Configuring Systems on Avaya Ethernet Routing Switch 4800 Series

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Contents

Chapter 1: Introduction

Purpose

This document provides the information and procedures required to configure the switch software.

Chapter 2: New in this release

The following sections detail what is new in *Configuring Systems on Avaya Ethernet Routing Switch 4800 Series*, NN47205-500 for release 5.9.

Features

See the following sections for information about feature changes:

Booting with an ASCII configuration file from the local file system

This feature allows you to download an ASCII configuration file from a TFTP server or USB to the local file system and boot the system with the local ASCII configuration file. Two ASCII configuration files are supported, one in each block. When you download and save an ASCII configuration file to the local file system, the system deletes the old file in that block.

For Release 5.9.2, , the maximum size of an ASCII configuration file is limited to 500 kilobytes.

This feature introduces the following ACLI commands:

- show script block
- copy tftp script
- copy usb script
- boot nvram block
- boot script block

For more information, see Booting with an ASCII configuration file from the local system on page 52.

Other changes

See the following section for information about changes that are not feature-related.

Document title change

Configuring Systems on Avaya Ethernet Routing Switch 4000 Series is renamed *Configuring Systems on Avaya Ethernet Routing Switch 4800 Series*.

Introduction chapter

Information about Related resources and Support are moved to the last chapter in this document.

Chapter 3: System configuration fundamentals

This chapter describes the system configuration fundamentals for the switch.

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	No entrance command, default mode	`exit`

Table continues…

Command mode and sample prompt	Entrance commands	Exit commands
`Switch>`		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
• VLAN
• Loopback
	From Global Configuration mode:
	To configure a port, enter `interface ethernet <port number>`.
	To configure a VLAN, enter `interface vlan <vlan number>`.
	To configure a loopback, enter `interface loopback <loopback number>`.
		To return to Global Configuration mode, enter
		`Exit`
		To return to Privileged EXEC mode, enter
		`end`
		To exit ACLI completely, enter
		`logout`

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`.

Table continues…

Command mode and sample prompt	Entrance commands	Exit commands
		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`.

Feature licensing

You require either an Advanced License or a Trial License to enable certain features. These software licenses support the following features:

- Open Shortest Path First (OSPF)
- Equal Cost Multi Path (ECMP)
- Virtual Router Redundancy Protocol (VRRP)
- Protocol Independent Multicast-Sparse mode (PIM-SM)

Trial License

A trial license can be obtained to try out the advanced license features for 30 days. Trial licenses can be obtained from Avaya and installed using the ACLI. After the trial period expires, the licensed feature is disabled.

For more information about licenses, see *Using ACLI and EDM on Avaya Ethernet Routing Switch 4800 Series*, NN47205-102.

Hardware features

This section provides information about the hardware features of the switch platforms.

Table 2: Hardware description by model

Model	Key Features
4850GTS	48 GIG & 2 SFP PLUS 2 SFP+
4850GTS-PWR+	48 GIG PoE+ & 2 SFP PLUS 2 SFP+
4826GTS	24 GIG & 2 SFP PLUS 2 SFP+
4826GTS-PWR+	24 GIG PoE+ & 2 SFP PLUS 2 SFP+

Cooling fans

When you install the switch, always allow enough space on both sides for adequate air flow.

For more information about installation, see *Installing Avaya Ethernet Routing Switch 4800 Series*, NN47205-300.

Redundant power supply

The switches 4826GTS-PWR+ and 4850GTS-PWR+ have 1000 W available power from the Primary power supply (145 W is for switch use and the remainder of 855 W is available power for PoE devices). These PWR+ models support a 1000 W Redundant power supply that would be used for PoE. Both primary and secondary power supplies are swappable and mount inside the switch chassis.

The switch 4850GTS supports 300 W primary and redundant power supply. Both primary and secondary power supplies are swappable and mount inside the switch chassis.

Stacking capabilities

You can use the switches in either of the following configurations:

- stand-alone
- stack

The switches have a built-in cascade port to stack up to eight units. The cascade port provides a 48 gigabits per second (Gbps) cascading mechanism for the stacks.

A stack can consist of any combination of switches.

Important:

All units in the stack must use the same software version.

To set up a stack, perform the following procedure:

1. Power down all switches.
2. Set the Unit Select switch in the back of the non-base units to the off position.
3. Set the Unit Select switch in the back of the base unit to base position.
4. Ensure all the cascade cables are properly connected and screwed into the unit.
5. Power up the stack.

Auto Unit Replacement

You can use the Auto Unit Replacement (AUR) feature to replace a unit from a stack while retaining the configuration of the unit. This feature requires the stack power to be on during the unit replacement.

The main feature of the AUR is the ability to retain the configuration (CFG) image of a unit in a stack during a unit replacement. The retained CFG image from the old unit is restored to the new unit. Because retained CFG images are kept in the Dynamic Random-Access Memory (DRAM)of the stack, the stack power must be on during the procedure.

Important:

For Auto Unit Replacement to function properly, the new unit and the existing units in the stack must all run the same version of software. In case of a two-high stack, only replacement of a non-base unit is currently supported.

You can manually restore an associated configuration (same unit number) of a unit in a stack including base unit (if the stack is of 3 units or bigger).

Important:

If the base unit is reset before you restore the configuration, the base unit erases the saved configuration information for non-base units.

The following information also relates to this feature:

- The new unit must be the same hardware configuration as the old, including the same number of ports.
- If you add a new unit with a different hardware configuration, the configuration of this unit is used.
- If you add a new unit with the same hardware configuration, the previous configuration of the new unit is lost. The configuration is overwritten with the restored configuration from the stack.

- You can enable or disable this feature at any time using ACLI. The default mode is ENABLE.
- Customer log messages are provided.

Important:

After booting a stack, use the ACLI command `show stack auto-unit-replacement` from a unit console to find out if that unit is ready for replacement.

The ACLI command `show stack auto-unit-replacement` provides the following information:

```
Auto Unit Replacement  Auto-Restore:  Enabled Auto Unit Replacement Auto-Save:  Disabled

Unit #       Last Configuration-Save Time-Stamp    Ready For Replacement
1                      3 days 10:23:02                                Yes
2                      0 days 00:01:40                                No
3                      3 days 10:12:33                                Yes
6                      3 days 10:12:34                                No
8                      3 days 10:12:35                                Yes
```

Table 3: show stack auto-unit-replacement fields

Field	Definition
Auto Unit Replacement Auto-Restore	**Enable:** During a unit replacement, the configuration is automatically restored to the new unit.
	Disable: During a unit replacement, the configuration is not restored automatically.
Auto Unit Replacement Auto-Save	**Enable:** The current configuration of a unit in stack including base unit (if the stack is of 3 units or bigger) is automatically saved to the base unit.
	Disable: The current configuration of a unit in stack including the base unit (if the stack is of 3 units or bigger) is not automatically saved to the base unit.
Last Configuration-Save Time-Stamp	The system-up time of the non-base unit recorded when the non-base unit sends configuration to the base unit.
Ready for Replacement	**Yes:** The current configuration of the non-base unit is saved to the base unit. This unit is currently ready for replacement.
	No: The current configuration of the non-base unit is not saved to the base unit. The latest changes of the configuration of the non-base unit is lost if the unit is replaced with a new unit.

For information about configuring AUR with ACLI, see AUR configuration on page 134. For information about configuring AUR with Enterprise Device Manager (EDM), see Configuring AUR using EDM on page 287.

AUR function

The CFG mirror image is a duplicate CFG image (stored in the flash drive) of a unit in a stack. The mirror image does not reside in the same unit with the CFG image. The unit that contains the CFG

image is called the Associated Unit (AU) of the CFG mirror image. The MAC Address of the AU is called the Associated MAC Address (AMA) of the CFG mirror image.

An active CFG mirror image is a CFG mirror image that has its AU in the stack. An INACTIVE CFG Mirror Image is a CFG mirror image for which the associated AU is removed from the stack. When a CFG mirror image becomes INACTIVE, the INACTIVE CFG mirror image is copied to another unit.

The stack always keeps two copies of an INACTIVE CFG mirror image in the stack in case one unit is removed—the other unit can still provide the backup INACTIVE CFG mirror image.

CFG mirror image process

The CFG mirror image process is triggered by specific events such as:

- A power cycle
- Adding a unit
- Removing a non-base unit (NBU)
- Removing a base unit (BU)
- Restoring a CFG image
- Synchronizing with a CFG flash drive in the AU

Power Cycle

After a power cycle, all the CFG images in a stack are mirrored. Figure 1: CFG mirror process in stack on page 26 illustrates the CFG mirror images in a three-unit stack after the stack is powered on. Unit 1 is the Base Unit (BU) and all other units are Non-Base Units (NBU).

- Unit 1 (BU) contains mirror images for unit 2 (CFG 2) and unit 3 (CFG 3).
- Unit 2 (NBU) is the TEMP-BU. It contains a mirror image of unit 1 (CFG 1), in case the BU (unit 1) is removed from the stack.
- All three mirror images (CFG 1, CFG 2, and CFG 3) are active.
- Unit 2 is the AU of the CFG 2 mirror image.
- The Mac Address 2 is the AMA of the CFG 2 mirror image.

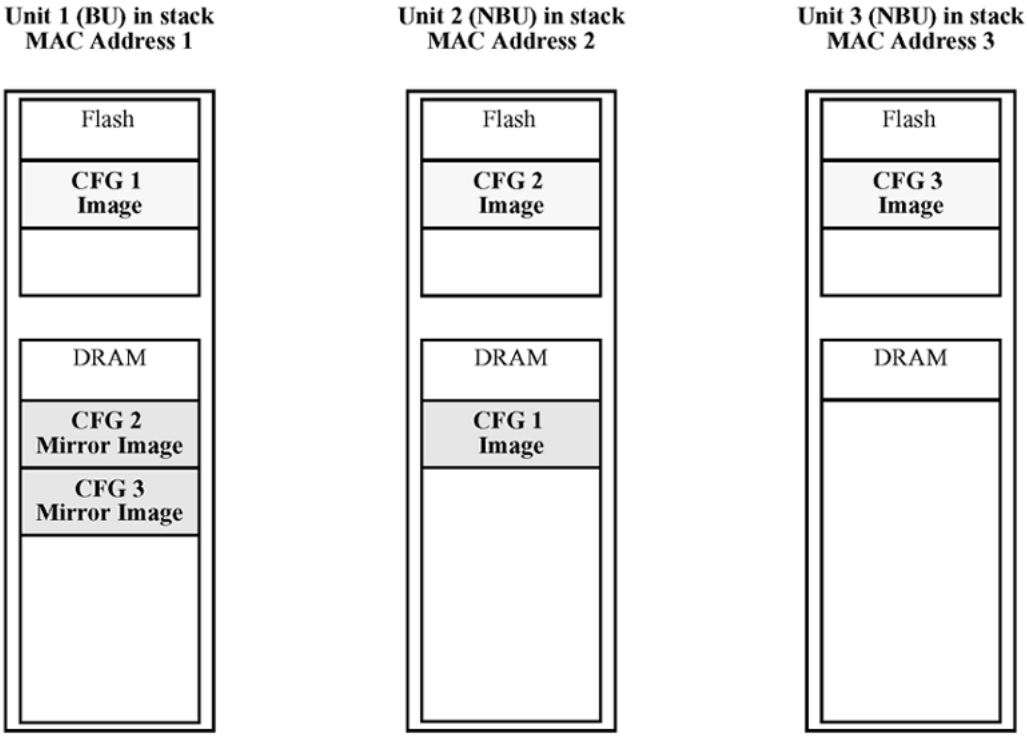


Figure 1: CFG mirror process in stack

Adding a unit

In a stack that has no INACTIVE CFG mirror images, a new unit causes the CFG image of the new unit to be mirrored in the stack. For example, in Figure 2: CFG mirror images in the stack after adding unit 4 on page 27, after you add unit 4 to the stack, the CFG 4 mirror image is created in the BU (unit 1).

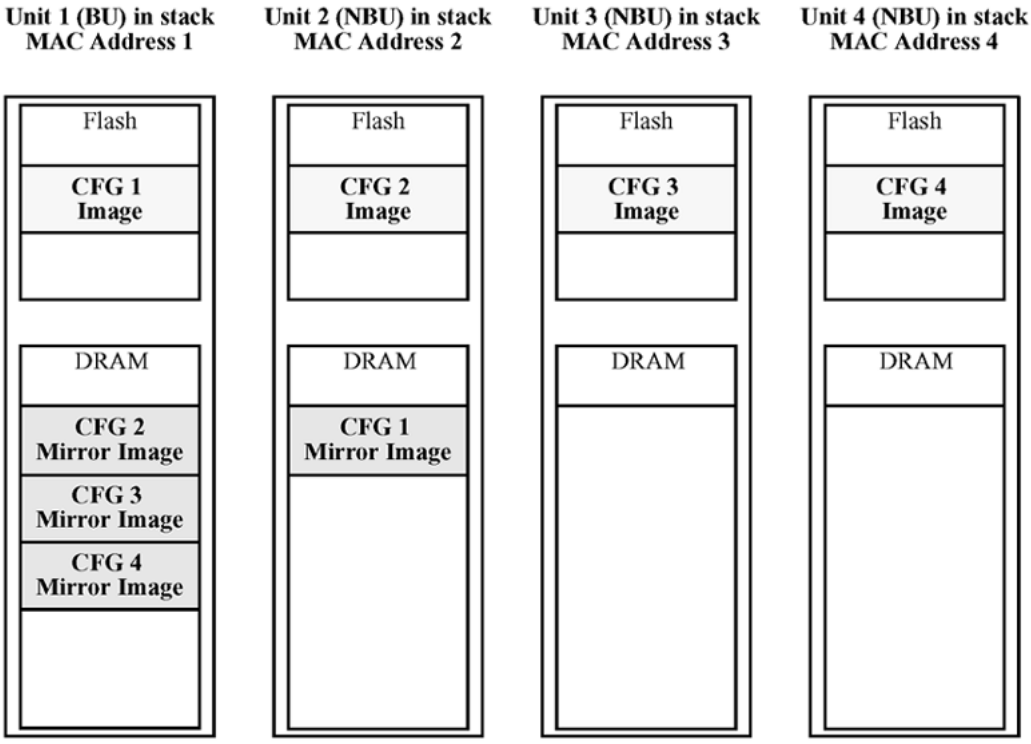


Figure 2: CFG mirror images in the stack after adding unit 4

Removing an NBU

When you remove an NBU from a stack, the related CFG mirror image in the stack becomes INACTIVE.

The AUR feature ensures that the stack always has two copies of an INACTIVE CFG mirror image. These two copies must not reside in the same unit in the stack.

For example, after you remove unit 4 from the stack shown in Figure 2: CFG mirror images in the stack after adding unit 4 on page 27, the CFG 4 mirror image becomes INACTIVE (see Figure 3: CFG mirror images after removing unit 4 on page 28). Another copy of the INACTIVE CFG 4 mirror image is also created in unit 2.

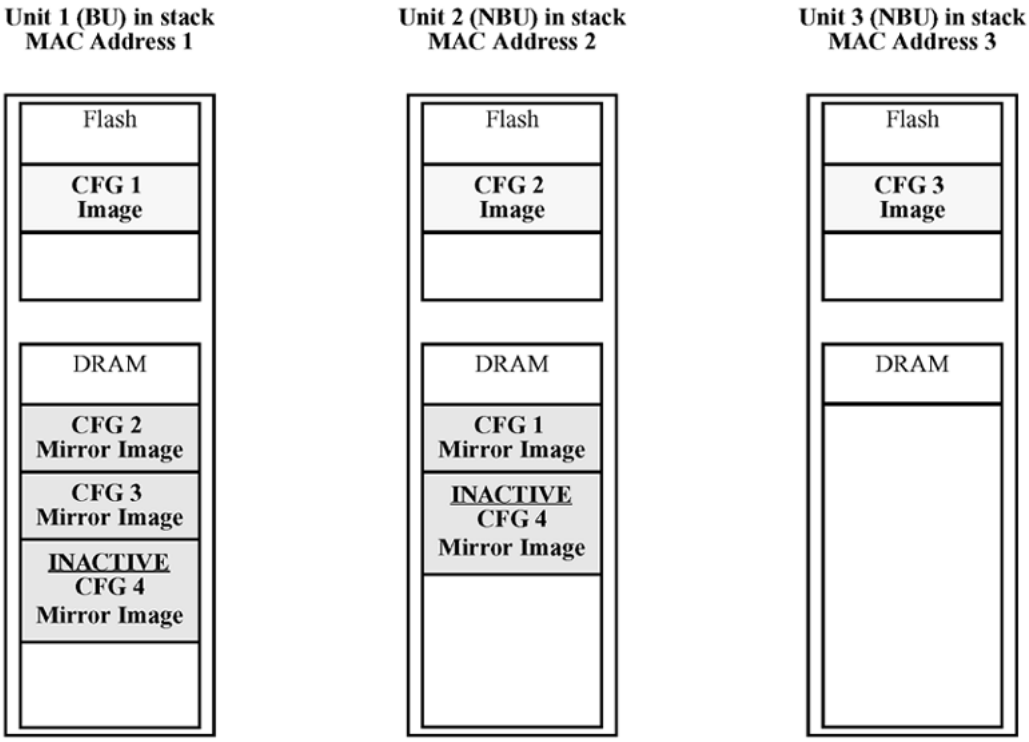


Figure 3: CFG mirror images after removing unit 4

Removing a BU

When you remove a BU, the TEMP-BU assumes the role of the BU. Because all the CFG mirror images of the NBUs reside in the removed BU, the TEMP-BU mirrors all the CFG images of the NBUs in the stack.

After you remove the BU from the stack shown in Figure 2: CFG mirror images in the stack after adding unit 4 on page 27, the TEMP-BU (unit 2) must mirror all the CFG images in the stack (see Figure 4: CFG mirror images in the stack after removing the BU (unit 1) on page 29). The feature also ensures that the stack always has two copies of an INACTIVE CFG mirror image.

