADAC. • MIB Web Page—Perform MIB Walk.
Device	Rediscover Device—Use the Rediscover Device selection to refresh the session. **Warning:** All existing tabs are lost.
Edit	Use the tabs associated with the subfolders in the Edit folder to view or change parameters for the currently-selected object. Subfolders in the Edit folder are: • Unit: Unit, PoE, and Unit Stats • Chassis: Chassis, Switch/Stack, Ports, and Environment • Bridge • File System • ADAC • Diagnostics: Port Mirrors, L2Ping/L2 Trace Route, CFM, Topology, System Log. 802.1AB: LLDP, Port dot1, Port dot3, Port MED, Avaya • NTP • SNTP/Clock • Link State Tracking • Fabric Attach • Snmp Server: MIB View, User, Community, Host, Notification Control • Storm Control
Security	Use the tabs associated with the sub-folders in the Security folder to view or change security settings. Sub-folders in the Security folder are: • General • MAC Security • DHCP Snooping

Table continues…

Folder	Description
	• Dynamic ARP Inspection (DAI) • IP Source Guard (IPSG) • 802.1X/EAP • Web/Telnet/Console • SSH/SSL • RADIUS • TACACS+
Graph	Use the tabs associated with the subfolders in the Graph folder to view statistics and produce graphs of the statistics. Subfolders in the Graph folder are: • Chassis • Port—To view or graph statistics for a port, first select a port on the Device Physical View.
Power Management	Use the tabs associated with the subfolders in the Power Management folder to view and configure Power over Ethernet (PoE) settings and to view and configure Energy Saver settings. Subfolders in the Power Management folder are: • PoE • Energy Saver PoE is only available for switches equipped with Power over Ethernet.
VLAN	Use the tabs associated with the subfolders in the VLAN folder to configure or view information about VLANs, Spanning Tree, and Multi-Link Trunking. Subfolders in the VLANs folder are: • VLANs • Spanning Tree: Globals, STG, RSTP, MSTP • MLT/LACP • SLPP
IS-IS	Use the tabs associated with the subfolders in the IS-IS folder to configure or view information about SPBM. Sub-folders in the IS-IS folder are: • IS-IS

Table continues…

Folder	Description
	• SPBM • Stats
IP	Use the tabs associated with the subfolders in the IP folder to configure IP routing functions. Subfolders in the IP folder are: • IP • TCP/UDP • OSPF • RIP • VRRP • Multicast • MVR • IGMP • PIM • DHCP Relay • UDP Forwarding • Policy
IPv6	Use the tabs associated with the subfolders in the IPv6 folder to set up IPv6 routing functions. Subfolders in the IPv6 folder are: • IPv6 • FHS • MLD • RIPng • TCP/UDP • Tunnel • DHCP Relay
QoS	Use the tabs associated with the subfolders in the QoS folder to configure quality of service and set up QoS policies and filters. Subfolders in the QoS folder are: • QoS Devices • QoS Rules • QoS

Table continues…

Folder	Description
	• QoS Agent • QoS UBP/Traffic Profile • QoS Queue Stats
Serviceability	Use the tabs associated with the subfolders in the Serviceability folder to monitor traffic flows using IPFIX, and to monitor and configure remote monitoring. Subfolders in the Serviceability folder are: • IPFIX • RMON: Alarms, Control • sFLOW • SLA monitor
Help	Use the tabs associated with the subfolders in the Help folder to access help and support for the following: • Device Manager Basic • Support Portal (Avaya) • Legend: Up, Down, No Link, Standby, Testing, Unmanageable, and Loopback.

Example 1: Configuring multiple Interface ports using EDM

About this task

The following procedure provides sample steps for configuring multiple interface ports using the Multiple Port Configuration function and the **Edit** > **Chassis** > **Ports** > **Interface** work flow. When you use this work flow you must first select ports on the Device Physical View.

Procedure

1. On the Device Physical View, select a port or ports.
2. From the navigation tree, double-click **Edit**.
3. From the Edit tree, double-click **Chassis**.
4. From the Chassis tree, click **Ports**.
5. Click the **Interface** tab.
6. To change the configuration of the selected ports, in the Multiple Port Configuration pane, double-click the cell beneath the column heading that represents the parameter you want to change and do one of the following:
   - Select a value from a drop-down list.
   - Type a value in the cell.
7. In the **Make Selection** pane, click **Apply Selection**.

The changes appear in the table.