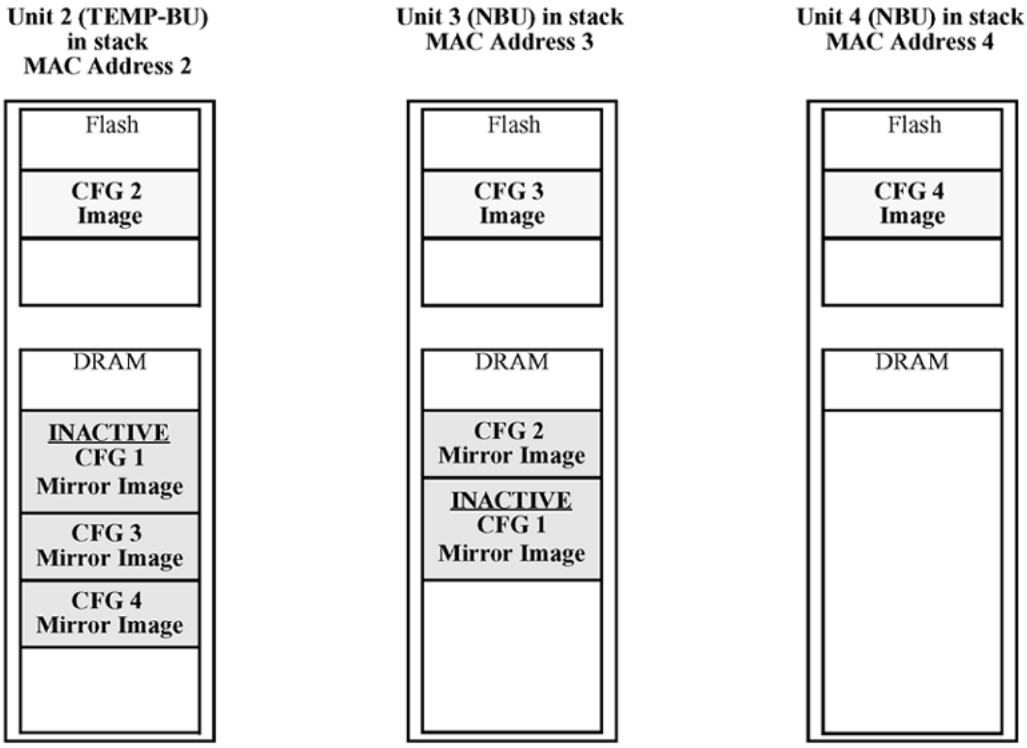


Figure 4: CFG mirror images in the stack after removing the BU (unit 1)

As shown in Figure 4: CFG mirror images in the stack after removing the BU (unit 1) on page 29:

- Unit 2 becomes the TEMP-BU.
- The CFG 1 mirror image (residing in unit 2) becomes INACTIVE.
- A second copy of the INACTIVE CFG 1 mirror image is created in unit 3.
- The TEMP-BU (unit 2) contains all CFG mirror images of the NBUs in the stack.
- The CFG 2 mirror image is created in unit 3. Unit 3 becomes the next TEMP-BU in case you remove the current TEMP-BU.

Restoring a CFG image

When you restore a CFG image, the system overwrites the CFG image of a new unit in a stack with an INACTIVE mirror image stored in the stack.

Important:

You can restore a CFG image to a new unit happens only if you meet the following conditions:

- The AUR feature is enabled.
- At least one INACTIVE CFG mirror image exists in the stack.

- The MAC address of the new unit is different from all the AMA of the INACTIVE CFG mirror images in the stack.

When you add a new unit to a stack, the image restore process consists of the following steps.

1. If more than one INACTIVE CFG mirror image is in the stack, select the one with the smallest unit ID for restoration.
2. Send the INACTIVE CFG mirror image in the stack to the new unit. The INACTIVE CFG mirror image becomes ACTIVE.

   The new unit saves the received CFG image to the flash drive and resets itself.

For example, if you add a unit 5 (MAC address 5) to the stack shown in Figure 4: CFG mirror images in the stack after removing the BU (unit 1) on page 29, the following occurs (see Figure 5: CFG mirror images in the stack after adding unit 5 on page 30):

- The INACTIVE CFG 1 mirror image is copied to the CFG 5 image. Unit 5 now has the configuration of Unit 1, which is no longer in the stack.
- The INACTIVE CFG 1 mirror image in Unit 2 becomes ACTIVE.
- The INACTIVE CFG 1 mirror image in Unit 3 is removed.
- The MAC address 5 of Unit 5 becomes the new AMA of the CFG 1 mirror image.

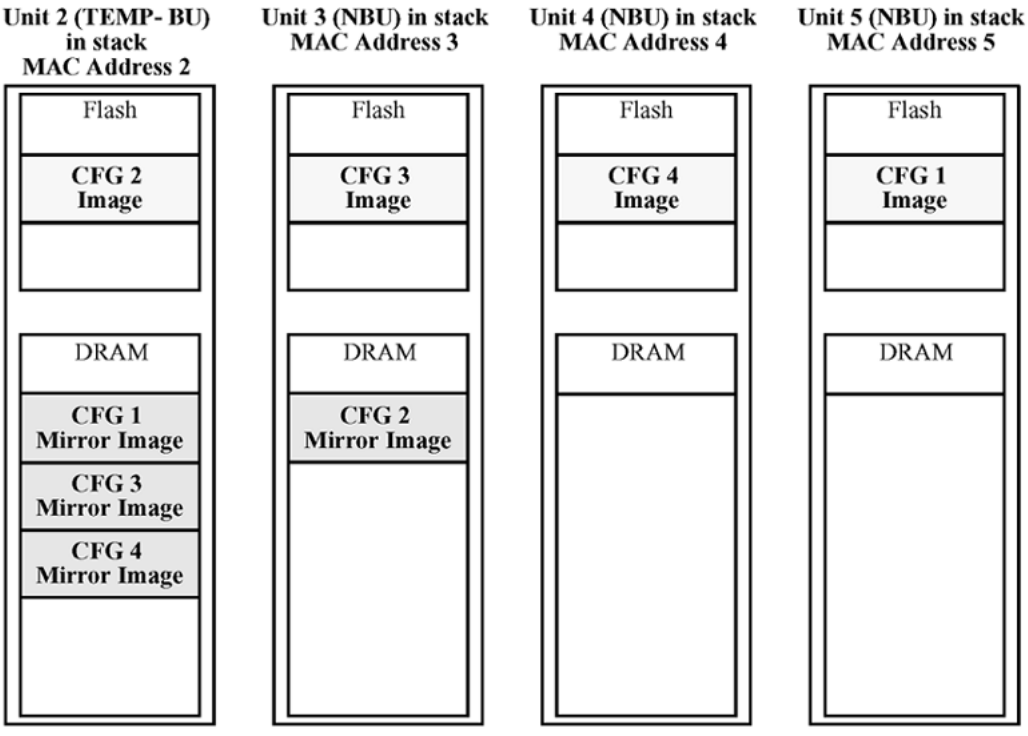


Figure 5: CFG mirror images in the stack after adding unit 5

Synchronizing the CFG mirror images with CFG images

A CFG mirror image is updated whenever a CFG flash drive synchronization occurs in the AU.

Agent Auto Unit Replacement

The Agent Auto Unit Replacement (AAUR), feature is an enhancement to the Auto Unit Replacement functionality. AAUR ensures that all units in a stack have the same software image by inspecting units joining a stack and downloading the stack software image to any unit that has a dissimilar image. AAUR is enabled by default.

Agent Auto Unit Replacement functions in the following manner:

1. When a stand-alone switch joins an AAUR-enabled stack, the switch software image is inspected.
2. If the switch software image differs from the stack software image, the AAUR functionality downloads the stack software image to the joining unit.
3. The joining unit is then reset and becomes a member of the stack upon a reboot.

The log file displays the following messages when AAUR completes successfully:

```
I 2 00:01:56:40 13 AAUR - Info: Receive request for agent image, start
transfer

I 2 00:01:56:48 14 AAUR - Info: Agent transfer finished
```

Stack Forced Mode

Stack Forced Mode allows one or both units to become stand-alone switches if a stack of two units breaks. The Stack Forced Mode allows you to manage one of the stand-alone devices from a broken stack of two with the previous stack IP address.

If you enable Stack Forced Mode on a stack, you enable Stack Forced Mode on all units in the stack. Stack Forced Mode becomes active only if the stack fails.

You can configure Stack Forced Mode through ACLI.

See Configuring Stack Forced Mode on page 139 for procedures to configure the Stack Forced Mode on a switch.

Stack Forced Mode applies to a stand-alone switch that is part of a stack of two units. When functioning in this mode, the stand-alone switch keeps the previous stack IP settings (IP address, netmask, gateway), and the administrator can reach the device through an IP connection by telnet or EDM.

If one unit fails, the remaining unit (base or non-base unit) keeps the previous stack IP settings. The remaining unit issues a gratuitous ARP packet when it enters Stack Forced Mode, in order for other devices on the network to update their ARP cache.

If the stack connection between the two units fails (a stack cable failure, for example), both stand-alone units retain the IP settings. To detect if the other stack partner is also using the previous stack IP settings, each device issues an ARP request on the IP address.

When a failure occurs in a stack of two units when Stack Forced Mode is enabled, the previous non-base unit sends out a gratuitous ARP onto the management network so that the non-base unit of a failed two-unit stack can determine if the base unit is still operational and using the stack IP address. Such a failure situation in which both the base unit and non-base unit were operational, but not part of a stack, could be possible if the two units in a stack were connected by a single stack cable and that stack cable were then removed or failed. If the previous non-base unit receives a reply from the previous base unit of the stack, the previous non-base unit knows that the previous base unit is still operational and does not take over ownership of the stack IP address, but instead uses the local switch IP address if configured. If, on the other hand, the previous non-base unit does not receive a response from the previous base unit, the previous non-base unit now takes over ownership of the stack IP address and issues a gratuitous ARP with its own MAC address. This ensures that all devices on the management VLAN have their ARP caches appropriately updated.

Stack Forced Mode allows non-EAP clients connected to the device to still authenticate themselves and maintain connectivity to the network. Non-EAP clients authenticate by the device with RADIUS, which is based on the stack IP address. In Stack Forced Mode, the device retains the IP settings of the stack of two.

The functional unit stays in Stack Forced Mode until either a reboot or it joins a stack.

A settlement timer prevents several stack failures that occur at an interval of a few seconds to lead to a device entering Stack Forced Mode after it was part of a stack larger than two units. A device enters Stack Forced Mode if and only if it was part of a stack of two for 30 seconds or longer.

If the switch is in Stack Forced Mode and you want to set a switch IPv6 address, you must first delete the active IPv6 interface and then configure the switch IPv6 address. If you use telnet, SSH or EDM to change the settings, the switch loses IPv6 connectivity to the switch. Avaya recommends that you change the settings with the Console Interface to the switch or use an IPv4 address for management.

IPv6 Management

This section provides information about the IPv6 Management feature of the switch platform.

IPv6 Management allows the user to configure an IPv6 address on the management VLAN. This enables IPv6 connectivity. The management VLAN can have both an IPv4 and an IPv6 address configured simultaneously (the switch functions as a dual stack network node).

There is no IPv6 routing support in the current phase and therefore only one IPv6 interface is associated to the management VLAN. You can perform IPv6 interface configuration (enabling, assigning IPv6 address and prefix, changing other parameters, querying interface statistics) only from ACLI or through SNMP (EDM).

IPv6 Management adds support for new standard MIBs (IP-MIB—RFC 4293, TCP-MIB—RFC 4022, UDP-MIB—RFC 4113) as well as the enterprise MIB rcIpv6.

If the switch is in Stack Forced Mode and you want to configure a switch IPv6 address, you must first delete the active IPv6 interface and then configure the switch IPv6 address. If you use telnet, SSH, or EDM to change the settings, the switch loses IPv6 connectivity to the switch. Avaya recommends that you change the settings with the Console Interface to the switch or use an IPv4 address for management.

The IPv6 header

The IPv6 header contains the following fields:

- A 4-bit Internet Protocol version number, with a value of 6
- An 8-bit traffic class field, similar to Type of Service in IPv4
- A 20-bit flow label that identifies traffic flow for additional Quality of Service (QoS)
- A 16-bit unsigned integer, the length of the IPv6 payload
- An 8-bit next header selector that identifies the next header
- An 8-bit hop limit unsigned integer that decrements by 1 each time a node forwards the packet (nodes discard packets with hop limit values of 0)
- A 128-bit source address
- A 128-bit destination address

IPv6 addresses

IPv6 addresses are 128 bits in length. The address identifies a single interface or multiple interfaces. IPv4 addresses, in comparison, are 32 bits in length. The increased number of possible addresses in IPv6 solves the inevitable IP address exhaustion inherent to IPv4.

The IPv6 address contains two parts: an address prefix and an IPv6 interface ID. The first three bits indicate the type of address that follows.

Figure 6: IPv6 address format on page 33 shows the IPv6 address format.

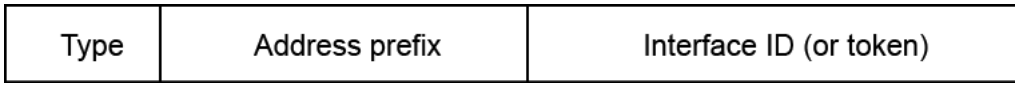


Figure 6: IPv6 address format

An example of a unicast IPv6 address is 1080:0:0:0:8:8000:200C:417A.

Interface ID

The interface ID is a unique number that identifies an IPv6 node (a host or a router). For stateless autoconfiguration, the ID is 64 bits in length.

In IPv6 stateless autoconfiguration, the interface ID is derived by a formula that uses the link layer 48-bit MAC address. (In most cases, the interface ID is a 64-bit interface ID that contains the 48-bit MAC address.) The IPv6 interface ID is as unique as the MAC address.

If you manually configure interface IDs or MAC addresses (or both), no relationship between the MAC address and the interface ID is necessary. A manually configured interface ID can be longer or shorter than 64 bits.

Address formats

The format for representing an IPv6 address is n:n:n:n:n:n:n:n n is the hexadecimal representation of 16 bits in the address.

An example is as follows: FF01:0:0:0:0:0:0:43

Each nonzero field must contain at least one numeral. Within a hexadecimal field, however, leading zeros are not required.

Certain classes of IPv6 addresses commonly include multiple contiguous fields containing hexadecimal 0. The following sample address includes five contiguous fields containing zeroes with a double colon (::): FF01::43

You can use a double colon to compress the leading zero fields in a hexadecimal address. A double colon can appear once in an address.

An IPv4-compatible address combines hexadecimal and decimal values as follows: x:x:x:x:x:x:d.d.d.d x:x:x:x:x:x is a hexadecimal representation of the six high-order 16-bit pieces of the address, and d.d.d.d is a decimal representation of the four 8-bit pieces of the address.

For example: 0:0:0:0:0:0:13.1.68.3

or

::13.1.68.3

IPv6 extension headers

IPv6 extension headers describe processing options. Each extension header contains a separate category of options. A packet can include zero or more extension headers. For more information, see Figure 7: IPv6 header and extension headers on page 34.

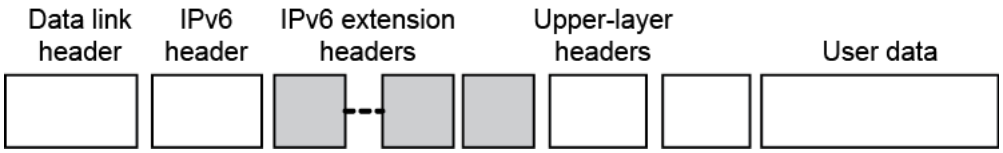


Figure 7: IPv6 header and extension headers

IPv6 examines the destination address in the main header of each packet it receives; this examination determines whether the router is the packet destination or an intermediate node in the packet data path. If the router is the destination of the packet, IPv6 examines the header extensions that contain options for destination processing. If the router is an intermediate node, IPv6 examines the header extensions that contain forwarding options.

By examining only the extension headers that apply to the operations it performs, IPv6 reduces the amount of time and processing resources required to process a packet.

IPv6 defines the following extension headers:

- The hop-by-hop extension header contains optional information that all intermediate IPv6 routers examine between the source and the destination.
- The end-to-end extension header contains optional information for the destination node.
- The source routing extension header contains a list of one or more intermediate nodes that define a path for the packet to follow through the network, to its destination. The packet source creates this list. This function is similar to the IPv4 source routing options.
- An IPv6 source uses the fragment header to send a packet larger than fits in the path maximum transmission unit (MTU) to a destination. To send a packet that is too large to fit in the MTU of the path to a destination, a source node can divide the packet into fragments and send each fragment as a separate packet, to be reassembled at the receiver.
- The authentication extension header and the security encapsulation extension header, used singly or jointly, provide security services for IPv6 datagrams.

Comparison of IPv4 and IPv6

The following table compares key differences between IPv4 and IPv6.

Table 4: IPv4 and IPv6 differences

Feature	IPv4	IPv6
Address length	32 bits	128 bits
IPsec support[1]	Optional	Required
QoS support	Limited	Improved
Fragmentation	Hosts and routers	Hosts only
Minimum MTU (packet size)	576 bytes	1280 bytes
Checksum in header	Yes	No
Options in header	Yes	No
Link-layer address resolution	ARP (broadcast)	Multicast Neighbor Discovery Messages
Multicast membership	IGMP	Multicast Listener Discovery (MLD)
Router discovery[2]	Optional	Required
Uses broadcasts	Yes	No
Configuration[3]	Manual, DHCP	Manual
[1]The switch does not support IPsec.		

Table continues…

Feature	IPv4	IPv6
[2]The switch does not perform Router discovery or advertise as a router. [3]The switch does not implement any form of automatic configuration of IPv6 address in release 5.2.		

ICMPv6

Internet Control Message Protocol (ICMP) version 6 maintains and improves upon features from ICMP for IPv4. ICMPv6 reports the delivery of forwarding errors, such as destination unreachable, packet too big, time exceeded, and parameter problem. ICMPv6 also delivers information messages such as echo request and echo reply.

Important:

ICMPv6 plays an important role in IPv6 features such as neighbor discovery, Multicast Listener Discovery, and path MTU discovery.

Neighbor discovery

IPv6 nodes (routers and hosts) on the same link use neighbor discovery (ND) to discover link layer addresses and to obtain and advertise various network parameters and reachability information. ND combines the services provided for IPv4 with the Address Resolution Protocol (ARP) and router discovery. Neighbor discovery replaces ARP in IPv6.

Hosts use ND to discover the routers in the network that you can use as the default routers, and to determine the link layer address of their neighbors attached on their local links. Routers also use ND to discover their neighbors and their link layer information. Neighbor discovery also updates the neighbor database with valid entries, invalid entries, and entries migrated to different locations.

Neighbor discovery protocol provides you with the following:

- Address and prefix discovery: hosts determine the set of addresses that are on-link for the given link. Nodes determine which addresses or prefixes are locally reachable or remote with address and prefix discovery.
- Router discovery: hosts discover neighboring routers with router discovery. Hosts establish neighbors as default packet-forwarding routers.
- Parameter discovery: host and routers discover link parameters such as the link MTU or the hop limit value placed in outgoing packets.
- Address autoconfiguration: nodes configure an address for an interface with address autoconfiguration.
- Duplicate address detection: hosts and nodes determine if an address is assigned to another router or a host.
- Address resolution: hosts determine link layer addresses (MAC for Ethernet) of the local neighbors (attached on the local network), provided the IP address is known.
- Next-hop determination: hosts determine how to forward local or remote traffic with next-hop determination. The next hop can be a local or remote router.

- Neighbor unreachability detection: hosts determine if the neighbor is unreachable, and address resolution must be performed again to update the database. For neighbors you use as routers, hosts attempt to forward traffic through alternate default routers.
- Redirect: routers inform the host of more efficient routes with redirect messages.

Neighbor discovery uses three components:

- host-router discovery
- host-host communication component
- redirect

For more information, see Figure 8: Neighbor discovery components on page 37 for the ND components.

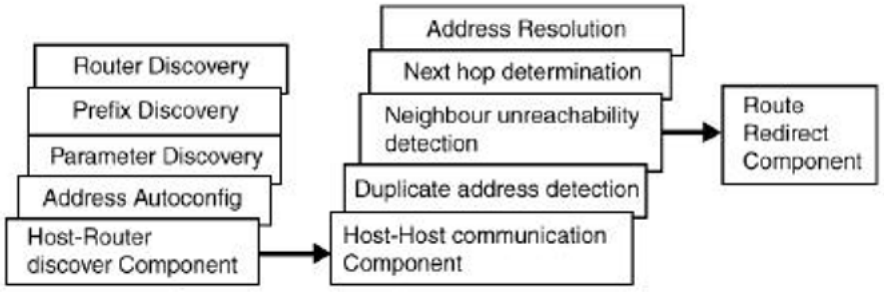


Figure 8: Neighbor discovery components

ND messages

The following table shows new ICMPv6 message types.

Table 5: IPv4 and IPv6 neighbor discovery comparison

IPv4 neighbor function	IPv6 neighbor function	Description
ARP Request message	Neighbor solicitation message	A node sends this message to determine the link-layer address of a neighbor or to verify that a neighbor is still reachable through a cached link-layer address. You can also use neighbor solicitations for duplicate address detection.
ARP Reply message	Neighbor advertisement	A node sends this message either in response to a received neighbor solicitation message or to communicate a link layer address change.
ARP cache	Neighbor cache	The neighbor cache contains information about neighbor types on the network.

Table continues…

IPv4 neighbor function	IPv6 neighbor function	Description
Gratuitous ARP	Duplicate address detection	A host or node sends a request with its own IP address to determine if another router or host uses the same address. The source receives a reply from the duplicate device. Both hosts and routers use this function.
Router solicitation message (optional)	Router solicitation (required)	The host sends this message upon detecting a change in a network interface operational state. The message requests that routers generate router advertisement immediately rather than at the scheduled time.
Router advertisement message (optional)	Router advertisement (required)	Routers send this message to advertise their presence together with various links and Internet parameters either periodically or in response to a router solicitation message. Router advertisements contain prefixes that you use for on-link determination or address configuration, and a suggested hop limit value.
Redirect message	Redirect message	Routers send this message to inform hosts of a better first hop for a destination.

Neighbor discovery cache

The neighbor discovery cache lists information about neighbors in your network.

The neighbor discovery cache can contain the following types of neighbors:

- **Static**: a configured neighbor
- **Local**: a device on the local system
- **Dynamic**: a discovered neighbor

The following table describes neighbor cache states.

Table 6: Neighbor cache states

State	Description
Incomplete	A node sends a neighbor solicitation message to a multicast device. The multicast device sends no neighbor advertisement message in response.

Table continues…

State	Description
Reachable	You receive positive confirmation within the last reachable time period.
Stale	A node receives no positive confirmation from the neighbor in the last reachable time period.
Delay	A time period longer than the reachable time period passes since the node received the last positive confirmation, and a packet was sent within the last DELAY_FIRST_PROBE_TIME period. If no reachability confirmation is received within DELAY_FIRST_PROBE_TIME period of entering the DELAY state, neighbor solicitation is sent and the state is changed to PROBE.
Probe	Reachability confirmation is sought from the device every retransmit timer period.

The following events involve Layer 2 and Layer 3 interaction when processing and affect the neighbor cache:

- Flushing the Virtual Local Area Network (VLAN) media access control (MAC)
- Removing a VLAN
- Performing an action on all VLANs
- Removing a port from a VLAN
- Removing a port from a spanning tree group (STG)
- Removing a multi-link trunk group from a VLAN
- Removing an Multi-Link Trunking port from a VLAN
- Removing an Multi-Link Trunking port from an STG
- Performing an action that disables a VLAN, such as removing all ports from a VLAN
- Disabling a tagged port that is a member of multiple routable VLANs

Router discovery

IPv6 nodes discover routers on the local link with router discovery. The IPv6 router discovery process uses the following messages:

- Router advertisement
- Router solicitation

Router advertisement

Configured interfaces on an IPv6 router send out router-advertisement messages. Router-advertisements are also sent in response to router-solicitation messages from IPv6 nodes on the link.

Router solicitation

An IPv6 host without a configured unicast address sends router solicitation messages.

Path MTU discovery

IPv6 routers do not fragment packets. The source node sends a packet equal in size to the maximum transmission unit (MTU) of the link layer. The packet travels through the network to the source. If the packet encounters a link to a smaller MTU, the router sends the source node an ICMP error message containing the MTU size of the next link.

The source IPv6 node then resends a packet equal to the size of the MTU included in the ICMP message.

The default MTU value for a regular interface is 1500.

IPv6 First Hop Security

IPv6 is expected to coexist with and eventually replace IPv4. In most of the networks, IPv6 is increasingly getting deployed and success of the deployment depends on the network security and Quality of Service (QoS) that it offers compared to IPv4.

Enhancements in IPv6 provides security in certain areas, but some of these areas are still open to exploitation by the attackers. The attack can be address theft, spoofing, and remote address resolution cache exhaustion (denial of service attacks). These security breaches can severely disrupt Layer 2 domains and networks in general. IPv6 First Hop Security (FHS) solution protects networks by mitigating these types of attacks.

First Hop Security contains the majority of the RIPE 554 mandatory requirement for Layer 2 switches. This includes the following:

- DHCPv6–guard
- Router Advertisement guard
- Dynamic IPv6 Neighbor solicitation or advertisement inspection
- Neighbor Unreachability Detection inspection
- Duplicate Address Detection inspection

For more information about First Hop Security, see *Configuring Security on Avaya Ethernet Routing Switch 4800 Series*, NN47205-505.

Jumbo frames

Jumbo frames are Ethernet frames larger than the maximum Ethernet frame size, or maximum transmission unit (MTU) specified in the IEEE 802.3 standard. For untagged frames, the maximum

standard size is 1518 bytes. For tagged frames, the maximum standard size increases by 4 bytes to 1522 bytes.

Enabling jumbo frames on a switch sets the MTU size to 9216 bytes (9220 bytes for tagged frames). By default, the jumbo frames are enabled.

Jumbo frames are used to improve network throughput and decrease CPU load. The following are the benefits when jumbo frames are enabled:

- Each frame carries a larger payload as the header sizes remain the same.
- There are fewer interrupts on the server due to fewer frames and a smaller CPU load.
- Larger frames provide better buffer utilization and forwarding performance in switches.

Flash memory storage

The following sections describe flash memory for software image upgrades.

Switch software image storage

The switch software image storage uses FLASH memory to store the switch software image.

You can update the software image with a new version from FLASH memory.

You must have an in-band connection between the switch and the TFTP load host to the software image.

Important:

When you use the TFTP address parameter to perform copy or download commands, the system overwrites the TFTP server address.

Configuration parameter storage

All configuration parameters in the configuration parameter storage are stored in FLASH memory.

These parameters are updated every 60 seconds if a change occurs, or upon execution of a reset command.

Important:

Do not power off the switch within 60 seconds of changing configuration parameters.

If the switch is powered down within 60 seconds, changes made to the configuration parameters can be lost.

Show FLASH

The Show FLASH feature displays information about the FLASH capacity and current usage, including:

- Ttotal FLASH capacity
- Size and version of boot image
- Size and version of agent image
- Size and version of diagnostic image
- Size and version of secondary agent image (if supported)
- Size of binary configuration
- Size of automatic backup configuration
- Size of secondary configuration
- Size of reserved space on FLASH
- Size of available space on FLASH

This feature is available on both single and stacked switches.

Show FLASH History

The Show FLASH History feature displays information about the number of writes or modification to the following sections:

- Diagnostics Image
- Primary Image
- Secondary Image
- Configuration Area 1
- Configuration Area 2
- Auxiliary Configuration Area
- MCFG Block
- Audit Log Area

Note:

Recording of FLASH history begins after upgrading the ERS 4000 to Release 5.7. FLASH events that occurred prior to Release 5.7 remain unknown.

Policy-enabled networking

With policy-enabled networking, you can implement classes of services and assign priority levels to different types of traffic. You can also configure policies to monitor the characteristics of traffic.

For example, in policy-enabled networking, you can determine the sources, destinations, and protocols used by the traffic. You can also perform a controlling action on the traffic when certain user-defined characteristics match.

Policy-enabled networking supports Differentiated Services (DiffServ). DiffServ is a network architecture through which service providers and enterprise network environments can offer various levels of services for different types of data traffic.

You can use DiffServ Quality of Service (QoS) to designate a specific level of performance on a packet-by-packet basis. If you have applications that require high performance and reliable service, such as voice and video over IP, you can use DiffServ to give preferential treatment to this data over other traffic.

Power over Ethernet

The Power over Ethernet 4826GTS-PWR+ and ERS 4850GTS-PWR+ routing switches provide IEEE 802.3at-compliant power or PoE+ on all 10/100/1000 RJ-45 ports.

The PoE-capable devices can deliver between 3 and 15.4(16) watts of power, supporting IEEE 802.3af or IEEE 802.3af and legacy power-device (PD) detection, whereas the PoE+ capable devices can deliver between 3 and 32 watts, with the added ability to detect IEEE 802.3at and legacy devices.

PoE refers to the ability of the switch to power network devices over an Ethernet cable. Some of these devices include IP Phones, Wireless LAN Access Points, security cameras, and access control points.

The PoE switches automatically detect the network device requirements and dynamically supply the required DC voltage at a set current to each appliance.

To configure and manage the PoE features, you must use either ACLI or EDM.

Important:

You must use a four-pair Cat 5 UTP cable for PoE. A standard two-pair UTP Cable does not support PoE.

PoE power priority and limit for IP Phones

The switch allows the provisioning of PoE priority levels and power limits when an IP Phone is discovered. Before connecting any phone to the switch, you have the option to configure two global PoE variables: the IP Phone port power limit and the IP Phone port power priority. After the switch detects an IP Phone, the PoE priority and the power limit settings are configured dynamically with the predefined values (if present). The dynamic settings are applied regardless of the discovery mechanism for IP Phones (ADAC, 802.1ab, 802.1x or any other future discovery mechanism). The dynamic settings are not applied without a proper configured IP Phone discovery method.

You can configure the power limit for the IP Phone in the range of 3 to 32 watts. The switch supports a maximum of 32 watts PoE power for each IP Phone on models 4850GTS-PWR+ and 4826GTS-PWR+. The actual power allocated, however, is limited by the power available from the system power pool.

Once the system applies the IP Phone dynamic values, they are read-only until the IP Phone disconnects from the supplying power port. You can change the global IP Phone settings for the next IP Phone connection or the PoE settings of the port for the next consuming power device. The port settings are kept, even it they are not applied, while an IP Phone is connected on the particular port.

Note:

The dynamic values of IP Phone power priority and power limit per port are available only if an IP Phone is connected on the port. When the IP Phone disconnects, the PoE port power priority and power limit return to previously-configured values.

Port mirroring

With port mirroring, also referred to as *conversation steering*, you can designate a single switch port as a traffic monitor for a specified port.

You can specify *port-based* mirroring for ingress and egress at a specific port, or address-based mirroring, either source or destination. You also can attach a probe device, such as an Avaya StackProbe*, or equivalent, to the designated monitor port.

For more information about port mirroring, see *Configuring System Monitoring on Avaya Ethernet Routing Switch 4800 Series*, NN47205-502.

Important:

Use ACLI to configure port mirroring.

Auto-MDI/X

The term auto-MDI/X refers to automatic detection of transmit and receive twisted pairs.

When auto-MDI/X is active, straight or crossover Cat5 cables can provide connection to a port. If autonegotiation is disabled, auto-MDI/X is not active.

Auto-polarity

Auto-polarity refers to the ability of the port to compensate for positive and negative signals being reversed on the receive cables.

With autonegotiation enabled, auto-polarity automatically reverses the polarity of a pair of pins from positive to negative or negative to positive. This corrects the polarity of the received data, if the port detects that the polarity of the data is reversed due to a wiring error. If autonegotiation is disabled, auto-polarity is not active.

Time Domain Reflectometer

The Time Domain Reflectometer (TDR) is used to test Ethernet cables connected to switch ports for defects (such as short pin and pin open), and display the results.

When you use the TDR to test a cable with a 10/100 MB/s link, the link is interrupted for the duration of the test and restored when the test is complete. Because ports that operate at slower speeds do not use all of the connected pins, test results for a port with a 10/100 MB/s link can be less detailed than test results for a port with a 1Gb/s link.

You can use the TDR to test cables from 5 to 120 meters in length with a margin of accuracy between 3 and 5 meters.

The TDR cannot test fibre-optic cables.

Autosensing and autonegotiation

The switches are autosensing and autonegotiating devices:

- The term autosense refers to the ability of a port to sense the speed of an attached device.
- The term autonegotiation refers to a standard protocol (IEEE 802.3u or 802.3z or 802.3ab) that exists between two IEEE-capable devices. Autonegotiation enables the switch to select the best speed and duplex modes.

Autosensing occurs when the attached device cannot autonegotiate or uses a form of autonegotiation that is not compatible with the IEEE 802.3z autonegotiation standard. If it is not possible to sense the duplex mode of the attached device, the switch reverts to half-duplex mode.

When autonegotiation-capable devices are attached to the switch, the ports negotiate down from 1000 Mb/s and full-duplex mode until the attached device acknowledges a supported speed and duplex mode.

Custom Autonegotiation Advertisements

You can use the Custom Autonegotiation Advertisements (CANA) feature to control the speed and duplex settings that each Ethernet port of the device advertises as part of the autonegotiation process.

Without CANA, a port with autonegotiation enabled advertises all speed and duplex modes supported by the switch and attempts to establish a link at the highest common speed and duplex setting. By using CANA, you can configure the port to advertise only certain speed and duplex settings, thereby establishing links only at these settings, regardless of the highest commonly supported operating mode.

CANA provides control over the IEEE802.3x flow control settings advertised by the port, as part of the autonegotiation process. You can set flow control advertisements to Asymmetric or Disabled.

You might not want a port to advertise all supported speed and duplex modes in the following situations:

- If a network can support only a 10 Mb/s connection, you can configure a port to advertise only 10 Mb/s capabilities. Devices that uses autonegotiation to connect to this port connect at 10 Mb/s, even if both devices are capable of higher speeds.
- If you configure a port to advertise only 100 Mb/s full-duplex capability, the link becomes active only if the link partner can autonegotiate a 100 Mb/s full-duplex connection. This prevents mismatched speed or duplex settings if autonegotiation is disabled on the link partner.
- For testing or network troubleshooting, you can configure a link to autonegotiate at a particular speed or duplex mode.

ASCII configuration file

With the ASCII configuration file, you can download a user-editable ASCII configuration file from a TFTP or SFTP server.

Important:

When you use the TFTP or SFTP address parameter to perform copy or download commands, the system overwrites the TFTP or SFTP server address.

Load the ASCII configuration file automatically at boot time or on demand by using ACLI.

ACLI Command syntax

```
Switch#script ?
```

```
run Run an ASCII configuration script
```

```
upload Upload the current ASCII configuration using an entry in the ASCII configuration
script table.
```

After you download the file, the configuration file automatically configures the switch or stack according to ACLI commands in the file.

With this feature, you can generate command configuration files that can be used by several switches or stacks with minor modifications.

The maximum size for an ASCII configuration file is 500 KB; split large configuration files into multiple files.

Use a text editor to edit the ASCII configuration. The command format is the same as that of ACLI.

Download the ASCII configuration file to the base unit by using ACLI commands. The ASCII configuration script completes the process.

Sample ASCII configuration file

This section shows a sample ASCII configuration file. This file is an example only and shows a basic configuration for a stand-alone switch that includes Multi-Link Trunking, VLANs, port speed and duplex, and SNMP configurations.

The following text represents a sample ASCII configuration file:

```
! ----------------------------------------------------------
! example script to configure different features from ACLI
! ----------------------------------------------------------
!
enable
configure terminal
!
!
! ----------------------------------------------------------
! add several MLTs and enable
! ----------------------------------------------------------
mlt 3 name seg3 enable member 13-14
mlt 4 name seg4 enable member 15-16
mlt 5 name seg5 enable member 17-18
!
!
! ----------------------------------------------------------
! add vlans and ports
! ----------------------------------------------------------
!
! create vlan portbased
vlan create 100 name vlan100 type port
!
! add Mlts created above to this VLAN
vlan members add 100 17
!
! create vlan ip protocol based
vlan create 150 name vlan150 type protocol-ipEther2
```

```
!
! add ports to this VLAN
! in this case all ports
vlan members add 150 ALL
vlan ports ALL priority 3
!
! igmp
! you could disable proxy on vlan 100
vlan igmp 100 proxy disable
!
! ----------------------------------------------------------
! Examples of changing interface parameters
! ----------------------------------------------------------
! change speed of port 3
interface ethernet 3
speed 10
duplex half
exit
!
! change speed of port 4
interface ethernet 4
speed auto
duplex auto
exit
!
!
! ----------------------------------------------------------
! SNMP configuration
! ----------------------------------------------------------
snmp-server host 192.168.100.125 private
snmp-server community private
!
!
exit
end
! ----------------------------------------------------------
! Finished
! ----------------------------------------------------------
```

Important:

To add comments to the ASCII configuration file, add an exclamation point (!) to the beginning of the line.

ASCII Download Log

The purpose of the ASCII Download Log feature is to log all the failed commands from the ASCII configuration file as informational customer messages.

1. `Connection error` (ACG_DOWNLOAD_ERROR)

   The message describes the situation in which the connection failed, therefore the ASCII Configuration File could not be accessed or used. The IP address and the file name are in the message in case of a TFTP server usage, or the file name in case of a USB usage. The message also contains the cause of the error (the same as the one displayed to the CLI). An ACG_DOWNLOAD_ERROR error message is logged only in the following situations:

   - Transfer Timed Out

- Invalid TFTP Server address
- File not found
- Configuration failed
- Switch IP address not set
- Stack IP address not set
- TFTP Server IP address not set
- Mask not set
- File too large
- Invalid Configuration File
- Invalid Configuration File or File not found
- Error accessing USB/ASCII file

Note:

It does not matter from which interface you start the ASCII file download; the logged messages are the ones from the CLI.

Example message for TFTP server usage:

```
Type      Unit      Time              Idx Src    Message
---- I    ---- 1    ------------      ------ 5   --------------- ASCII
                     00:00:00:30                  transfer failed, Addr:
                                                  10.3.2.137, File:
                                                  config.txt. File not
                                                  found.
```

Example message for USB usage:

```
Type      Unit      Time              Idx Src    Message
---- I    ---- 1    ------------      ------ 6   --------------- ASCII
                     00:00:00:30                  transfer failed, from
                                                  USB, File: config.txt.
                                                  Error accessing USB/
                                                  ASCII file.
```

2. `Connection error on load on boot` (ACG_DOWNLOAD_ERROR_ON_BOOT)

   The message describes the situation in which the connection failed at load on boot; the ASCII Configuration File could not be accessed or used. The IP address and the file name are in the message in case of TFTP server usage, or the file name in case of USB usage. The message also contains the cause of the error (the same as the one displayed to the CLI). If the IP number is unknown, the question mark (?) is used.