8. On the **Interface** tab toolbar, click **Apply** to apply the changes to the switch configuration.

Example 2: Configuring multiple ports using EDM

The following procedure provides sample steps for configuring multiple ports using the Multiple Port Configuration function and the **Security** > **MAC Security** > **AutoLearn** workflow. When you use this, and similar workflows, you can select ports directly from the Multiple Port Configuration pane on the configuration tab. If you use the **Edit** > **Chassis** > **Ports** workflows you must first select ports on the Device Physical View.

Procedure steps

1. From the navigation tree, double-click **Security**.
2. From the Security tree, click **MAC Security**.
3. Click the **AutoLearn** tab.
4. In the work area, in the **Make Selection** section of the **Multiple Port Configuration** pane, click the **Switch/Stack/Ports** ellipsis (...) to open the **Port Editor** dialog.
5. In the **Port Editor** window, click the ports you want to configure.

   Note:

   Tto configure all ports, click **All**.

6. Click **OK** to return to the Make Selection pane.

   The ports you selected appear in the **Switch/Stack/Ports** section.

7. To change the configuration of the selected ports, in the **Multiple Port Configuration** pane, double-click the cell beneath the column heading that represents the parameter you want to change and perform one of the following actions:
   - Select a value from a drop-down list.
   - Type a value in the cell.
8. In the **Make Selection** pane, click **Apply Selection**.

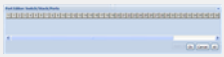
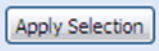
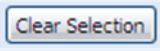
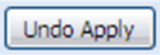
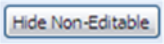
   The changes appear in the table.

9. On the **AutoLearn** tab toolbar, click **Apply** to apply the changes to the configuration.

Job aid—Buttons and dialog boxes in the Multiple Port Configuration pane

Button or dialog box name	Button or dialog box	Description
Switch/Stack/Ports:		Opens the Port Editor dialog box.

Table continues…

Button or dialog box name	Button or dialog box	Description
Port Editor		Provides a list of all ports on the switch or stack. • Click **OK** to accept port selections and return to the Multiple Port Configuration pane. • Click **Cancel** to return to the Multiple Port Configuration pane. • Click **All** to select all ports and return to the Multiple Port Configuration pane.
Apply Selection		Applies port selections and parameter changes to the Multiple Port Configuration pane and the port data table for review.
Clear Selection		Clears Multiple Port Configuration selections.
Undo Apply		Deletes port changes applied in the Multiple Port Configuration pane.
Hide Non-Editable		Displays only those parameters that are editable in the Multiple Port Configuration pane for the selected ports.

Graphing statistics

About this task

You can graph statistics for an entire device, a group of ports, or a single port.

Procedure

1. In the Device Physical View, select one of the following:
   - A port
   - A group of ports
   - A device
2. In the navigation tree, double-click **Graph**.
3. In the Graph tree, select one of the following:
   - **Chassis**

- **Port**

4. In the work area, select a tab.
5. On the tab, select information to graph. To export the information to another application, on the task bar click **Export Data**.
6. To create the graph, on the task bar, click a graph type.

Getting EDM online help files for embedded EDM

Because help files are not included with the embedded EDM software files on the switch, you need to download the help files to a TFTP destination and use ACLI to configure a path from your switch to the help files. You can also use a USB mass storage device to contain help files for switches equipped with a USB port.

If you are using COM to manage your switch, help resides with COM and you do not need to use these procedures.

Downloading help files

Before you begin

- An available TFTP server— ensure that the TFTP path differs from the path you use to download switch software,

  OR

  A USB mass storage device and switch equipped with a USB port

About this task

Use the following procedure to download help files.

Caution:

Do not install EDM help files on a PCMCIA or Flash card.

Procedure

1. To obtain EDM help files for the embedded element manager, perform one of the following actions:
   - Go to the Avaya support site at http://support.avaya.com and locate the help files for the appropriate product.

     OR

   - Select the help file from the software CD-ROM.
2. Perform one of the following actions:
   - Download the help file to a TFTP server.

     OR

   - Download the help file to a USB mass storage device.

3. Unzip the help file in the TFTP server directory.

Configuring the path to the help files using ACLI

About this task

Use the following procedure to configure the path to the help files.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

2. At the command prompt, enter the following ACLI command:

   ```
   edm help-file-path <path name> <tftp address | usb> <filename>
   ```

Variable definitions

Use the definitions in the following table to use the `edm help-file-path` command.

Variable	Definition
path name	Specifies the path name you created for EDM help files. The path name is stored in NVRAM.
TFTP address	Specifies the EDM TFTP server IP address. Use this address only for EDM help files. If you do not specify a TFTP server address, the system uses the address specified most recently. **Warning:** Because the TFTP server address is stored in NVRAM, each time the system returns to the default configuration, you must reconfigure the path to EDM online help.
usb *<unit>*	Specifies the unit number where the USB mass storage device that contains the help files resides. The unit number is an integer from 1 through 8.