   Example message for TFTP server usage:

```
Type      Unit      Time              Idx Src    Message
---- I    ---- 1    ------------      ------ 5   --------------- ASCII
                     00:00:00:30                  transfer failed at load
                                                  on boot, Addr:
                                                  10.3.2.137, File:
                                                  config.txt. File not
                                                  found.
```

Example message for USB usage:

```
Type      Unit      Time              Idx Src    Message
---- I    ---- 1    ------------      ------ 6   --------------- ASCII
                     00:00:00:30                  transfer failed at load
                                                  on boot, from USB, File:
                                                  config.txt. Error
                                                  accessing USB/ASCII
                                                  file.
```

3. `Connection OK` (ACG_DOWNLOAD_OK)

   The message describes the situation in which the connection was successful; the ASCII Configuration File could be accessed and used. The IP address and the file name are in the message in case of TFTP server usage, or the file name in case of USB usage.

   Example message for TFTP server usage:

```
Type      Unit      Time              Idx Src    Message
---- I    ---- 1    ------------      ------ 10  --------------- ASCII
                     00:00:00:45                  transfer OK, Addr:
                                                  10.3.2.137, Filename:
                                                  config.txt
```

   Example message for USB usage:

```
Type      Unit      Time              Idx Src    Message
---- I    ---- 1    ------------      ------ 10  --------------- ASCII
                     00:00:00:45                  transfer OK, from USB,
                                                  Filename: config.txt
```

4. `Connection OK on load on boot` (ACG_DOWNLOAD_OK_ON_ BOOT)

   The message describes the situation in which the connection was successful at load on boot; the ASCII Configuration File could be accessed and used. The IP address and the file name are in the message in case of TFTP server usage, or the file name in case of USB usage.

   Example message for TFTP server usage:

```
Type      Unit      Time              Idx Src    Message
```

Table continues…

```
---- I    ---- 1    ------------        ------ 10  --------------- ASCII
                    00:00:00:45                     transfer OK at load on
                                                    boot, Addr: 10.3.2.137,
                                                    Filename: config.txt
```

Example message for USB usage:

```
Type       Unit      Time                Idx Src    Message
---- I    ---- 1    ------------        ------ 10  --------------- ASCII
                    00:00:00:45                     transfer OK at load on
                                                    boot, from USB,
                                                    Filename: config.txt
```

5. `Execution OK` (ACG_EXECUTION_OK)

   The message describes the situation in which the execution of the ASCII Configuration File was successful; no error occurred at any line.

   Example message for both TFTP server usage and USB usage:

```
Type       Unit      Time                Idx Src    Message
---- I    ---- 1    ------------        ------ 10  --------------- ASCII
                    00:00:00:45                     finished successfully.
```

6. `Execution OK on load on boot` (ACG_EXECUTION_OK_ON_ BOOT)

   The message describes the situation in which the execution of the ASCII Configuration File was successful at load at boot; no error occurred at any line.

   Example message for both TFTP server usage and USB usage:

```
Type       Unit      Time                Idx Src    Message
---- I    ---- 1    ------------        ------ 10  --------------- ASCII
                    00:00:00:45                     finished successfully at
                                                    load on boot.
```

7. `Failed command` (ACG_CMD_ERR)

   The message describes the situation in which a command from the ASCII Configuration File failed. The failed command text line number is in the message. If the cause of the error is one of the following, the cause is also given in the message: “Invalid input detected,” “Ambiguous command,” “Incomplete command,” “Permission denied,” “Not allowed on slave.” In other words, if one of these messages is displayed in the CLI, it is in the ASCII_CMD_ERR message.

   Note:

   In some cases, the ASCII file download is programmed to stop when the first error is found. Therefore, only this error is logged.

   Example error message:

```
Type      Unit      Time                Idx Src    Message
---- I    ---- 1    ------------        ------ 21  --------------- ASCII
                     00:00:09:33                    failed at line 4.
                                                    Invalid input detected.
```

Booting with an ASCII configuration file from the local system

This feature allows you to download an ASCII configuration file from a TFTP server or USB to the local file system and boot the system with the local ASCII configuration file. Two ASCII configuration files are supported, one in each block. When you download and save an ASCII configuration file to the local file system, the system deletes the old file in that block.

For ERS 4800, the maximum size of an ASCII configuration file is limited to 500 kilobytes.

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

Note:

Downgrading software from one major release to another (e.g. Release 5.7 to 5.6) deletes all the ASCII files from the local ASCII file system, whereas downgrading from a minor release to another minor release (e.g. 5.7.4 to 5.7.3) does not delete the ASCII files.

Additionally, using the **boot default** command does not delete the ASCII files from the ASCII file system.

For related ACLI procedures, see:

- Displaying the ASCII configuration file status on page 112
- Downloading an ASCII configuration file from a TFTP server or USB device on page 113
- Setting boot parameters on page 127

Backup configuration file

When the switch writes a configuration file to FLASH, the switch writes to the primary configuration block, updates the CRC16 checksum in the multi-configuration area, and then saves the information to the auxiliary configuration block. This prevents the corruption of the configuration file if power failure occurs during the write process.

When you boot the switch, if the switch detects corruption in the primary configuration file (checksum mismatch), the switch sends a message to the system log. The switch then attempts to load the secondary configuration file from the auxiliary configuration block if the checksum is correct,

and sends a message to the system log. If both primary and auxiliary configurations blocks are corrupted, the switch resets the settings to default and sends a message to the system log.

The auxiliary configuration block is a mirror of the active configuration block. The backup configuration feature is transparent to the user.

You can check the system log for messages if you suspect corruption in a configuration file.

This feature is enabled by default. There are no configuration commands for this feature.

Displaying unit uptime

You can display the uptime for each unit in a stack. Unit stack uptime collects the stack uptime for each unit in a stack and reports this information when requested. You can determine how long each unit is connected to the stack. You can use ACLI commands to display the unit uptimes.

Port naming

You can name or specify a text string for each port. This feature provides easy identification of the connected users.

Use ACLI or EDM to name ports.

Port error summary

You can view all ports that have errors in an entire stack.

If a particular port has no errors, it is not displayed in the port error summary.

IP address for each unit in a stack

You can assign an IP address to each unit in a stack. Use ACLI to configure the IP addresses for each unit within a stack.

BootP automatic IP configuration and MAC address

The switch supports the Bootstrap protocol (BootP).

You can use BootP to retrieve an ASCII configuration file name and configuration server address.

With a properly configured BootP server, the switch automatically learns its assigned IP address, its subnet mask, and the IP address of the default router (default gateway).

The switch has a unique 48-bit hardware address, or MAC address, that is printed on a label on the back panel. Use this MAC address when you configure the network BootP server to recognize the switch BootP requests.

The BootP modes supported by the switch are:

- BootP or Last Address mode
- BootP or Default IP
- BootP Always
- BootP Disabled

Important:

Whenever the switch is broadcasting BootP requests, the BootP process eventually times out if a reply is not received. When the process times out, the BootP request mode automatically changes to BootP or Default IP mode. To restart the BootP process, change the BootP request mode to any of the following modes:

- Always
- Disabled
- Last
- Default-ip

Default BootP setting

The default operational mode for BootP on the switch is BootP or Default IP. The switch requests an IP address from BootP only if one is not already set from the console terminal (or if the IP address is the default IP address: 192.168.1.1).

DHCP client

The Dynamic Host Configuration Protocol (DHCP) client, uses either DHCP or BootP to assign an IPv4 address to the management VLAN. Using the DHCP client, the switch can retrieve IP address, netmask, default gateway, and Domain Name Server (DNS) information for a maximum of three DNS servers.

Web Quick Start

You can use the Web Quick Start feature to enter the setup mode through a single screen.

This feature is supported only by the Web interface.

During the initial setup mode, all ports in the switch or stack are assigned to the default VLAN.

You can use the Web Quick Start screen to configure the following information:

- Stack IP address
- Subnet mask
- Default gateway
- SNMP Read community
- SNMP Write community
- Quick Start VLAN

NTP Fundamentals

The Network Time Protocol (NTP) synchronizes the internal clocks of various network devices across large, diverse networks to universal standard time. NTP runs over the User Datagram Protocol (UDP), which in turn runs over IP. The NTP specification is documented in Request For Comments (RFC) 1305. Every network device relies on an internal system clock to maintain accurate time. On local devices, the internal system clock is usually set by eye or by a wristwatch to within a minute or two of the actual time and is rarely reset at regular intervals. Many local clocks are battery-backed devices that use room temperature clock oscillators that can drift as much as several seconds each day. Network Time Protocol solves this problem by automatically adjusting the time of the devices so that they are synchronized within a millisecond (ms) on LANs and up to a few tens of milliseconds on WANs relative to Coordinated Universal Time (UTC).

The current implementation of NTP supports only unicast client mode. In this mode, the NTP client sends NTP time requests to other remote time servers in an asynchronous fashion. The NTP client collects four samples of time from each remote time server. A clock selection algorithm determines the best server among the selected samples based on stratum, delay, dispersion and the last updated time of the remote server.

The System Clock is adjusted to the selected sample from the chosen server.

NTP terms

A peer is a device that runs NTP software. However, this implementation of NTP refers to peers as remote time servers that provide time information to other time servers on the network and to the local NTP client. An NTP client refers to the local network device, a switch which accepts time information from other remote time servers.

NTP system implementation model

NTP is based on a hierarchical model that consists of a local NTP client that runs on the switch and on remote time servers. The NTP client requests and receives time information from one or more remote time servers. The local NTP client reviews the time information from all available time servers and synchronizes its internal clock to the time server whose time is most accurate. The NTP client does not forward time information to other devices running NTP.

Two types of time servers exist in the NTP model: primary time servers and secondary time servers. A primary time server is directly synchronized to a primary reference source, usually a wire or radio clock that is synchronized to a radio station providing a standard time service.

The primary time server is the authoritative time source in the hierarchy, meaning that it is the one true time source to which the other NTP devices in the subnet synchronize their internal clocks.

A secondary time server uses a primary time server or one or more secondary time servers to synchronize its time, forming a synchronization subnet. A synchronization subnet is a self-organizing, hierarchical master-slave configuration with the primary servers at the root and secondary servers of decreasing accuracy at successive levels.

The following figure shows NTP time servers forming a synchronization subnet.

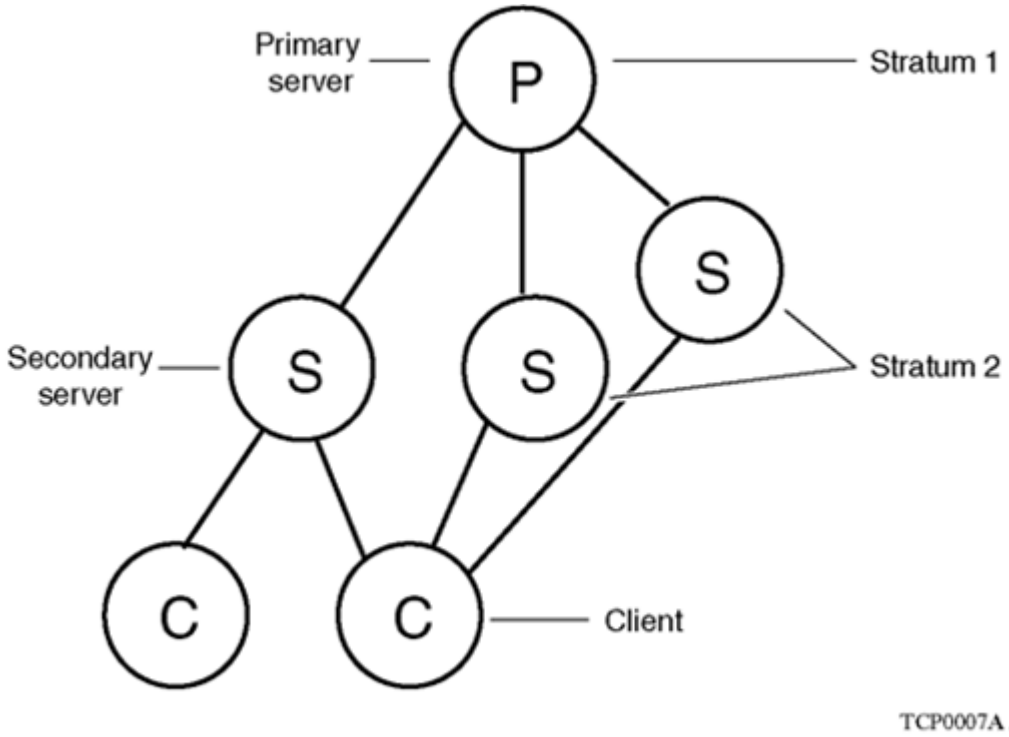


Figure 9: NTP time servers forming a synchronization subnet

In the NTP model, the synchronization subnet automatically reconfigures in a hierarchical primary-secondary (master-slave) configuration to produce accurate and reliable time, even if one or more primary time servers or the path between them fails. This feature applies where all the primary

servers on a partitioned subnet fail, but one or more backup primary servers continue to operate. If all of the primary time servers in the subnet fail, the remaining secondary servers synchronize among themselves.

Time distribution within a subnet

NTP distributes time through a hierarchy of primary and secondary servers, with each server adopting a stratum. A stratum defines how many NTP hops away a particular secondary time server is from an authoritative time source (primary time server) in the synchronization subnet. A stratum 1 time server is located at the top of the hierarchy and is directly attached to an external time source, typically a wire or radio clock; a stratum 2 time server receives its time through NTP from a stratum 1 time server; a stratum 3 time server receives its time through NTP from a stratum 2 time server, and so forth.

Each NTP client in the synchronization subnet chooses as its time source the server with the lowest stratum number with which it is configured to communicate through NTP. This strategy effectively builds a self-organizing tree of NTP speakers. The number of strata is limited to 15 to avoid long synchronization loops.

NTP avoids synchronizing to a remote time server whose time is inaccurate. NTP never synchronizes to a remote time server that is not itself synchronized. NTP compares the times reported by several remote time servers.

Synchronization

Unlike other time synchronization protocols, NTP does not attempt to synchronize the internal clocks of the remote time servers to each other. Rather, NTP synchronizes the clocks to universal standard time, using the best available time source and transmission paths to that time source.

NTP uses the following criteria to determine the time server whose time is best:

- The time server with the lowest stratum.
- The time server closest in proximity to the primary time server (reduces network delays).
- The time server offering the highest claimed precision.

NTP accesses several (at least three) servers at the lower stratum level because it can apply an agreement algorithm to detect a problem on the time source.

NTP modes of operation

NTP uses unicast client mode to enable time servers and NTP clients to communicate in the synchronization subnet. The switch supports only unicast client mode.

After you configure a set of remote time servers (peers), NTP creates a list that includes each time server IP address. The NTP client uses this list to determine the remote time servers to query for time information.

After the NTP client queries the remote time servers, the servers respond with various timestamps, along with information about their clocks, such as stratum, precision, and time reference.

The NTP client reviews the list of responses from all available servers and chooses one as the best available time source from which to synchronize its internal clock.

The following figure shows how NTP time servers operate in unicast mode.

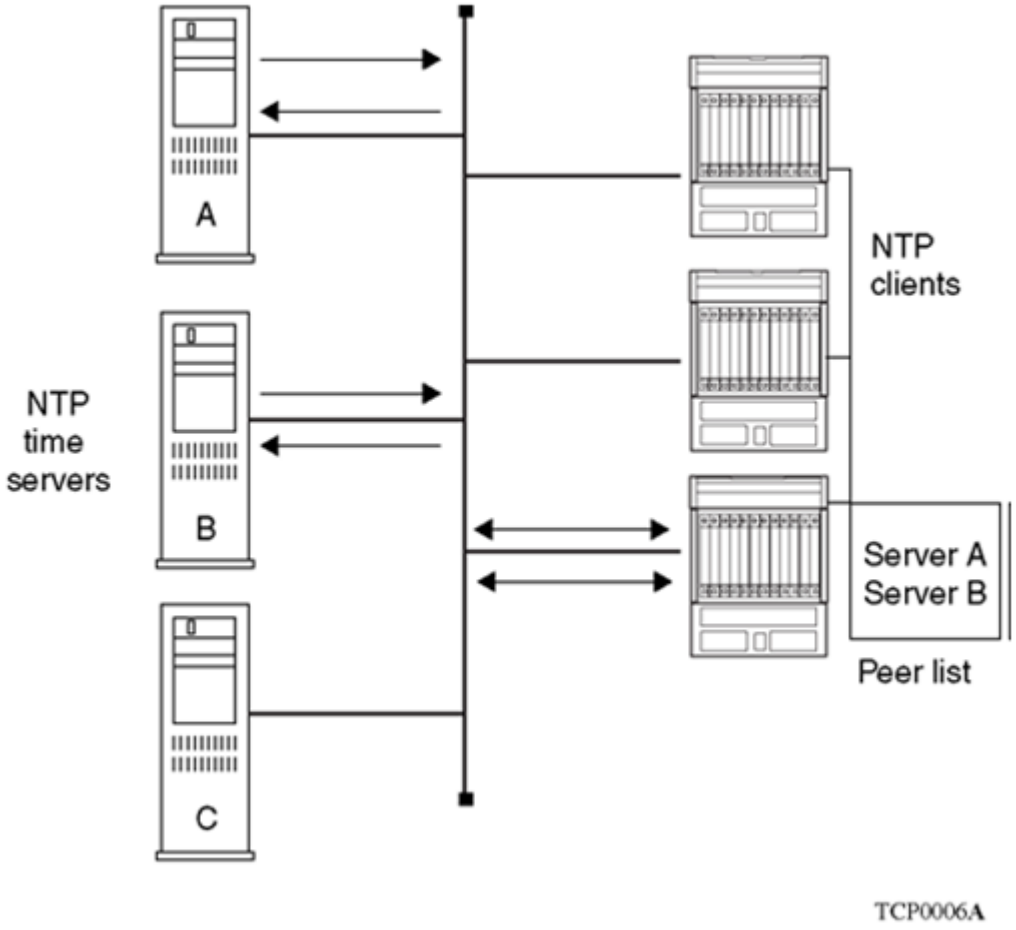


Figure 10: NTP time servers operating in unicast client mode

NTP authentication

You can authenticate time synchronization to ensure that the local time server obtains its time services only from known sources. NTP authentication adds a level of security to your NTP configuration. By default, network time synchronization is not authenticated.

If you select authentication, the switch uses the Message Digest 5 (MD5) algorithm to produce a message digest of the key. The message digest is created using the key and the message, but the key itself is not sent. The MD5 algorithm verifies the integrity of the communication, authenticates the origin, and checks for timeliness.

To authenticate the message, the client authentication key must match that of the time server. Therefore, the authentication key must be securely distributed in advance (the client administrator must obtain the key from the server administrator and configure it on the client).

While a server can know many keys (identified by many key IDs) it is possible to declare only a subset of these as trusted. The time server uses this feature to share keys with a client that requires authenticated time and that trusts the server, but that is not trusted by the time server.