Configuring the help file path using EDM

About this task

Use the following procedure to configure the path to the help files.

Procedure

1. In the navigation tree, double-click **Edit** or click the Edit arrow to open the Edit menu.
2. Click **File System** to open the File System work area.
3. In the work area, click the **Help File Path** tab.

4. In the Help TFTP Source Directory Path field, enter the path to the help file storage location; for example, tftp://aaa.bbb.ccc.ddd/file_name, usb://file_name, or usb://unit number/file_name.

Chapter 5: Configuration files fundamentals

This chapter provides fundamental information about working with configuration files.

Configuration files are ASCII text files that allow the administrator to change the switch configuration quickly.

Procedures to manage binary configuration files are included in the Enterprise Device Manager section.

Procedures for Universal Serial Bus (USB) devices apply only to switch models with USB ports.

ACLI configuration files

You can use ACLI to display, store, and retrieve configuration files, and to save the current configuration.

Configuration file management procedures

About this task

Perform the procedures in this section to display, store, restore, and save configuration files using ACLI. For a list of the command variables and definitions, see Variable definitions — ACLI commands on page 50.

Viewing current configuration using ACLI

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. At the prompt, enter `show running-config`.

Saving current configuration to SFTP server using ACLI

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. At the prompt, enter `copy running-config sftp [verbose] [module <applicationModules>] [filename <WORD>] ([address {<A.B.C.D> | <ipv6addr>}]) username <WORD> [password] .`

Saving current configuration to TFTP server using ACLI

Procedure

1. Enter Privileged EXEC mode:

   `enable`

2. At the prompt, enter `copy running-config tftp [address {<A.B.C.D> | <WORD>}] [module <applicationModules>][filename <WORD>][verbose]`

Saving current configuration to USB device using ACLI

Procedure

1. Enter Privileged EXEC mode:

   `enable`

2. At the prompt, enter `copy running-config usb [filename <WORD>][module <applicationModules>][unit<1-8>] [verbose]`

Saving current configuration to flash memory using ACLI

Procedure

1. Enter Privileged EXEC mode:

   `enable`

2. At the prompt, enter `copy config nvram`.

Restoring system configuration from USB device using ACLI

Procedure

1. Enter Privileged EXEC mode:

   `enable`

2. At the prompt, enter `copy config usb {filename <name> | unit <1-8>}`.

Restoring system configuration from TFTP using ACLI

Procedure

1. Enter Privileged EXEC mode:

   `enable`

2. At the prompt, enter `copy tftp config address <A.B.C.D> | <WORD> filename <name> .`

Restoring system configuration from SFTP using ACLI

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. At the prompt, enter `copy sftp config address <A.B.C.D> | <WORD> filename <name> username <WORD>[password] .`

Copying stack unit configuration to standalone switch using ACLI

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. At the prompt, enter `copy [ tftp | sftp ] config address <A.B.D.C> | <WORD> filename <name> unit <unit number> .`

Downloading a configuration file automatically using ACLI

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. Enter `configure network load-on-boot {disable | use-bootp |use-config} address {A.B.C.D | <WORD>} filename <WORD>` to configure a switch or stack to automatically load a configuration file.

Variable definitions — ACLI commands

Use the definitions in the following table to use the `copy running-config` command.

Variable	Definition
{tftp | sftp | usb}	Specifies whether to save the file to a TFTP or SFTP server or a USB mass storage device. **Note:** Not all switch models have a USB port.
address <*A.B.C.D*> | <*WORD*>	Specifies the address of the TFTP or SFTP server. • A.B.C.D—specifies the IP address • WORD—specifies the IPv6 address
filename <*name*>	Specifies the configuration file name.
username <*WORD*>	Specifies the username for downloading a configuration file automatically using ACLI.
[password]	Specifies the password for downloading a configuration file automatically using ACLI.

Use the definitions in the following table to use the `copy config tftp unit` command.

Variable	Definition
address <*A.B.C.D*> | <*WORD*>	Specifies the address of the TFTP or SFTP server. • A.B.C.D—specifies the IP address • WORD—specifies the IPv6 address
filename <*name*>	Specifies the configuration file name.
unit <*unit number*>	Specifies the stack unit number.

Use the definitions in the following table to use the `configure network load-on-boot` command.