Simple Network Time Protocol

The Simple Network Time Protocol (SNTP) feature synchronizes the Universal Coordinated Time (UTC) to an accuracy within 1 second. This feature adheres to the IEEE RFC 2030 (MIB is the s5agent). With this feature, the system can obtain the time from any RFC 2030-compliant NTP/SNTP server.

Use SNTP to provide a real-time timestamp for the software, shown as Greenwich Mean Time (GMT).

If you run SNTP, the system synchronizes with the configured NTP server at boot-up and at user-configurable periods thereafter (the default synchronization interval is 24 hours). The first synchronization does not occur until network connectivity is established.

SNTP supports primary and secondary NTP servers. The system tries the secondary NTP server only if the primary NTP server is unresponsive.

For more information, see Using Simple Network Time Protocol on page 201.

Link-state tracking

Link-state tracking (LST) binds the link state of multiple interfaces. The Link-state tracking feature identifies the upstream and downstream interfaces. The associations between these two interfaces form a link-state tracking group.

To enable link-state tracking, create a link-state group, and specify the interfaces that are assigned to the link-state group. An interface can be an aggregation of ports, multi-link trunks (MLT) or link aggregation groups (LAG). In a link-state group, these interfaces are bundled together. The downstream interfaces are bound to the upstream interfaces. Interfaces connected to servers are referred to as downstream interfaces, and interfaces connected to distribution switches and network devices are referred to as upstream interfaces.

For example, in an application, link-state tracking can provide redundancy in the network with two separate switches or stacks when used with server NIC adapter teaming. The following diagram is a sample scenario. If interface 1 is unavailable on either switch, the server continues to send traffic through interface 2 and the traffic is dropped. If interfaces 1 and 2 are coupled in a link-state group (as upstream and downstream ports respectively), when interface 1 is unavailable, interface 2 is disabled, prompting the server to choose the other path as the target.

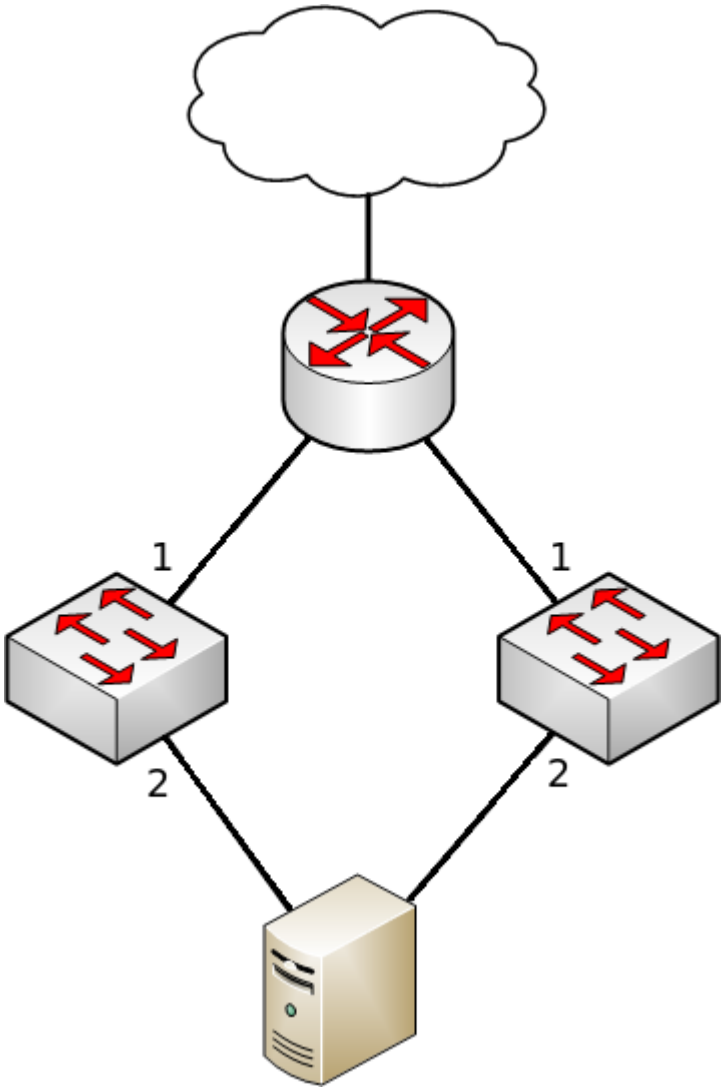


Figure 11: Sample scenario for link-state tracking

In a link-state group, the upstream ports become unavailable or lose connectivity when the Virtual Link Aggregation Control Protocol (VLACP) is disabled, cables are disconnected, or the link is lost.

The following are the interactions between the downstream and upstream interfaces when link-state tracking is enabled:

- If any of the upstream interfaces are in link-up state, the downstream interfaces are in link-up state.

- If all of the upstream interfaces become unavailable, link-state tracking automatically disables the downstream interfaces.

The following table provides an overview about the link-state feature interactions with other features:

Feature	Interaction
Interface link status	The `show interface` command displays the link status for ports or trunk members. For upstream interfaces with VLACP disabled, the link status is identical to the one kept by link-state tracking. A port with a link and a trunk with at least one link among its members are considered up.
Interface administrative status	• An administrator can enable or disable interfaces that are in the link-state tracking downstream set by issuing shutdown or no shutdown commands. • Link-state tracking does not enable ports which are administratively disabled. • If a port is disabled by link-state tracking, an administrator cannot enable the port and only the administrative status changes. The port can be recovered either by LST (convergence) or by removing the port from the downstream set.
STP BPDU-Filtering, Mac Security	• Link-state tracking managed interfaces can be configured with Spanning Tree Protocol (STP) Bridge Protocol Data Units (BPDU) Filtering or Mac Security Intrusion Detection. • The port can be enabled or disabled administratively, similar to the interface administrative status feature. • The port is enabled only if it is enabled in both LST and BPDU-Filtering or Mac Security. If one of them is disabled, the port is not operational and does not link up.
SLPP-Guard	• Link-state tracking managed interfaces can be configured with Simple Loop Prevention Protocol (SLPP) Guard. • When link-state tracking disables a port that is already disabled by SLPP-Guard, the interface is unblocked by SLPP-Guard and the blocking timer is cleared. The `show slpp-guard` command displays the details.
VLACP	If enabled on interfaces, VLACP displays the upstream interface link status.
MLT	Multi-link trunks are valid members of tracking groups. However, a disabled trunk cannot be added or disabled when it is a member of a tracking group. This could allow the trunk to change its member list and can lead to various inconsistencies.
LACP – LAGs as link-state tracking members	• LAG interfaces can be added to link-state tracking by specifying their trunk ID. • If several LAGs de-aggregate, during re-aggregation they can get different IDs. For example, after switch or stack reset or after each stack composition change, the LAGs are not saved into binary or ASCII configurations and are removed from tracking groups whenever de-aggregation occurs. Also, when in downstream, LAG ports must be shut

Table continues…

Feature	Interaction
	down according to their LACP operational key, which is not directly under user control. An administrative key to a trunk ID can be used to ensure LAGs are persistent and maintained in LST binary or ASCII configurations and to shut down the downstream LAG member ports. • Until the enhancement is implemented, you cannot add LAGs to link-state tracking groups.
LACP	You cannot add ports with link-aggregation enabled or enable link-aggregation on ports which are already in a tracking group.
Stack	• When entering stack, the base unit sends the LST configuration to all units. The non-base units erase their own configuration and assume the base unit configuration. • When leaving the stack, the units keep a local version of LST configuration containing all trunks but only local ports. • When a unit becomes inactive in stack, the local ports remain in a back-up configuration and become visible if the unit rejoins or are replaced. Adding or removing interfaces erases all back-up configuration. If a unit is replaced in stack by another unit with fewer ports, the extra ports are removed from LST configuration.

Link-state tracking configuration guidelines

The following are the guidelines to avoid configuration problems:

- You can configure up to two link-state groups per switch.
- You can configure up to eight upstream members and 384 downstream members.
- An interface cannot be a member of more than one link-state group.
- A trunk-member port cannot be added to a link-state tracking group by itself.
- Only enabled trunks can be tracking group members. A trunk which is a tracking group member cannot be disabled. If you disable and change the membership, the system displays an error 6 message.
- Ports with link aggregation enabled cannot be added to a tracking group member port.
- Operational state for interfaces or tracking groups is not saved in binary or ASCII configuration; they are dynamically determined during switch operation.

Ping enhancement

Using ACLI, you can specify ping parameters, including the number of Internet Control Message Protocol (ICMP) packets to be sent, the packet size, the interval between packets, and the time-out. You can also set ping to continuous, or you can set a debug flag to obtain extra debug information.

You can specify any source IPv4 address for the outgoing ICMP requests if the source address is one of the router's active layer 3 interfaces. This feature is useful for testing all routing functionality between two routers from a single place.

For more information about the ping command, see Using the ping command to test communication with another switch on page 213.

New Unit Quick Configuration

Use the New Unit Quick Configuration feature to create a default configuration to apply to any new unit entering a stack configuration. You can add new units to the stack without resetting the stack.

For more information about New Unit Quick Configuration, see *Installing Avaya Ethernet Routing Switch 4800 Series*, NN47205-300.

Updating switch software

Updating switch software is a necessary part of switch configuration and maintenance. You can update the version of software running on the switch through either EDM or ACLI.

Before you attempt to change the switch software, ensure that the following prerequisites are in place:

- The switch has a valid IP address.
- A Trivial File Transfer Protocol (TFTP) server is on the network that is accessible by the switch and that has the desired software version loaded.
- If you change the switch software on a switch using a USB Mass Storage Device, ensure that the Mass Storage Device has the desired software version and is inserted into the front panel USB port.
- If you use ACLI, ensure that ACLI is in Privileged EXEC mode.
- If you use EDM, ensure that Simple Network Management Protocol (SNMP) is enabled.

Important:

When you use the TFTP address parameter to perform copy or download commands, the system overwrites the TFTP server address.

See the following sections for details about updating switch software:

- Changing switch software using ACLI on page 90
- Managing switch software using EDM on page 300
- LED activity during software download on page 63

LED activity during software download

During the software download, the port LEDs light one after another in a chasing pattern, except for ports 35, 36, 47, and 48 on a switch.

This chasing pattern is initially fast as the software image is downloaded but gradually slows as the switch erases the flash memory. This pattern speeds up again as the switch programs the new image into the flash memory.

When the process is complete, the port LEDs are no longer lit and the switch resets.

Agent and diagnostic software status display

You can display the currently-loaded and operational switch or stack software status for both agent and diagnostic loads. With the `show boot` ACLI command and variables, you can view the agent or diagnostic load status individually, or together. The Boot Image EDM tab displays agent and diagnostic load status information together.

Software download progress on EDM

EDM displays the following status messages while downloading a software:

- Software download progress percentage to indicate the time taken to download the software to the switch.
- Transferring download progress percentage to indicate the time taken to transfer the software to stack units.
- Programming percentage to indicate the time taken to write the software on the switch.
- If you are downloading software using the **`NoReset`** option, the Status field is updated to "success" after software download.
- Estimated remaining time until the EDM interface is operational again after switch restart. The EDM interface tries to reconnect to the switch after the estimated time has elapsed. If it is not able to reconnect immediately, the estimated reattempt time is displayed. For example, the time to reattempt to connect the to the switch can be 30 seconds.

Agent and diagnostic software status display

You can display the currently-loaded and operational switch or stack software status for both agent and diagnostic loads. With the `show boot` ACLI command and variables, you can view the agent or diagnostic load status individually, or together. The Boot Image EDM tab displays agent and diagnostic load status information together.

Asset ID string configuration

You can define an Asset ID, which provides inventory information for the switch, stack, or each unit within a stack. An asset ID consists of an alphanumeric string up to 32 characters in length for the switch or stack. An Asset ID is useful for recording your company-specific asset tracking information, such as an asset tag affixed to the switch. The switch allows you to configure the asset-ID through either ACLI commands or EDM.

Avaya Energy Saver

You can use Avaya Energy Saver (AES) to reduce network infrastructure power consumption without impacting network connectivity. AES uses intelligent-switching capacity reduction in off-peak mode to reduce direct power consumption by up to 40%. AES can also use Power over Ethernet (PoE) port-power priority levels to shut down low-priority PoE ports and provide more power savings.

The power consumption savings of each switch is determined by the number of ports with AES enabled and by the power consumption of PoE ports that are powered off. If AES for a port is set to Disabled, the port is not powered off, irrespective of the PoE configuration. AES turns off the power to a port only when PoE is enabled globally, the port AES is enabled, and the PoE priority for the port is configured to Low.

You can schedule AES to enter lower power states during multiple specific time periods. These time periods (a maximum of 42) can be as short as one minute, or last a complete week, complete weekend, or individual days.

Important:

If a switch is reset while AES is activated, the PoE power-saving calculation might not accurately reflect the power saving, and in some cases might display zero savings. This problem occurs because the switch did not have sufficient time to record PoE usage between the reset of the switch and AES being reactivated. When AES is next activated, the PoE power saving calculation is correctly updated.

When AES is active and you replace a unit, that unit will not be in AES mode. At the next deactivate/activate cycle, the unit will be in the correct state. You can issue the AES deactivate and activate command directly after replacing a unit to place the unit into the appropriate energy-savings mode.

Secure Shell File Transfer Protocol (SFTP over SSH)

With this feature, you can securely transfer a configuration file from a switch or stack to an SFTP server or from an SFTP server to the switch or stack using the SFTP protocol with SSH version 2.

The switch supports the following SFTP features:

- A binary configuration file upload to an SFTP server
- A binary configuration file download from an SFTP server
- ASCII configuration file upload to an SFTP server
- ASCII configuration file download from an SFTP server
- DSA-key authentication support
- RSA-key authentication support
- Password authentication support
- Host key generation support
- 512–1024-bit DSA-key use for authentication
- 1024–2048-bit RSA-key use for authentication
- Agent and diagnostic software download from an SFTP server
- SNMP and EDM support

EDM inactivity time-out

A session becomes inactive if there is no interaction with the EDM interface for more than the 15 minutes. After the session becomes inactive, you must log in again with your user name and password.

Using the ACLI command `edm inactivity-timeout`, you can configure the time period for which an EDM session remains active. After the specified time period, the EDM session becomes inactive. The EDM inactivity time-out period configuration does not affect the open EDM sessions. The configuration is applied only on the future EDM sessions. By default, an EDM session becomes inactive after 15 minutes. You can configure inactivity time-out with a value between 30 and 65535 seconds.

Run Scripts

According to the Avaya best practices for converged solutions, you can use scripts to configure the parameters for an Avaya stackable Ethernet switch.

The script executes a set of CLI commands in either a fully automated or user-prompted configuration. In a fully-automated or non-verbose mode, the scripts are executed with the predefined default values. In a user-prompted or the verbose mode, the script guides you to configure the values.

While executing the script using EDM, do not run other commands while the script is in progress, because this slows down the execution. EDM can time out while waiting for a response; even when a time-out occurs, the script execution continues on the switch.

The run scripts delete the VLANs with the name Voice or Data, the specified IDs 42 or 44, or the IDs specified in the verbose mode, and the default routes that were applied during the previous script execution or settings applied on the switch.

Note:

Currently, only IPv4 configuration is supported.

The run script commands are only available from the base unit. If you use the telnet or SSH connection, you can lose the connection if the Management IP address is changed during the script execution.

Run scripts are available in both verbose and non-verbose mode for IP Office, and only verbose mode is available for Link Layer Discovery Protocol (LLDP) and Auto Detect Auto Configuration (ADAC).

Run IP Office script

The Run IP Office script can be used to configure parameters for the switch according to the Avaya best practices for converged solutions. You can execute the script in any of the following two modes using ACLI or EDM:

- Non-verbose mode—configures the switch using predetermined parameters
- Verbose mode—configures the switch using the parameters provided through ACLI prompts

The configuration is optimized for solutions with Run IP Office that support a maximum of 250 users. You can quickly set up a switch with Avaya IP Office.

The script sets VLAN IDs, IP addresses, QoS rules and tagging modes on switch ports to specific values, and sets PoE priorities for PWR units. The LLDP for IP Phone detection is set automatically and switch ports are configured for the Run IP Office call server to connect.

Note:

The default subnet mask created by the Run IP Office script supports only 252 hosts. You can use the verbose mode to change the subnet mask to 255.255.254.0 to allow 508 hosts for each subnet.

Table 7: Default parameters for Run IP Office script

Voice VLAN ID	42
Voice VLAN 42 gateway IP	192.168.42.254
Data VLAN ID	44
Data VLAN 44 gateway IP	192.168.44.254

Table continues…

Data VLAN Gateway IP/mask	255.255.255.0
IP Route to Gateway Modem-Router (Internet/WAN)	192.168.44.2
IP Office Call server address	192.168.42.1
IP Office File server address	192.168.42.1
Switch port 1 (or 1/1)	IP Office
Switch port 2 (or 1/2)	Gateway Modem-Router port

Run ADAC script

The Run Auto Detect Auto Configuration (ADAC) script optimizes the switch configuration for IP Telephony and Unified Communications solutions to support any number of users. The Run ADAC script reduces the time required to set up the best-practice configuration of the switching parameters in a setup where:

- ADAC is used for detection and provisioning of IP Phones connected to an Avaya Ethernet switch or stack.
- LLDP is used for all configurations for voice communications over the data network.

Use the Run ADAC script to detect IP Phones using ADAC call server communication. LLDP-based detection is also possible using the Run ADAC script. ADAC is able to detect IP Phones using MAC address range detection; ADAC can also configure IP Phones (from Avaya or from other vendors) as long as the IP Phones send LLDPDUs.

The ADAC script prompts the user for the Uplink, Call-Server and Telephony ports. Some of the VLAN tagging settings, LLDP network policy parameters for voice, or QoS rules are configured in the background by ADAC.

The following configurations can be completed using the Run ADAC script:

- Configuring VLAN ID information (for Voice and Data VLANs).
- Setting the DSCP values for Voice data and control plane (signaling).
- Applying VLAN tagging modes on switch ports to specific values for accommodating tagged (IP Phone) and untagged VLAN (laptop or desktop computer) behind the IP Phone.
- Setting call server and file server IP address to provision on the IP Phone.
- Setting ADAC Uplink, Call-Server and Telephony ports and enabling ADAC in Tagged-Frames operating mode.

Run LLDP Script

The Run LLDP script optimizes the switch configuration for IP Telephony and Unified Communications solutions to support any number of users. The Run LLDP scriptreduces the time required to set up the best practice configuration of the switching parameters in a setup where LLDP is used for detection and provisioning of IP Phones connected to an Avaya Ethernet switch or stack.

Use the Run LLDP script to optimize the switch configuration for a specific deployment that does not use ADAC. ADAC-based detection is not enabled using the Run LLDP script.

The following configurations can be completed using the Run LLDP script:

- Configuring VLAN ID information (for Voice and Data VLANs).
- Setting the port trust mode.
- Setting the DSCP values for Voice data and control plane (signaling).
- Applying VLAN tagging modes on switch ports to specific values for accommodating tagged (IP Phone) and untagged VLAN (laptop or desktop PC device) behind the IP Phone.
- Setting call server and file server IP address to provision on the IP Phone.