Variable	Definition
load-on-boot *{disable | use-bootp | use-config}*	Specifies the setting to automatically load a configuration file when the system starts *disable* disables the automatic loading of the configuration file. *use-bootp* specifies loading the ASCII configuration file at startup and using BootP to obtain values for the TFTP or SFTP address and file name. *use-config* specifies loading the ASCII configuration file at startup and using the locally configured values for the TFTP or SFTP address and file name. If you omit the variables, the system immediately downloads and runs the ASCII configuration file.

Viewing USB files

About this task

Use this procedure to display configuration files stored on a USB device in a unit in a stack.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. Enter `show usb-files`.

Viewing USB host port information

About this task

Use this procedure to display the USB host port information for a unit in a stack.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. Enter `show usb-host-port [unit <1-8>]`.

Example

The following is an output example for the `show usb-host-port` command.

```
Switch(config)#show usb-host-port
USB Host Port Info - Stand-alone Enabled
----------------------------------------
  Vendor Info      : Imation
  Product ID       : Flash Drive
  Product Revision : 1.00
  Number of Blocks : 1974271
  Bytes per Block  : 512
  Total Capacity   : 1010826752
```

Downloading an ASCII configuration file from a TFTP server or USB device

About this task

Use this procedure to download an ASCII configuration file from a TFTP server or USB device to the local ASCII file system. You can then boot the system from the local file system. In a stack, the downloaded ASCII configuration file will be saved in all units.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

2. To download from a TFTP server, enter the following command at the command prompt:

   ```
   copy tftp script <address> filename <filename> block <1-2> [name]
   ```

3. To download from a USB device, enter the following command at the command prompt:

   ```
   copy usb script filename <filename> block <1-2> [name]
   ```

Next steps

Proceed with the `boot script` command to boot the system with the local ASCII configuration file.

Once the system boots successfully with an ASCII configuration file, the system configuration is saved to the binary configuration. If the system boot fails, the system resets and boots with the current binary configuration.

Variable definitions

The following table describes the fields in the `copy [tftp] [usb] script` command.

Variable	Description
address <*A.B.C.D*> | <*WORD*>	Specifies the address of the TFTP server to load the script. • A.B.C.D - specifies the IPv4 address

Table continues…

Variable	Description
	• WORD - specifies the IPv6 address
filename *<WORD>*	Specifies the name of the file to be retrieved.
block *<1–2> [name <WORD>]*	Specifies the block from which the ASCII configuration file is to be downloaded. If you do not specify a name for the block name, the default is the name of the file retrieved.

ACLI pipe filter functions

This section provides the supported pipe (|) filter functions.

Count filter

This filter counts the number of lines in the output of a command.

Syntax

```
<ACLI command> | count
```

Example

```
#show running-config | count
Count: 100 lines
```

Display output matching a pattern

The match filter displays only the output lines that match the given pattern.

Syntax

```
<ACLI command> | match <pattern> [field <number>] [ignore-case] [header <number>]
```

Parameter	Description
pattern	Specifies the regular expression to be matched against each line of output. Quotations are required if the parameter contains spaces.
field <number>	Specifies the field in each line to be matched against the pattern. Fields are separated by white spaces and are counted starting with 1 for the left-most field.
ignore-case	Specifies letters to be matched in the pattern regardless of case.
header <number>	Specifies a number of lines from the start of the output to be displayed unchanged before trying to match the pattern. Useful to keep the header of a table intact.

Examples

```
#show interfaces | match 1000 header 3
              Status                    Auto                          Flow
Port Trunk Admin   Oper Link LinkTrap Negotiation  Speed   Duplex Control
---- ----- ------- ---- ---- -------- ----------- -------- ------ -------
```

```
5          Enable  Up   Up   Disabled Enabled     1000Mbps Full   Asymm
9          Enable  Up   Up   Enabled  Enabled     1000Mbps Full   Asymm
```

```
#show interfaces | match disabled field 5 ignore-case
5          Enable  Up   Up   Disabled Enabled     1000Mbps Full   Asymm
11         Enable  Down Down Disabled Enabled
```

Ignore output that matches a pattern

The ignore filter displays only the output lines that do not match the given pattern. The lines matching the pattern are discarded.

Syntax

```
<ACLI command> | except <pattern> [field <number>] [ignore-case] [header <number>]
```

Parameter	Description
pattern	Specifies the regular expression to be matched against each line of output. Quotations are required if the parameter contains spaces.
field <number>	Specifies the field in each line to be matched against the pattern. Fields are separated by white spaces and are counted starting with 1 for the left-most field.
ignore-case	Specifies letters to be matched in the pattern regardless of case.
header <number>	Specifies a number of lines from the start of the output to be displayed unchanged before trying to match the pattern. Useful to keep the header of a table intact.