Chapter 4: Power over Ethernet

The Power over Ethernet 4826GTS-PWR+ and ERS 4850GTS-PWR+ routing switches provide IEEE 802.3at-compliant power or PoE+ on all 10/100/1000 RJ-45 ports.

The PoE capable devices can deliver between 3 and 15.4(16) watts of power, supporting IEEE 802.3af or IEEE 802.3af and legacy powered-device (PD) detection, whereas the PoE+ capable devices can deliver between 3 and 32 watts, with the added ability to detect IEEE 802.3at and legacy devices.

PoE refers to the ability of the switch to power network devices over an Ethernet cable. Some of these devices include IP Phones, Wireless LAN Access Points, security cameras, and access control points.

For more information about power supplies, see *Installing Avaya Ethernet Routing Switch 4800 Series*, NN47205-300.

You can configure PoE from the Avaya Command Line Interface (ACLI), Enterprise Device Manager (EDM), and SNMP. For details, see the following sections.

PoE overview

The PWR+ models 4850GTS-PWR+ and 4826GTS-PWR+ are ideal to use with Avaya Business Communication Manager system, IP phones, hubs, and wireless access points. You can use these switches with all network devices.

By using the switch series PWR and PWR+ units, you can plug any IEEE802.3af-compliant (and IEEE802.3at-compliant for PWR+) powered device into a front-panel port and receive power in that port. Data also can pass simultaneously on that port. This capability is called PoE.

For more information about PoE and power supplies, see *Installing Avaya Ethernet Routing Switch 4800 Series*, NN47205-300.

The switch series 4826GTS-PWR+ and 4850GTS-PWR+ automatically detect any IEEE 802.3at-compliant powered device attached to any PoE front panel port and immediately send power to that appliance.

The power detection function of the switch series PWR and PWR+ models, operate independent of the data link status. A device that is already operating the link for data or a device that is not yet operational can request power. That is, the switches provide power to a requesting device even if the data link for that port is disabled. The switches monitor the connection and automatically

disconnect power from a port when you remove or change the device, as well as when a short circuit occurs.

The switches automatically detect devices that require no power connections from them, such as laptop computers or other switching devices, and send no power to those devices. You control the supply of power to specific ports by setting the maximum allowed power to each port in 1–watt increments, from 3 watts to 16 watts for PWR models and 3 watts to 32 watts for PWR+ models.

Important:

Allow 30 seconds between unplugging and replugging an IP device to the switch to enable the IP device to discharge. If you attempt to connect earlier, the switch may not detect the IP device.

The Data Link Layer (DLL) classification provides finer power resolution and the ability for Power Sourcing Equipment (PSE) and Powered Device (PD) to participate in dynamic power allocation. This is ability is enabled by configuring the PoE PD detection type (802.3at or 802.3at_and_legacy) to support a DLL classification for communication.

The PWR+ devices support the IEEE 802.3at-2009 standard for an Link Layer Discovery Protocol (LLDP) configuration with a PD. The LLDP support for PoE+ is added by extending the existing standard LLDP DOT3 Power through MDI TLV defined by the IEEE 802.1ab with the new fields and values defined in the IEEE 802.3at-2009 standard.

For more information, see LLDP support for PoE+ on page 71.

Note:

The LLDP support for the PoE+ feature is available only on the PWR+ models.

The switch provides the capability to configure a PoE power threshold, which lets you set a percentage of the total PoE power usage at which the switch sends a warning trap message. If the PoE power usage exceeds the threshold and SNMP traps are appropriately configured, the switch sends the **pethMainPowerUsageOnNotification** trap. If the power consumption exceeds and then falls below the threshold, the switch sends the **pethMainPowerUsageOffNotification** trap.

LLDP support for PoE+

LLDP is a link (point-to-point) MAC protocol which is used to allow switches and routers to automatically discover a network topology. Under IEEE 802.3at, LLDP is extended to perform a link configuration function related to power negotiation between a PSE and PD.

The DLL scheme uses a PoE-specific LLDP specified in the Clause 79 (IEEE 802.3) with additional protocol rules defined in Clause 33 (IEEE 802.3at). According to Clause 33, there are two power entities, PD and PSE. These entities allow devices to draw or supply power over the sample generic cabling as used for data transmission.

You can configure the PoE PD detection type (802.3at or 802.3at_and_legacy) to support a DLL classification for communication. The Data Link Layer classification provides finer power resolution

and the ability for PSE and PD to participate in dynamic power allocation. The allocated power to the PD can change one or more times during PD operation.

The following configurations must be enabled on a PoE-capable port for applying LLDP support for PoE+:

- Link Layer Discovery Protocol Data Units (LLDPDUs) for transmission and reception
- Power-via-MDI TLV transmit flag
- PD detection type must be 802.3at or 802.3at_and_legacy

By default, the LLDPU transmission and reception are enabled on all device under test (DUT) ports.

For more information about the power through MDI TLV, see 802.1AB integration on page 79.

Class PoE Management Mode

In class PoE management mode, the maximum power for an interface is determined by the class of the connected powered device.

The following table lists the classes of powered devices and associated power levels.

Standard	Class	Maximum power delivered by PoE port	Power range of powered device
IEEE 802.3af (PoE) and IEEE 802.3at (PoE+)	0	15.4 watts	0.44 through 12.95 watts
	1	4.0 watts	0.44 through 3.84 watts
	2	7.0 watts	3.84 through 6.49 watts
	3	15.4 watts	6.49 through 12.95 watts
IEEE 802.3at (PoE+)	4	30.0 watts	12.95 through 25.5 watts

Due to line loss, the power range of the PD is less than the maximum power delivered at the PoE port for each class. Line loss is influenced by cable length, quality, and other factors and is typically around 10 to 25 percent.

The powered device communicates to the PoE controller which class it belongs to when it is connected. The PoE controller then allocates to the interface the maximum power required by the class. It does not allocate power to an interface until a powered device is connected. Class 0 is the default class for powered devices that do not provide class information. Class 4 powered devices are supported only by PoE ports that support IEEE 802.3at (PoE+).

The default detection type for PWR+ models is 802.3at. If the 802.3af and 802.3af_and_legacy detection types are used, the switch operates as a Type 1 Power Sourcing Equipment (PSE), even when the high power mode is enabled.

Port power priority

You can configure the power priority of each port by choosing low, high, or critical power priority settings.

The switch automatically drops low-priority ports when the power requirements exceed the available power budget. When the power requirements becomes lower than the switch power budget, the power returns to the dropped port. When several ports have the same priority and the power budget is exceeded, the ports with the highest interface number are dropped until the consumption is within the power budget.

For example, assume the following scenario:

- Ports 1 to 40 are configured as low priority.
- Port 41 is configured as high priority.
- Ports 1 to 41 are connected to powered devices.

The devices connected to the ports consume the available switch power. The device connected to port 41 requests power from the switch. The switch provides the required power, as port 41 is configured as high priority. However, to maintain the power budget, the switch powers off one of the ports configured as low priority. In this case, the switch powers off port 40 and provides power to port 41. If another port drops power, the system automatically reinstates power to port 40.

Viewing PoE ports using EDM

The front panel view of Enterprise Device Manager (EDM) provides additional information for PoE ports on the PoE switch. This additional information is in the form of a colored **P** that appears inside the graphic representation of the port. This colored P represents the current power aspect of the PoE port.

Table 8: Power Aspect color codes on page 73 explains the different colors displayed by the power aspect.

Table 8: Power Aspect color codes

Color	Description
Green	The port is currently delivering power.
Red	The power and detection mechanism for the port is disabled.
Orange	The power and detection mechanism for the port is enabled. The port is not currently delivering power.
White/Gray	The power and detection mechanism for the port is unknown.

Important:

The data and power aspect coloring schemes are independent of each other. You can view the initial status for both data and power aspect for the port. To refresh the power status, right-click the unit, and select **Refresh PoE Status** from the shortcut menu.

Chapter 5: Link Layer Discovery Protocol (802.1ab)

This chapter describes the Link Layer Discovery Protocol (LLDP) (IEEE 802.1ab).

Link Layer Discovery Protocol (IEEE 802.1AB) Overview

The switch software supports the Link Layer Discovery Protocol (LLDP) (IEEE 802.1AB), which enables stations connected to a LAN to advertise their capabilities to each other, enabling the discovery of physical topology information for network management. LLDP-compatible stations can consist of any interconnection device including computers, IP Phones, switches, and routers. Each LLDP station stores LLDP information in a standard Management Information Base (MIB), making it possible for a network management system (NMS) or application to access the information.

Each LLDP station:

- Advertises connectivity and management information about the local station to adjacent stations on the same 802 LAN (802.3 Ethernet with the switch).
- Receives network management information from adjacent stations on the same LAN.

LLDP also makes it possible to discover certain configuration inconsistencies or malfunctions that can result in impaired communications at higher layers. For example, it can be used to discover duplex mismatches between an IP Phone and the connected switch.

LLDP is compatible with IETF PROTO MIB (IETF RFC 2922).

Figure 12: How LLDP works on page 75 shows an example of how LLDP works in a network.

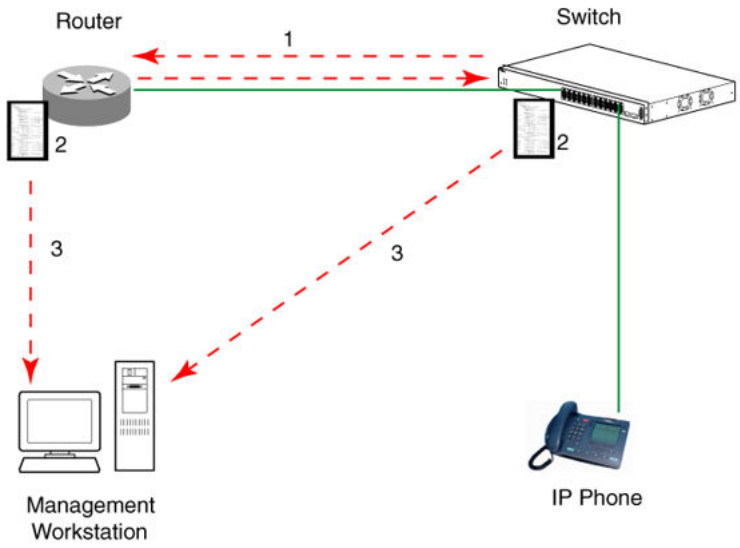


Figure 12: How LLDP works

1. The switch and LLDP-enabled router advertise chassis/port IDs and system descriptions to each other.
2. The devices store the information about each other in local MIB databases, accessible by using SNMP.
3. A network management system retrieves the data stored by each device and builds a network topology map.

LLDP operational modes

LLDP is a one-way protocol. An LLDP agent can transmit information about the capabilities and current status of the system associated with its MAC service access point (MSAP) identifier. The LLDP agent also can receive information about the capabilities and current status of the system associated with a remote MSAP identifier. However, LLDP agents cannot solicit information from each other.

You can set the local LLDP agent to transmit only, receive only, or to both transmit and receive LLDP information. You can configure the state for LLDP reception and transmission using SNMP or ACLI commands.

Connectivity and management information

The information fields in each LLDP frame are in a Link Layer Discovery Protocol Data Unit (LLDPDU) as a sequence of short, variable-length information elements known as TLVs (type, length, value).

Each LLDPDU includes the following four mandatory TLVs:

- Chassis ID TLV
- Port ID TLV
- Time To Live TLV
- End Of LLDPDU TLV

The chassis ID and the port ID values are concatenated to form a logical MSAP identifier that the recipient uses to identify the sending LLDP agent and port.

A non-zero value in the Time to Live (TTL) field of the TTL TLV indicates to the receiving LLDP agent how long the LLDPDU information from the MSAP identifier remains valid. The receiving LLDP agent automatically discards all LLDPDU information, if the sender fails to update it in a timely manner. A zero value in the TTL field of the Time to Live TLV tells the receiving LLDP agent to discard the information associated with the LLDPDU MSAP identifier.

In addition to the four mandatory TLVs, switch software supports the TLV extension set consisting of Management TLVs and organizational-specific TLVs. Organizationay-specific TLVs are defined by either the professional organizations or the individual vendors that are involved with the particular functionality being implemented. You can specify which of these optional TLVs to include in the transmitted LLDPDUs for each port.

Basic management TLV set

The basic management TLV set contains the following TLVs:

- Port Description TLV
- System Name TLV
- System Description TLV
- System Capabilities TLV—indicates both the capabilities and current primary network function of the system, such as end station, bridge, or router.
- Management Address TLV

The switch supports IPv4 and IPv6 management addresses and the transmission of all TLVs from the basic management TLV set is enabled by default.

IEEE 802.1 organizational-specific TLVs

The optional IEEE 802.1 organizational-specifc TLVs are:

- Port VLAN ID TLV—Contains the local port PVID.
- Port And Protocol VLAN ID TLV—Contains the VLAN IDs of the port and protocol VLANs that contain the local port.
- VLAN Name TLV—Contains the VLAN names of the VLANs that contain the local port.

- Protocol Identity TLV—Advertises the protocol supported. The following values are used for supported protocols on the switch:
  - Stp protocol {0x00,0x26,0x42,0x42,0x03, 0x00, 0x00, 0x00}
  - Rstp protocol string {0x00,0x27,0x42,0x42,0x03, 0x00, 0x00, 0x02}
  - Mstp protocol string {0x00,0x69,0x42,0x42,0x03, 0x00, 0x00, 0x03}
  - Eap protocol string {0x88, 0x8E, 0x01}
  - Lldp protocol string {0x88, 0xCC}

IEEE 802.3 organizational-specific TLVs

The optional IEEE 802.3 organizational-specifc TLVs are:

- MAC/PHY Configuration/Status TLV—Indicates the autonegotiation capability and the speed and duplex status of IEEE 802.3 MAC/PHYs.
- Power-Via-MDI TLV—Indicates the capabilities and current status of IEEE 802.3 PMDs that either require or can provide power over twisted-pair copper links.
- Link Aggregation TLV—Indicates the current link aggregation status of IEEE 802.3 MACs.
- Maximum Frame Size TLV—Indicates the maximum supported 802.3 frame size.

Organizational-specific TLVs for MED devices

The optional organizational-specific TLVs for use by Media Endpoint Devices (MED) and MED network connectivity devices are:

- Capabilities TLV—Enables a network element to advertise the LLDP-MED TLVs it is capable of supporting.
- Network Policy Discovery TLV–A fixed length TLV that enables both network connectivity devices and endpoints to advertise VLAN type, VLAN identifier (VID), and Layer 2 and Layer 3 priorities associated with a specific set of applications on a port. In addition, an LLDP-MED endpoint advertises this TLV for supported application types to enable the discovery of specific policy information and the diagnosis of network policy configuration mismatch issues.
- Location Identification TLV—Allows network connectivity devices to advertise the appropriate location identifier information for an endpoint to use in the context of location-based applications. The Location Identification Discovery extension enables the advertisement of location identifier information to Communication Endpoint Devices (Class III), based on the configuration of the Network Connectivity Device to which it is connected. This is expected to be related to wiremap or similar network topology data, such that the configuration of the Network Connectivity Device can uniquely identify the physical location of the connected MED Endpoint, and hence the correct location identifier information for it to use.
- Extended Power-via-MDI TLV—Enables advanced power management between an LLDP-MED endpoint and network connectivity devices. The Extended Power-via-MDI TLV enables

the advertisement of fine grained power requirement details, endpoint power priority, and power status for both endpoint and network connectivity devices.

- Inventory TLVs—Important in managed VoIP networks. Administrative tasks in these networks are made easier by access to inventory information about VoIP entities. The LLDP Inventory TLVs consist of the following:
  - LLDP-MED Hardware Revision TLV allows the device to advertise its hardware revision.
  - LLDP-MED Firmware Revision TLV allows the device to advertise its firmware revision.
  - LLDP-MED Software Revision TLV allows the device to advertise its software revision.
  - LLDP-MED Serial Number TLV allows the device to advertise its serial number.
  - LLDP-MED Manufacturer Name TLV allows the device to advertise the name of its manufacturer.
  - LLDP-MED Model Name TLV allows the device to advertise its model name
  - LLDP-MED Asset ID TLV allows the device to advertise its asset ID

802.1AB MED network policies

You can configure 802.1AB MED network policies to dynamically configure voice VLAN, DSCP, priority, and VLAN tagging on the switch for voice traffic received from an IP phone. When you enable LLDP and configure the MED network policies on the switch, the switch sends the network policies to the IP Phone. The IP phone processes the data in the LLDP PDU and transmits the voice traffic with the appropriate VLAN ID, VLAN tagging, DSCP and priority information.

You can configure MED network policies on a switch port that has ADAC enabled. The network policies that you configure have priority over automatically configured ADAC network policies on a port.

Transmitting LLDPDUs

When a transmit cycle is initiated, the LLDP manager extracts the managed objects from the LLDP local system MIB and formats this information into TLVs. TLVs are inserted into the LLDPDU.

LLDPU are regularly transmitted at a user-configurable transmit interval (*tx-interval*) or when any of the variables in the LLDPU is modified on the local system (such as system name or management address).

Tx-delay is the minimum delay between successive LLDP frame transmissions.

Beginning in Release 5.7, the transmission and reception of LLDPDUs on all Device Under Testing (DUT) ports are enabled by default.

TLV system MIBs

The LLDP local system MIB stores the information for constructing the various TLVs to be sent. The LLDP remote systems MIB stores the information received from remote LLDP agents.

LLDPDU and TLV error handling

LLDPDUs and TLVs that contain detectable errors are discarded. TLVs that are not recognized, but that also contain no basic format errors, are assumed to be validated and are stored for possible later retrieval by network management.

802.1AB integration

802.1AB integration provides a set of LLDP TLVs for Avaya IP Phone support.

You can select which Avaya IP Phone support TLVs can be transmitted from individual switch ports by enabling or disabling TLV transmit flags for the port. The TLV transmit flags and TLV configuration operate independently of each other. Therefore, you must enable the transmit flag on a switch port for a specific TLV, before the port can transmit that TLV to an Avaya IP Phone.

A switch port does not transmit Avaya IP Phone support TLVs unless the port detects a connected Avaya IP Phone.

PoE conservation level request TLV

With the PoE conservation level request TLV, you can configure the switch to request that an Avaya IP Phone, connected to a switch port, operate at a specific power conservation level. The requested conservation level value for the switch can range from 0 to 255, but an Avaya IP Phone can support only maximum 243 levels. If you request a power conservation level higher than the maximum conservation level an Avaya IP Phone can support, the phone reverts to its maximum supported power conservation level. If you select a value of 0 for the PoE conservation level request, the switch does not request a power conservation level for an Avaya IP Phone.

If you set the PoE conservation level request TLV on a port and you enable Avaya Energy Saver (AES) for the port, the TLV value is temporarily modified for maximum power savings by the switch. When you disable AES for the port, the switch automatically restores the power conservation level request TLV to the previous value.

If you set the PoE conservation level on a port while AES is active on the port and the maximum PoE Conservation level for the switch is 255, the switch replaces the PoE conservation level stored for AES restoration with the new value you set for the port.

By default, the transmission of PoE conservation level request TLV is enabled on all PoE capable switch ports.