Example

```
#show interfaces | except down ignore-case header 3
              Status                      Auto                          Flow
Port Trunk Admin   Oper Link LinkTrap Negotiation  Speed   Duplex Control
---- ----- ------- ---- ---- -------- ----------- -------- ------ -------
5          Enable  Up   Up   Disabled Enabled     1000Mbps Full   Asymm
9          Enable  Up   Up   Enabled  Enabled     1000Mbps Full   Asymm
```

Display output from the first match of a pattern

The find filter displays the output of a command starting from the first line that matches the given pattern.

Syntax

```
<ACLI command> | find <pattern> [field <number>] [ignore-case] [header <number>]
```

Parameter	Description
pattern	Specifies the regular expression to be matched against each line of output. Quotations are required if the parameter contains spaces.
field <number>	Specifies the field in each line to be matched against the pattern. Fields are separated by white spaces and are counted starting with 1 for the left-most field.
ignore-case	Specifies letters to be matched in the pattern regardless of case.

Table continues…

Parameter	Description
header <number>	Specifies a number of lines from the start of the output to be displayed unchanged before trying to match the pattern. Useful to keep the header of a table intact.

Example

```
#show interfaces | find 47 header 3
              Status                      Auto                          Flow
Port Trunk Admin   Oper Link LinkTrap Negotiation  Speed   Duplex Control
---- ----- ------- ---- ---- -------- ----------- -------- ------ -------
47         Enable  Down Down Enabled  Enabled
48         Enable  Down Down Enabled  Enabled
49         Enable  Down Down Enabled  Disabled    10Gbps   Full   Asymm
50         Enable  Down Down Enabled  Disabled    10Gbps   Full   Asymm
51         Enable  Down Down Enabled  Disabled    10Gbps   Full   Asymm
52         Enable  Down Down Enabled  Disabled    10Gbps   Full   Asymm
```

Do not paginate output of a single command

The no-more command filter temporarily disables pagination for the output of an ACLI command. When the lines of output exceed the terminal length, you are not prompted to continue or to quit but the entire output of the command continues to be displayed. The effect is similar to setting terminal length 0 but only for the current command.

Example

```
#show interfaces | no-more
```

Display only the first few lines of output

The head filter limits the output of a command to the first few lines. If a number is not specified then the first 10 lines are shown.

Syntax

```
<ACLI command> | head [<number>]
```

Parameter	Description
<number>	Specifies the number of lines to keep from the beginning of the output.

Example

```
#show interfaces | head
              Status                      Auto                          Flow
Port Trunk Admin   Oper Link LinkTrap Negotiation  Speed   Duplex Control
---- ----- ------- ---- ---- -------- ----------- -------- ------ -------
1          Enable  Down Down Enabled  Enabled
2          Enable  Down Down Enabled  Enabled
3          Enable  Down Down Enabled  Enabled
4          Enable  Down Down Enabled  Enabled
5          Enable  Up   Up   Disabled Enabled     1000Mbps Full   Asymm
6          Enable  Down Down Enabled  Enabled
7          Enable  Down Down Enabled  Enabled
```

Display only the last few lines of output

The tail filter limits the output of a command to the last few lines. If a number is not specified, then the last 10 lines are shown.

Syntax

```
<ACLI command> | tail {[<number>] | from-line <number> } [header
<number>]
```

Parameter	Description
<number>	Specifies the number of lines to keep from the end of the output.
from-line <number>	Specifies the line from which to start the output.
[header]	Same description as for the other commands which allow it.

Example

```
#show interfaces | tail 3
50          Enable  Down Down Enabled  Disabled    10Gbps   Full   Asymm
51          Enable  Down Down Enabled  Disabled    10Gbps   Full   Asymm
52          Enable  Down Down Enabled  Disabled    10Gbps   Full   Asymm
```

Regular expressions

Match, except, and find filters require a pattern parameter, which is a regular expression.

Pattern parameter	Description
regular expression	Zero or more branches separated by the pipe symbol ‘|’ It matches anything that matches one of the branches.
branch	Zero or more pieces, concatenated. For instance, it matches a match for the first, followed by a match for the second.
piece	An atom possibly followed by `*', `+', or `?'. An atom followed by `*' matches a sequence of 0 or more matches of the atom. An atom followed by `+' matches a sequence of 1 or more matches of the atom. An atom followed by `?' matches a match of the atom, or the null string.
atom	A regular expression in parentheses (matching a match for the regular expression), a range, `.' (matching any single character), `^' (matching the null string at the beginning of the input string), `$' (matching the null string at the end of the input string), a `\' followed by a single character (matching that character), or a single character with no other significance (matching that character).
range	A sequence of characters enclosed in `[ ]'. It normally matches any single character from the sequence. If the sequence begins with `^', it matches any single character not from the rest of the sequence. If two characters in the sequence are separated by `-', this is shorthand for the full list of ASCII characters between them (for example, `[0-9]' matches any decimal digit). To include a literal `]' in the sequence, make it the first character (following a possible `^'). To include a literal `-', make it the first or last character.
	If the pattern includes white spaces then it must be enclosed in quotation marks.
	To match characters which have a special meaning – one of *.+?^$()[]\ – they must be escaped. They must be preceded by a single backslash if the pattern is not in quotation marks and by double backslash if the pattern is enclosed in quotes.

Regular expression examples

Regular expression	Description
est	Matches a string containing “est”. For example, “testing”.
A(d+)r	Matches a string containing an ‘A’ followed by at least one ‘d’ followed by ‘r’. For example, “Address”.
^1	Matches a ‘1’ only at the beginning of a line.
192\.[0-9]+\.[0-9]+\.[0-9]+	Matches a string representing a valid IPv4 address starting with 192.
“192\\.[0-9]+\\.[0-9]+\\.[0-9]+”	Matches a string representing a valid IPv4 address starting with 192 when the pattern is enclosed in quotes. The un-escaped ‘.’ means “any single character” which would make the regular expression accept invalid addresses as well.

Enterprise Device Manager configuration files

This section describes how to use Enterprise Device Manager (EDM) to store and retrieve configuration files.

Using EDM, you can :

- Store the current ASCII switch configuration file on a TFTP or SFTP server or a USB storage device
- Retrieve an ASCII configuration file from a TFTP or SFTP server or USB storage device to apply to a switch
- Store or retrieve a binary configuration file
- Manually save the current configuration to flash memory

You can check file upload transfer status of ASCII configuration files in the ScriptLastStatusChange field on the **Edit** > **File System** > **Ascii Config Script Files** tab. During upload transfer, the status is `manualUploadInProgress`. To check changes to file transfer status, click **Refresh**. After the file transfer is complete the status displays as either `manualUploadPassed` or `manualUploadFailed`.

You can check file download transfer status of ASCII configuration files in the ScriptLastStatusChange field on the **Ascii Config Script Files** tab. During download transfer, the status is `manualDownloadInProgress`. To check changes to file transfer status, click **Refresh**. After the file transfer is complete, the status displays as either `manualDownloadPassed` or `manualDownloadFailed`.

You can also designate an ASCII configuration file to download automatically at switch startup.

To control which ASCII configuration files load automatically, at switch startup use the fields in the table on the **Edit** > **File System** > **Ascii Config Script Files**.

The **Ascii Config Script Files** table provides a way to control which ASCII configuration files are loaded, and in which order, because you can designate the path to an ASCII configuration file, a boot priority value, and a script index priority for each entry in the table.

Depending on which script source you designate for an entry, the system uses the designated paths in the Ascii Config Script Files table in one of the following ways:

- The system uses BootP to download the designated ASCII configuration file from the network, according to the specified IP address and file name.
- The system downloads the designated ASCII configuration file from a TFTP or SFTP server, according to the specified IP address and file name.
- The system downloads the ASCII configuration file from a USB device, according to the specified file name.

In the **boot priority** column on the Ascii Config Script Files tab, if you designate a non-zero boot priority value for any but the first row, the switch attempts to load the configuration file at startup. The first entry in the configuration files table is assigned a fixed boot priority value of 0 and it is not available to load at startup.

The switch attempts to load each ASCII configuration file with a non-zero priority value, in ascending order, until a script file loads successfully. If ASCII configuration file boot priority values are equal, the switch attempts to load the configuration files according to their script index order.

In the **Script Source** column in the Ascii Config Script Files table, if you designate a USB device in a stand-alone switch as the load-on-boot path to the ASCII configuration file, the switch downloads the specified configuration file from the USB port of the switch.

If you designate a USB device in a stack unit as the load-on-boot path to the ASCII configuration file entry, the system downloads the specified configuration file from the USB port of the designated unit or, if no unit is designated, from the USB port of the base unit.

If the system cannot download the configuration file, or if the script does not execute successfully, the script operational status changes to `autoDownloadFailed` and the system downloads the next entry in the table.

When the configuration file downloads and executes without errors, the operational status for the entry changes to `autoDownloadPassed`.

ASCII and binary configuration file procedures

Perform the procedures in this section to use EDM to manage ASCII and binary configuration files. For more information about fields on the **Config/ImageDiag file** tab, used to manage binary configuration files, see Config Image Diag file tab field descriptions job aid on page 63.