You can only configure the PoE conservation level request TLV on switches that support PoE.

PoE conservation level support TLV

With the PoE conservation level support TLV, an Avaya IP Phone transmits information about current power save level, typical power consumption, maximum power consumption, and power conservation level of the IP Phone to a switch port.

Call server TLV

With the call server TLV, you can configure the switch to advertise the IP addresses of a maximum of eight call servers to connected Avaya IP Phones. Avaya IP Phones use the IP address information to connect to a call server.

Avaya IP Phones use the call server TLV to report which call server it is connected to back to the switch.

The call server TLV supports IPv4 addresses only.

By default, the transmission of the call server TLV is enabled for all ports.

File server TLV

With the file server TLV, you can configure the switch to advertise the IP addresses of a maximum of 4 file servers to connected Avaya IP Phones. Avaya IP Phones use the IP address information to connect to a file server.

Avaya IP Phones use the call server TLV to report which file server it is connected to back to the switch.

The file server TLV supports IPv4 addresses only.

By default, the transmission of the file server TLV is enabled for all ports.

Note:

If your Avaya IP Phone uses SIP, 802.1AB (LLDP) TLVs do not provide all information for the IP Phone. You must specify a fileserver IP address TLV so the IP Phone can download the SIP configuration information, because the IP Phone retrieves information related to the SIP domain, port number and transport protocol from the file server.

802.1Q framing TLV

With the 802.1Q framing TLV, you can configure the switch to exchange Layer 2 priority tagging information with Avaya IP Phones.

Because the 802.1Q framing TLV operates as an extension of the LLDP Network Policy TLV, you must enable the LLDP MED Capabilities and LLDP MED Network Policy TLVs for the 802.1Q framing TLV to function.

By default, the transmission of the 802.1Q Framing TLV is enabled for all ports.

Phone IP TLV

Avaya IP Phones use the phone IP TLV to advertise IP Phone IP address configuration information to the switch.

The phone IP TLV supports IPv4 addresses only.

Power via MDI TLV

The Power via MDI TLV allows network management to advertise and discover the MDI power support capabilities. TLV also performs Data Link Layer classification using PoE-specific LLDP specified in the Clause 79 of IEEE 802.3 with additional protocol rules defined in Clause 33 (IEEE 802.3at). Clause 33 defines two power entities, Powered Device (PD) and Power Sourcing Equipment (PSE). These entities allow devices to draw or supply power over the sample generic cabling as used for data transmission.

The following fields are added to provide Data Link Layer classification capabilities:

- Power type/source/priority—Contains the power type, power source, and priority bit-map. The power type is set according to the device generating the LLDPPDU. The power source describes the different definitions for PD and PSE. Power priority indicates the configured PoE priority. When the power type is PD, this field is set to the power priority configured for the

device. If a PD is unable to determine its power priority or it is not configured, then this field is set to 00.

- PD Requested Power—Contains the PD requested power value. The PD requested power value is the maximum input average power which the PD wants to draw and as measured at the input to the PD.
- PSE Allocated Power—Contains the PSE allocated power value. The PSE allocated power value is the maximum input average power which the PSE expects the PD to draw at the input to the PD.

Fabric Attach LLDP Extensions

The Fabric Attach (FA) agent advertises its capabilities through LLDP packets. New organizational-specific TLVs are used to export FA element data to directly-connected network components. The new TLVs use TLV type 127 as described in the 802.1ab (LLDP) standard.

For more information about FA, see *Configuring Avaya Fabric Connect on Avaya Ethernet Routing Switch 4800 Series*, NN47205-507.

Avaya FA Element TLV

With the Avaya FA Element TLV, FA elements advertise their FA capabilities. This data forms the basis for FA element discovery and determines the state machine used by FA entities. This information is received, processed, and stored by the receiving device so that it is immediately accessible for internal applications.

FA Element TLV data integrity and source validation is supported through the use of the HMAC-SHA256 message authentication algorithm.

The Organizationally Specific Avaya FA Element TLV contains the following data:

- FA Element Type — indicates element capabilities
- FA Element Management VLAN — identifies the management VLAN
- FA Element State Data — supports the exchange of element state information
- FA Element System ID — unique system identifier used to support element discovery and tracking.

The FA Element TLV is included in all LLDPDUs when the FA service is enabled and when the per-port transmission flags associated with this TLV are enabled. FA port settings can only be viewed and not modified through the LLDP CLI interface. The command **`lldp tx-tlv vendor avaya`** is not supported to change the LLDP FA TLV settings. FA port settings must be updated using the FA CLI support (with the **`fa port-enable`** ACLI command). For more information, see *Configuring Avaya Fabric Connect on Avaya Ethernet Routing Switch 4800 Series*, NN47205-507.

With the FA service enabled, LLDPDUs containing proprietary Avaya TLVs are transmitted on links that may or may not have Avaya components at the far end. Since the LLDP standard dictates that unrecognized but well-formed TLVs in received LLDPDUs should be ignored, this should not cause any issues.

Note:

This behavior is different from the way other proprietary Avaya LLDP TLVs are handled. The other proprietary Avaya TLVs are only included in LLDPDUs generated on links that have recognized Avaya elements, specifically Avaya telephony gear, at the far end.

Avaya FA I-SID/VLAN Assignment TLV

With the Avaya FA I-SID/VLAN Assignment TLV, an FA Proxy or FA Client distributes I-SID/VLAN assignments that it would like installed by an FA Server. This information is received, processed, and stored by the receiving device so that it is immediately accessible for internal applications. An FA Server uses FA I-SID/VLAN Assignment TLV to provide feedback about the requested bindings to the originating FA device.

I-SID/VLAN Assignment TLV data integrity and source validation is supported through the use of the HMAC-SHA256 message authentication algorithm.

I-SID/VLAN assignment requests can be accepted (activated) or rejected by an FA Server.

The FA I-SID/VLAN Assignment TLV is only included in a LLDPDU when complementary FA element devices (FA Proxy, FA Server or FA Client) are directly connected. The associated per-port transmit flags must be enabled as well.

The Organizationally Specific Avaya FA I-SID/VLAN Assignment TLV contains the following data:

- VLAN ID — Identifies the VLAN component of the I-SID/VLAN mapping.
- I-SID — Identifies the I-SID component of the I-SID/VLAN mapping.
- Status — Contains information related to the processing of the I-SID/VLAN mapping.

Multiple I-SID/VLAN assignments can be included in a single TLV.

All I-SID/VLAN assignments defined on an FA Proxy, as well as those received from FA Clients when external client proxy operation is enabled, start in the *pending* state. This state is updated based on feedback received from the FA Server. If an assignment is accepted by the FA Server, its state is updated to *active*. A server can also reject proposed I-SID/VLAN assignments. In this case, the assignment state is updated to *rejected*.

Avaya TLV Transmit Flags

With the transmit flags you can choose on a per-port basis which LLDP TLVs (including the Avaya TLVs, such as Call Server TLV or FA TLVs) to include in transmitted LLDPDUs, and which to exclude. These flags are independent of the configured TLV data. Therefore, even if data for a specific TLV is configured, the TLV is only included in LLDPDUs on ports for which the TLV is enabled for transmission.

By default, the transmit flags are set to *enabled* for non-FA Avaya TLVs (the PoE Conservation Levels TLV default depends on the device's PoE support) on all ports. The transmit flags for the FA Element and FA I-SID/VLAN Assignment TLVs default to *enabled* on a FA Proxy and *disabled* on an FA Server, on all ports. The transmit flag values for the FA TLVs can be manipulated through the FA support (with the **`fa port-enable`** ACLI command).

Chapter 6: System configuration using ACLI

This chapter provides procedures to configure the switch or stack with Avaya Command Line Interface (ACLI).

Setting user access limitations

The administrator can use ACLI to limit user access by creating and maintaining passwords for web, telnet, and console access. This is a two-step process that requires that you first create the password and then enable it.

Ensure that you enter Global Configuration mode in ACLI before you start these tasks.

Setting the read-only and read/write passwords

To require password authentication when a user logs in to a switch, you must edit the password configuration.

About this task

Follow this procedure to edit the password configuration.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

2. Enter the following command:

   ```
   cli password {read-only | read-write} <password>
   ```

3. Press `Enter`.

Variable definitions

The following table describes the parameters for the `cli password` command.

Variable	Definition
{read-only | read-write}	Specify whether the password change is for read-only access or read-write access.
<password>	Specify password length. If password security is disabled, the password length can be 1 to 15 characters. If password security is enabled, the range for the password length is 10 to 15 characters.

Enabling and disabling passwords

After you set the read-only and read-write passwords, you can individually enable or disable them for the various switch-access methods.

About this task

Follow this procedure to enable or disable a password for a specific access method.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

2. Enter the following command:

   ```
   cli password {telnet | serial} {none | local | radius | tacacs}
   ```

3. Press `Enter`.

Variable definitions

The following table describes the variables for the **`cli password`** command.

Variable	Definition
{telnet | serial}	Specify whether the password is enabled or disabled for telnet or the console. Telnet and web access are connected so that enabling or disabling passwords for one enables or disables passwords for the other.
none | local | radius | tacacs	Specify the password type to modify: • none: disables the password. • local: uses the locally defined password for serial console or telnet access. • radius: uses RADIUS authentication for serial console or telnet access. • tacacs: uses TACACS+ authentication, authorization, and accounting (AAA) services for serial console or telnet access.

Configuring RADIUS authentication

The Remote Authentication Dial-In User Service (RADIUS) protocol is a means to authenticate users through a dedicated network resource. This network resource contains a list of eligible user names and passwords and their associated access rights. When RADIUS is used to authenticate access to a switch, the user supplies a user name and password and this information is checked against the existing list. If the user credentials are valid they can access the switch.

If you select RADIUS Authentication when you set up passwords through ACLI, you must specify the RADIUS server settings to complete the process.

About this task

Use this procedure to enable RADIUS authentication through ACLI,

Procedure

1. Enter Global Configuration mode:

   ```
   enable

   configure terminal
   ```

2. At the command prompt, enter the following command to configure the server settings:

   ```
   radius-server host <address> [secondary-host <address>] port <num>
   key <string> [password fallback] timeout
   ```

3. From the command prompt, enter the following command to enable Change Radius Password:

   ```
   radius-server encapsulation <MS-CHAP-V2>
   ```

Variable definitions

Use the data in the following table to use the **`radius-server`** command.

Parameter	Description
host <address>	The IPv6 or IP address of the RADIUS server that is used for authentication.
[secondary-host <address>]	The secondary-host <address> parameter is optional. If you specify a backup RADIUS server, include this parameter with the IPv6 or IP address of the backup server.
port <num>	The UDP port number the RADIUS server uses to listen for requests.
key <string>	A secret text string that is shared between the switch and the RADIUS server. Enter the secret string, which is a string up to 16 characters in length.
[password fallback]	An optional parameter that enables the password fallback feature on the RADIUS server. This option is disabled by default.

Table continues…

Parameter	Description
timeout	The RADIUS time-out period.
encapsulation <MS-CHAP-V2>	Enables Microsoft Challenge-Handshake Authentication Protocol version 2 (MS-CHAP-V2). MSCHAP-V2 provides an authenticator controlled password change mechanism also known as the change RADIUS password function. DEFAULT: disabled **Note:** Change RADIUS Password is available only in secure software builds. **Note:** When you disable MS-CHAP-V2, RADIUS encapsulation is set to password authentication protocol (PAP) by default. PAP is not considered a secure encapsulation.

Related RADIUS Commands

When you configure RADIUS authentication, three other ACLI commands are useful to the process:

1. `show radius-server`

   The command has no parameters and displays the current RADIUS server configuration.

2. `no radius-server`

   This command has no parameters and clears any previously configured RADIUS server settings.

3. `radius-server password fallback`

   This command has no parameters and enables the password fallback RADIUS option if it you did not set the option when you initially configured the RADIUS server.

Run script configuration

Use the procedures in this section to configure IP Office, LLDP, and ADAC Run scripts.

Configuring IP Office script

About this task

IP Office script automatically configures or modifies the VLAN IDs and port memberships, VLAN IP addresses, default route, QoS, and LLDP settings.

Note:

Avaya recommends you to execute the ACLI command **`run ipoffice`** on a switch operating in a factory default state.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   run ipoffice [verbose]
   ```

Example

The following is a sample output of the `run ipoffice` command script.

```
Switch>enable
Switch#run ipoffice

% The Voice VLAN ID has been set to 42
% The Voice VLAN Gateway IP address has been set to 192.168.42.254
% The Voice VLAN Gateway IP network mask has been set to 255.255.255.0
% The Data VLAN ID has been set to 44
% The Data VLAN IP address has been set to 192.168.44.254
% The Data VLAN IP network mask has been set to 255.255.255.0
% ------------------------------------------------------------------
% IP Offie LAN port is set to plug into switch port 1
% Gateway Modem-Router port is set to plug into switch port 2
% ------------------------------------------------------------------
% Default IP Route set to 192.168.44.2 (Gateway Modem-Router interface)
% IP Office Call-Server IP address is set to 192.168.42.1
% IP Office File-Server IP address is set to 192.168.42.1
% ** Switch QoS and Unified Communications policies setup and saved **
% ** IP Office solution automated switch setup complete and saved **
% ------------------------------------------------------------------
% To manage this Avaya switch, enter 192.168.44.254 in your Web browser.
% ------------------------------------------------------------------
Switch#
```

The following is sample output of the `run ipoffice verbose` command script.

```
Switch# run ipoffice verbose

*********************************************************
*** This script will guide you through configuring the ***
*** Avaya switch for optimal operation with IP Office. ***
*** ---------------------------------------------------***
*** The values in [] are the default values, you can   ***
*** input alternative values at any of the prompts.    ***
*** Warning: This script may delete previous settings. ***
*** If you wish to terminate or exit this script       ***
*** enter ^C <control-C> at any prompt.                ***
*********************************************************
Voice VLAN ID [42] :
Voice VLAN Gateway IP Address [192.168.42.254] :10.10.42.254
Voice VLAN Gateway IP Mask [255.255.255.0] :
Data VLAN ID [44] :
Data VLAN Gateway IP Address [192.168.44.254] :10.10.44.254
Data VLAN Gateway IP Mask [255.255.255.0] :
IP Route to Gateway Modem-Router (Internet/WAN) [192.168.44.2] :10.10.44.99
IP Office Call-Server IP address [192.168.42.1] :10.10.42.200
IP Office File-Server IP address [192.168.42.1] :10.10.42.200
% The Voice VLAN ID has been set to 42
```

```
% The Voice VLAN Gateway IP address has been set to 10.10.42.254
% The Voice VLAN Gateway IP network mask has been set to 255.255.255.0
% The Data VLAN ID has been set to 44
% The Data VLAN IP address has been set to 10.10.44.254
% The Data VLAN IP network mask has been set to 255.255.255.0
% ------------------------------------------------------------------------
% IP Office LAN port is set to plug into switch port 1
% Gateway Modem-Router port is set to plug into switch port 2
% ------------------------------------------------------------------------
% Default IP Route set to 10.10.44.99 (Gateway Modem-Router interface)
% IP Office Call-Server IP address is set to 10.10.42.200
% IP Office File-Server IP address is set to 10.10.42.200
% ** Switch QoS and Unified Communications policies setup and saved **
% ** IP Office solution automated switch setup complete and saved **
% ------------------------------------------------------------------------
% To manage this Avaya switch, enter 10.10.44.254 in your Web browser.
% ------------------------------------------------------------------------
Switch#
```

Note:

If there is an error, the script execution stops and the system displays an error message.

Configuring ADAC script using ACLI

About this task

Run ADAC script detects IP Phones using ADAC call server communication. Also, the script detects all the configurations for voice communications over the data network using LLDP.

The ADAC script prompts for the Uplink, Call-Server and Telephony ports. Some of the VLAN tagging settings, LLDP network policy parameters for voice, or QoS rules are configured in the background by ADAC.

Note:

You cannot configure VLAN 1 (default) as the voice VLAN ID.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   `run adac`

3. Enter the information requested at each prompt.

Example

The following is the sample output for `run adac` command script.

```
Switch# run adac

*********************************************************
*** This script will guide you through configuring the ***
*** Avaya switch for optimal operation using ADAC.     ***
*** ---------------------------------------------------***
*** Input required values at each prompts.             ***
*** If you wish to terminate or exit this script       ***
```

```
*** enter ^C <control-C> at any prompt.                 ***
*** Warning: This script may delete previous settings. ***
*********************************************************
Data VLAN ID [2-4094 or Enter to skip]:
Do you want to use the Data VLAN as the management VLAN [yes/no]?
Default IP Route [A.B.C.D]:
Data VLAN Gateway IP address [A.B.C.D or Enter to skip]:
Data VLAN Gateway IP netmask [xxx.xxx.xxx.xxx/xx]:
Management IP address [A.B.C.D or Enter to skip]:
Management IP netmask [xxx.xxx.xxx.xxx or Enter to skip]:
Voice VLAN ID [2-4094]:
Voice VLAN Gateway IP address [A.B.C.D or Enter to skip]:
Voice VLAN Gateway IP netmask [xxx.xxx.xxx.xxx/xx]:
LLDP Call-Server IP address [A.B.C.D]:
LLDP File-Server IP address [A.B.C.D]:
Do you want to configure a MLT Trunk as Uplink port? [yes/no]
Uplink Trunk port members [slot/port,slot/port...]:
ADAC Uplink ports [slot/port,slot/port...]:
ADAC Call Server ports [slot/port,slot/port...]:
ADAC Telephony ports [slot/port,slot/port...]:
% The Data VLAN ID is set to [according to the provided input]
% The Data VLAN [according to the provided input] is set as Management VLAN
% The Default IP Route is set to [according to the provided input]
% The Data VLAN Gateway IP address is set to [according to the provided input]
% The Data VLAN Gateway IP netmask is set to [according to the provided input]
% The Management IP address is set to [according to the provided input]
% The Management IP netmask is set to [according to the provided input]
% The Voice VLAN ID is set to [according to the provided input]
% The Voice VLAN Gateway IP address is set to [according to the provided input]
% The Voice VLAN Gateway IP netmask is set to [according to the provided input]
% LLDP Call Server IP address is set to [according to the provided input]
% LLDP File Server IP address is set to [according to the provided input]
% The ADAC Uplink ports are set to [according to the provided input]
% The ADAC Call Server ports are set to [according to the provided input]
% The ADAC Telephony ports are set to [according to the provided input]
% ** ADAC operating mode is set to tagged frames **
% ** ADAC is now enabled **
% ** Switch QoS and Unified Communications policies setup and saved **
% ------------------------------------------------------------------------
% To manage this Avaya switch, enter [MGMT VLAN IP entry] in your Web browser.
% ------------------------------------------------------------------------
```

Configuring LLDP script using ACLI

About this task

Configures or modifies the LLDP and Voice VLAN using VLAN ID, IP addresses, LLDP MED policies, and QoS rules.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   run lldp
   ```

3. Enter the information requested at each prompt.

Example

The following is a sample output of the `run lldp` command script

```
*********************************************************
*** This script will guide you through configuring the ***
*** Avaya switch for optimal operation using LLDP.     ***
*** ---------------------------------------------------***
*** Input required values at each prompts.             ***
*** If you wish to terminate or exit this script       ***
*** enter ^C <control-C> at any prompt.                ***
*** Warning: This script may delete previous settings. ***
*********************************************************
Data VLAN ID [2-4094 or Enter to skip]:
Do you want to use the Data VLAN as the management VLAN [yes/no]?
Default IP Route [A.B.C.D]:
Data VLAN Gateway IP address [A.B.C.D or Enter to skip]:
Data VLAN Gateway IP netmask [xxx.xxx.xxx.xxx/xx]:
Data VLAN Uplink ports [unit/port, unit/port..]:
Management IP address [A.B.C.D or Enter to skip]:
Management IP netmask [xxx.xxx.xxx.xxx/xx]:
Voice VLAN ID [2-4094]:
Voice VLAN Gateway IP address [A.B.C.D or Enter to skip]:
Voice VLAN Gateway IP netmask [xxx.xxx.xxx.xxx/xx]:
LLDP Call-Server IP address [A.B.C.D]:
LLDP File-Server IP address [A.B.C.D]:
% The Data VLAN ID is set to [according to the provided input]
% The Data VLAN [according to the provided input] is set as Management VLAN
% The Default IP Route is set to [according to the provided input]
% The Data VLAN Gateway IP address is set to [according to the provided input]
% The Data VLAN Gateway IP netmask is set to [according to the provided input]
% The Data VLAN Uplink ports [according to the provided input] tagging is set to tagAll
% The Management IP address is set to [according to the provided input]
% The Management IP netmask is set to [according to the provided input]
% The Voice VLAN ID is set to [according to the provided input]
% The Voice VLAN Gateway IP address is set to [according to the provided input]
% The Voice VLAN Gateway IP netmask is set to [according to the provided input]
% LLDP Call Server IP address is set to [according to the provided input]
% LLDP File Server IP address is set to [according to the provided input]
% ** Switch QoS and Unified Communications policies setup and saved **
% ------------------------------------------------------------------
% To manage this Avaya switch, enter [MGMT VLAN IP entry] in your Web browser.
% ------------------------------------------------------------------
```

Changing switch software

Important:

When you use the TFTP or SFTP address parameter to perform copy or download commands, the system overwrites the assigned default TFTP or SFTP server address.