Procedures for USB devices apply only to switch models equipped with USB ports.

Storing current ASCII configuration on a TFTP server using EDM

Procedure

1. From the navigation tree, double-click **Edit** to open the Edit tree.

2. Click **File System**.
3. Click the **Ascii Config Script Files** tab.
4. Double-click the **ScriptSource** field and type the TFTP server address and the configuration file name in the following format:

   `tftp://<ip address>/<filename>`

   The entry is limited to a maximum of 327 characters.
5. Double-click the **ScriptManual** field and then click **Upload**.
6. On the toolbar, click **Apply**.

Storing current ASCII configuration on a SFTP server using EDM

Procedure

1. From the navigation tree, double-click **Edit** to open the Edit tree.
2. Click **File System**.
3. Click the **Ascii Config Script Files** tab.
4. Double-click the **ScriptSource** field and type the SFTP server address and the configuration file name in the following format:

   `sftp://<ip address>/<filename>`

   The entry is limited to a maximum of 327 characters.
5. Double-click the **ScriptManual** field and then click **Upload**.
6. On the toolbar, click **Apply**.

Storing current ASCII configuration on a USB device using EDM

Procedure

1. From the navigation tree, double-click **Edit** to open the Edit tree.
2. Click **File System**.
3. Click the **Ascii Config Script Files** tab.
4. Double-click the **ScriptSource** field and type:

   `usb://<filename>` to store the configuration file on a USB device in a stand-alone unit

   or

   `usb://<unit number>/<filename>` to store the configuration file on a USB device in a unit in a stack.
5. Double-click the **ScriptManual** field and then click **Upload**.
6. On the toolbar, click **Apply**.

Downloading an ASCII Configuration from a TFTP server using EDM

Procedure

1. From the navigation tree, double-click **Edit** to open the Edit tree.
2. Click **File System**.
3. Click the **Ascii Config Script Files** tab.
4. Double-click the **ScriptSource** field and type the TFTP server IP address and configuration file name in the following format:

   `tftp://<ip address>/<filename>`
5. Double-click the **ScriptManual** field and then click **Download**.
6. On the toolbar, click **Apply**.

Downloading an ASCII configuration from a SFTP server using EDM

Procedure

1. From the navigation tree, double-click **Edit** to open the Edit tree.
2. Click **File System**.
3. Click the **Ascii Config Script Files** tab.
4. Double-click the **ScriptSource** field and type the SFTP server IP address and configuration file name in the following format:

   `sftp://<ip address>/<filename>`
5. Double-click the **ScriptManual** field and then click **Download**.
6. On the toolbar, click **Apply**.

Downloading an ASCII configuration from a USB device using EDM

Procedure

1. From the navigation tree, double-click **Edit** to open the Edit tree.
2. Click **File System**.
3. Click the **Ascii Config Script Files** tab.
4. Double-click the **ScriptSource** field and type the configuration file name in the following format:

   `usb://<filename>` for a USB device in a standalone unit

   or

   `usb://<unit number>/<filename>` for a USB device in a unit in a stack
5. Double-click the **ScriptManual** field, and then click **Download**.
6. On the toolbar, click **Apply**.

Downloading a configuration file automatically using EDM

Procedure

1. From the navigation tree, double-click **Edit**.
2. Click **File System**.
3. Click the **Ascii Config Script Files** tab.
4. Double-click the **ScriptSource** field and type the TFTP server IP address and the configuration file name in the following format:

   `tftp://<ip address>/<filename>`.

   Substitute `usb://<filename>` to retrieve a configuration from a USB device in a stand-alone unit or `usb://<unit number>/<filename>` if the USB device resides in a unit in a stack.

   If you retrieve the configuration file from a BOOTP server, type `bootp://` in the **ScriptSource** field.
5. Double-click the **ScriptBootPriortity** field and type a digit between 1 and 127 for the script priority. Use **0** if you are not using the entry at startup.
6. On the toolbar, click **Apply**.

Storing a binary configuration file on a TFTP server using EDM

Procedure

1. From the navigation tree, double-click **Edit**.
2. Click **File System**.
3. Click the **Config/Image/Diag file** tab.
4. In the **TftpServerInetAddressType** dialog box, click the applicable address type button.
5. In the **TftpServerInetAddress** field, enter the TFTP server IP address.
6. In the **BinaryConfigFilename** field, enter the configuration file name.
7. In the **BinaryConfigUnitNumber** field enter the stack unit number or, for a stand-alone switch, enter `0`.
8. In the **Action** box, click **upldConfig**.
9. On the toolbar, click **Apply**.

Storing a binary configuration file on a USB device using EDM

Procedure

1. From the navigation tree, double-click **Edit** .
2. Click **File System**.
3. Click the **Config/Image/Diag file** tab.

4. In the **BinaryConfigFilename** field, enter the configuration file name.
5. In the **BinaryConfigUnitNumber** field enter the stack unit number or, for a stand-alone switch, enter `0`.
6. In the **UsbTargetUnit** field, enter the stack number where the USB device is inserted.
7. In the **Action** field, click **upldConfigtoUsb**.
8. On the toolbar, click **Apply**.

Downloading a binary configuration file from a TFTP server using EDM

Procedure

1. From the navigation tree, double-click **Edit**.
2. Click **File System**.
3. Click the **Config/Image/Diag file** tab.
4. In the **TftpServerInetAddress** field, enter the TFTP server IP address.
5. In the **BinaryConfigFilename** field, enter the configuration file name.
6. In the **BinaryConfigUnitNumber** field, enter the stack unit number, or for a stand-alone switch, enter `0`.
7. In the **Action** field, click **dnldConfig**.
8. On the toolbar, click **Apply**.

Downloading a binary configuration file from a USB device using EDM

Procedure

1. From the navigation tree, double-click **Edit**.
2. Click **File System**.
3. Click the **Config/Image/Diag file** tab.
4. In the **BinaryConfigFilename** field, enter the configuration file name.
5. In the **BinaryConfigUnitNumber** field, enter the stack unit number, or for a stand-alone switch, enter `0`.
6. In the **UsbTargetUnit** field, enter the stack unit number where the USB resides.
7. In the **Action** field, click **dnldConfigFromUsb**.
8. On the toolbar, click **Apply**.

Saving current configuration to flash memory manually using EDM

Procedure

1. From the navigation tree, double-click **Edit**.
2. Click **File System**.

3. Click the **Save Configuration** tab.
4. Ensure that **AutosavetoNvramEnabled** is not selected.
5. In the **Action** field, click **copyConfigToNvram**.
6. On the toolbar, click **Apply**.
7. On the toolbar, click **Refresh** to check progress.

Job aid—Config/Image/Diag file tab field descriptions

The following table provides information about fields on the Config/Image/Diag file tab.

Field name	Description
TftpServerInetAddressType	Specifies the IP version of the TFTP server address
TftpServerInetAddress	Specifies the TFTP server IP address
BinaryConfigFilename	Specifies the name of the binary configuration file
BinaryConfigUnitNumber	Specifies the unit number of a switch in a stack
ImageFileName	Specifies the software image file name
FWFileName(Diagnostics)	Specifies the diagnostics file name
USBTargetUnit	Specifies the unit number containing the USB port
Action	• **dnldConfigFromUSB**—Downloads a configuration to the switch from a USB device. • **DnldImgIfNewer**—Downloads a new software image to the switch only if it is newer than the current image. • **dnldFw**—Downloads a new diagnostic software image to the switch. • **dnldImgFromUsbNoReset** —Downloads the diagnostic image from a USB and does not reset the switch. • **dnldConfig**—Downloads a configuration file to the switch. • **upldConfigToUsb**—Uploads a configuration file to a USB device. • **dnldImgNoReset**—Downloads a new software image to the switch without a switch reset. • **dnldFwNoReset**—Downloads a new diagnostic software image to the switch without a switch reset. • **upldConfig**—Uploads a configuration file to the switch from a designated location. • **dnldImg**—Downloads a new software image to the switch. • **dnldImgFromUsb**—Downloads a new software image to the switch from a USB device. • **dnldFwFromUsb**—Downloads a new diagnostic software image to the switch from a USB device.

Table continues…

Field name	Description
	• **dnldImgFromSftp**—Downloads a new software image to the switch from the SFTP server. This option replaces the software image on the switch regardless of whether it is newer or older than the current image. • **dnldFwFromSftp**—Downloads a new diagnostic software image to the switch from the SFTP server. This option replaces the image regardless of whether it is newer or older than the current image. • **dnldConfigFromSftp**—Downloads a configuration to the switch from the SFTP server. • **upldConfigToSftp**—Uploads a configuration to the SFTP server. • **dnldImgFromSftpNoReset**—Downloads the agent image from a SFTP server anddoes not reset the switch. • **dnldFwFromSftpNoReset**—Downloads the diagnostic image from a SFTP server and does not reset the switch.
Status	Displays the status of the most recent action since last switch restart.

Displaying USB file information using EDM

About this task

Displays the general information of the files on a USB flash device.

Procedure

1. From the navigation tree, click **Edit**.
2. Click **File System**.
3. Click the **USB Files** tab.