About this task

The software download occurs automatically without user intervention. This process deletes the contents of the flash memory and replaces it with the desired software image. Do not interrupt the download. Depending on network conditions, this process can take up to 10 minutes.

When the download is complete, the switch automatically resets unless you used the `no-reset` parameter. The software image initiates a self-test and returns a message when the process is complete. The following is an example of this message.

```
Download Image [/]
Saving Image [-]
Finishing Upgrading Image
```

During the download, the switch is not operational.

You can track the progress of the download by observing the front panel LEDs. For more information about this topic, see LED activity during software download on page 63.

Procedure

1. Access ACLI through the telnet protocol or through a console connection.
2. At the command prompt, enter the following command:

   ```
   download [sftp] [address <A.B.C.D> | <WORD>] {image <image name> |
   image-if-newer <image name> | diag <image name> | poe_module_image
   <image name>} [no-reset] [usb]
   ```

3. Press `Enter`.

Variable definitions

The following table describes the parameters for the **`download`** command.

Variable	Definition
sftp	Download from the SFTP server.
address <A.B.C.D> | <WORD>	The IPv6 or IP address of the TFTP or SFTP server you use. The address <A.B.C.D> | <WORD> parameter is optional and if you omit it, the switch defaults to the TFTP or SFTP server specified by the `tftp-server` or `sftp-server` command unless software download is to occur using a USB Mass Storage Device.
image <image name>	The name of the software image to be downloaded from the TFTP or SFTP server.
image-if-newer <image name>	This parameter is the name of the software image to be downloaded from the TFTP server if it is newer than the currently running image. This option is not supported for SFTP in Release 5.6.
diag <image name>	The name of the diagnostic image to be downloaded from the TFTP or SFTP server.
poe_module_image <image name>	The name of the Power over Ethernet module image to be downloaded from the TFTP server. This option is available only for switches that support Power Over Ethernet. This option is not supported for SFTP in Release 5.6.

Table continues…

Variable	Definition
no-reset	This parameter forces the switch to not reset after the software download is complete.
usb	Specifies that the software download is performed using a USB Mass Storage Device and the front panel USB port.
The `image, image-if-newer, diag`, and `poe_module_image` parameters are mutually exclusive; you can execute only one at a time. The address <ip> and usb parameters are mutually exclusive; you can execute only one at a time.	

Setting TFTP parameters

Many processes in the switch can use a Trivial File Transfer Protocol (TFTP) server. You can set a default TFTP server for the switch and clear these defaults through ACLI.

Important:

When you use the TFTP address parameter to perform copy or download commands, the system overwrites the assigned default TFTP server address.

Setting a default TFTP server

To save time and prevent input errors, you can store a default TFTP server IP address on the switch so that the system can use that IP address automatically for the *tftp* parameter in TFTP server-related procedures, such as:

- Changing switch software using ACLI.
- Copying running-config tftp command.
- Copying config tftp command.

About this task

Use this procedure to specify a default TFTP server for the switch.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   tftp-server [<ipv6_address> | <XXX.XXX.XXX.XXX>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `tftp-server [<ipv6_address> | <XXX.XXX.XXX.XXX>]` command.

Variable	Definition
ipv6_address	Specify the the IPv6 address of the default TFTP server.
XXX.XXX.XXX.XXX	Specify the the IPv6 address or IP address of the default TFTP server.

Displaying the default TFTP server

About this task

Use this procedure to display the default TFTP server configured for the switch.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   tftp-server
   ```

3. Press Enter.

Clearing the default TFTP server

About this task

Use this procedure to clear the default TFTP server from the switch and reset it to 0.0.0.0.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

2. At the command prompt, enter one of the following commands:

   ```
   no tftp-server
   ```

   OR

   ```
   default tftp-server
   ```

3. Press Enter.

SFTP configuration using ACLI

To save time and prevent input errors, you can store a default SFTP server IP address on the switch so that the system can use that address automatically for the *sftp* parameter in SFTP server-related procedures, such as:

- Changing switch software using ACLI.
- Copying running-config sftp command.
- Copying config sftp command.

Use the information in this section to configure the switch to use an SFTP server.

Configuring a default SFTP server IP address using ACLI

About this task

Use this procedure to specify a default SFTP server IP address.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   sftp-server [<ipv6_address> | <A.B.C.D>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `sftp-server` command.

Variable	Definition
<ipv6_address>	Specify an IPv6 address for the SFTP server.
<A.B.C.D>	Specify an IPv4 address for the SFTP server.

Clearing the default SFTP server IP address using ACLI

About this task

Use this procedure to clear the SFTP server IP address and reset it to 0.0.0.0.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   ```

```
configure terminal
```

2. From the command prompt, enter the following command:

   ```
   no sftp-server
   ```

   OR

   ```
   default sftp-server
   ```

3. Press Enter.

Displaying the default SFTP server IP address using ACLI

About this task

Use this procedure to display the default SFTP server IP address configured for the switch.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   show sftp-server
   ```

3. Press Enter.

Configuration files in ACLI

ACLI provides many options for working with configuration files. Through ACLI, you can display, store, and retrieve configuration files.

Displaying the current configuration

About this task

Use this procedure to display the current configuration of switch or a stack. You can use the command with or without parameters.

Important:

If the switch CPU is busy performing other tasks, the output of the `show runningconfig` command can appear to intermittently stop and start. This is normal operation toensure that other switch management tasks receive appropriate priority.

Important:

The ASCII configuration generated by the `show running-config` command produces a file in which the IP address of the switch is inactive by being commented out using the '!' character. This enables customers to move the configuration between switches without causing issues with duplicate IP addresses.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show running-config [verbose] [module <value>]
   ```

   Note:

   You can enter [module <value>] parameters individually or in combinations.

3. Press Enter.

Example

The following tables show sample output for variations of the **`show running-config`** command.

Table 9: show running-config module mlt command output

```
Switch# show running-config module mlt

! Embedded ASCII Configuration Generator Script
! Model = Ethernet Routing Switch 4850GTS-PWR+
! Software version = v5.9
!
! Displaying only parameters different to default
!================================================
enable
configure terminal
!
! *** MLT (Phase 1) ***
!
!
! *** MLT (Phase 2) ***
!
Switch#
```

Table 10: show running-config module ip mlt command output

```
Switch# show running-config module ip mlt

! Embedded ASCII Configuration Generator Script
! Model = Ethernet Routing Switch 4850GTS-PWR+
! Software version = v5.9
!
! Displaying only parameters different to default
```

```
!================================================
enable
configure terminal
!
! *** IP  ***
!
ip default-gateway 172.16.120.1
ip address switch 172.16.120.40
ip address netmask 255.255.255.0
!
! *** MLT (Phase 1) ***
!
!
! *** MLT (Phase 2) ***
!
Switch#
```

Table 11: show running-config command output

```
Switch#show running-config
Switch(config)#show running-config
! Embedded ASCII Configuration Generator Script
! Model = Ethernet Routing Switch 4850GTS-PWR+
! Software version = v5.9
!
! Displaying only parameters different to default
!================================================
enable
configure terminal
!
! *** CORE (Phase 1) ***
!
tftp-server 172.16.3.2
!
! *** SNMP ***
!
!
! *** IP  ***
!
ip default-gateway 172.16.120.1
ip address switch 172.16.120.20
!
! *** IP Manager ***
!
!
! *** ASSET ID ***
!
!
! *** IPFIX ***
```

Table continues…

```
!
!
! *** System Logging ***
!
!
! *** STACK ***
!
stack retry-count 25
!
! *** Custom Banner ***
!
!
! *** SSH ***
!
!
! *** SSL ***
!
!
! *** SSHC ***
!
!
!
! *** STP (Phase 1) ***
!
!
! *** LACP (Phase 1) ***
!
!LACP mode is set to OFF on all interfaces to enable manipulation of
!ports with LACP enabled
interface Ethernet ALL
lacp mode port ALL off
exit
!
! *** VLAN ***
!
!
! *** EAP ***
!
interface Ethernet ALL
eapol multihost port ALL mac-max 2
exit
!
! *** EAP Guest VLAN ***
!
!
! *** EAP Fail Open VLAN ***
!
!
! *** EAP Voip VLAN ***
!
!
! *** 802.1ab ***
!
```

```
!
! *** 802.1ab vendor-specific Avaya TLVs config ***
!
!
! *** 802.1AB MED Voice Network Policies ***
!
!
! *** QOS ***
!
!
! *** RMON ***
!
!
! *** SPBM (Phase 1) ***
!
!
! *** Interface ***
!
interface Ethernet ALL
! auto-negotiation-advertisements port 49-50 none
flowcontrol port 49-50 disable
exit
!
! *** Rate-Limit ***
!
!
! *** MLT (Phase 1) ***
!
!
! *** MAC-Based Security ***
!
!
! *** LACP (Phase 2) ***
!
!
! *** ADAC ***
!
!
! *** STP (Phase 2) ***
!
!
! *** Port Mirroring ***
!
!
! *** VLAN Phase 2***
!
!
! *** MLT (Phase 2) ***
!
!
! *** SPBM (Phase 2) ***
!
!
```

```
! *** PoE ***
!
!
! *** RTC ***
!
!
! *** Avaya Energy Saver ***
!
!
! *** AUR ***
!
!
! *** AAUR ***
!
!
! *** L3 ***
!
!
! --- ECMP ---
!
! No license for ECMP.
! Contact support@avaya.com to update Software license.
!
! *** Brouter Port ***
!
!
! *** CORE (Phase 2) ***
!
!
! *** IPV6 ***
!
interface vlan 1
ipv6 interface
ipv6 interface enable
exit
!
! *** MLD ***
!
!
! *** FHS ***
!
!
! --- FHS Global settings ---
!
 ipv6 fhs enable
 ipv6 nd raguard enable
 ipv6 dhcp guard enable
 ipv6 nd inspection enable
!
! *** VLACP ***
!
!
! *** DHCP Relay ***
```

```
!
!
! *** L3 Protocols ***
!
!
! --- IP Directed Broadcast ---
!
!
! --- Proxy ARP ---
!
!
! --- UDP Broadcast Forwarding ---
!
!
! --- VRRP ---
!
!
! --- Route Policies ---
!
!
! --- OSPF ---
!
router ospf
router-id 14.28.36.0
exit
!
! --- RIP ---
!
!
! *** DHCP SNOOPING ***
!
!
! *** ARP INSPECTION ***
!
!
! *** IP SOURCE GUARD ***
!
!
! *** IGMP ***
!
!
! *** STACK MONITOR ***
!
!
! *** SLPP-guard ***
!
!
! *** PIM ***
!
!
! *** CFM ***
!
!
```

```
! *** SLAMON ***
!
!
! *** STORM CONTROL ***
!
!
! *** LINK STATE TRACKING ***
!
!
! *** Fabric Attach ***
!
```

Variable definitions

The following table defines optional parameters that you can enter after the `show running-config` command.

Variable	Definition
module <value>	Display configuration of an application for any of the following parameter values: [802.1ab] [aaur] [adac] [arp-inspection] [asset-id] [aur] [banner] [brouter] [cfm] [core] [dhcp-relay] [dhcp-snooping] [eap] [energy-saver] [fa][igmp] [interface] [ip] [ip-source-guard] [ipfix] [ipmgr] [ipv6] [ipv6-fhs] [l3] [l3-protocols] [lacp] [link-state] [logging] [mac-security] [mlt] [pim][poe] [port-mirroring] [qos] [rate-limit] [rmon] [rtc] [slamon] [slpp] [snmp] [spbm] [stack] [stkmon] [storm-control][stp] [vlacp] [vlan]
verbose	Display entire configuration, including defaults and non-defaults.

Storing the current configuration in ASCII file

You can store the current configuration into an ASCII file, on a TFTP server, SFTP server or USB Mass Storage Device (through the front panel USB drive).

Important:

When you use the TFTP or SFTP address parameter to perform copy or download commands, the system overwrites the TFTP or SFTP server address.

Copying current configuration file to the TFTP server

About this task

Use this procedure to copy contents of the current configuration file to another file on the TFTP server.

You can enter [module <applicationModules>] parameters individually or in combinations.

Note:

You can execute this command in the Privileged EXEC command mode or the Global Configuration command mode.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

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

3. Press Enter.

Variable definitions

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

Variable	Definition
address <A.B.C.D> | <WORD>	Specify the IP address of the TFTP server. • A.B.C.D—Specify the IP address • WORD—Specify the IPv6 address
filename <WORD>	Specify the file name to store configuration commands on the TFTP server.
module <applicationModules>	Display configuration of an application for any of the following parameter values: [802.1ab] [aaur] [adac] [arp-inspection] [asset-id] [aur] [banner] [core] [dhcp-relay] [dhcp-snooping] [eap] [energy-saver] [interface] [ip] [ip-source-guard] [ipfix] [ipmgr] [ipv6] [l3] [l3-protocols] [lacp] [logging] [mac-security] [mlt] [port-mirroring] [qos] [rate-limit] [rmon] [rtc] [snmp] [ssh] [ssl] [stack] [stkmon] [stp] [vlacp] [vlan]
verbose	Copy the entire configuration, including defaults and non-defaults.

Copying current configuration file to a USB device

About this task

Use this procedure to copy the contents of the current configuration file to a USB storage device.

You can enter [module <applicationModules>] parameters individually or in combinations.

Note:

You can also execute this command in the Global Configuration command mode.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

```
copy running-config usb [filename <WORD>] [module
<applicationModules>] [verbose]
```

3. Press Enter.

Variable definitions

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

Variable	Definition
filename <WORD>	Specify the file name to store configuration commands on the TFTP server.
module <applicationModules>	Display configuration of an application for any of the following parameter values: [802.1ab] [aaur] [adac] [arp-inspection] [asset-id] [aur] [banner] [core] [dhcp-relay] [dhcp-snooping] [eap] [energy-saver] [interface] [ip] [ip-source-guard] [ipfix] [ipmgr] [ipv6] [l3] [l3-protocols] [lacp] [logging] [mac-security] [mlt] [port-mirroring] [qos] [rate-limit] [rmon] [rtc] [snmp] [ssh] [ssl] [stack] [stkmon] [stp] [vlacp] [vlan]
verbose	Copy the entire configuration, including defaults and non-defaults.

Copying current configuration file to SFTP server

About this task

Use this procedure to copy contents of the current configuration file to another file on the SFTP server.

You can enter [module <applicationModules>] parameters individually or in combinations.

Note:

You can also execute this command in the Global Configuration command mode.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

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

3. Press Enter.

Variable definitions

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

Variable	Definition
address <A.B.C.D> > | < WORD>	Specify the address of the SFTP server to be used: • A.B.C.D—specify the IPv4 address. • WORD—specify the IPv6 address.
filename <WORD>	Specify the name of the file that is created when the configuration is saved to the TFTP or SFTP server or USB Mass Storage Device.
username <WORD>	Specify the user name.
password	If sshc password authentication is enabled, then the password parameter is mandatory.
module <applicationModules>	Display the configuration of an application for any of the following parameter values: [802.1ab] [aaur] [adac] [arp-inspection] [asset-id] [aur] [banner][brouter] [core] [dhcp-relay] [dhcp-snooping] [eap] [energy-saver] [interface] [ip] [ip-source-guard] [ipfix][ipmc] [ipmgr] [ipv6] [l3] [l3-protocols] [lacp] [logging] [mac-security] [mlt] [poe] [port-mirroring] [qos] [rate-limit] [rmon] [rtc] [slpp] [snmp] [ssh] [sshc] [ssl] [stack] [stkmon] [stp] [vlacp] [vlan]
verbose	Copy the entire configuration for the switch or stack (defaults and non-defaults).

Creating an entry in the ASCII configuration script table

About this task

Use this procedure to create an entry (either a TFTP, an SFTP or a USB entry) in the ASCII configuration script table.

Important:

When you use the TFTP or SFTP address parameter to perform copy or download commands, the system overwrites the TFTP or SFTP server address

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   script <1-127> {bootp | load-on-boot <1-127> | tftp <A.B.C.D >|
   <WORD> <filename> | sftp <A.B.C.D> | <WORD> <filename> username
   <WORD> [password]| usb [unit<1-8>] <filename>}
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `script` command.

Variable	Definition
<1-127>	The index of the entry to be used.
bootp	Indicate script from the TFTP server, file name, and IP address obtained using BOOTP.
load-on-boot	Specify the load-on-boot priority. Values range from 1 to 127. If you omit this parameter, the entry is created or modified for manual upload and downloads only.
filename	The name of the file to be saved.
tftp	Create a TFTP entry. Script from TFTP server.
sftp	Create an SFTP entry. Script from SFTP server.
A.B.C.D >| <WORD>	Specify the hostname or IPv4 address, or the IPv6 address of the TFTP or SFTP server.
username <WORD>	Specify the user name.
password	Specify the password.
usb	Create a USB entry.
unit <1-8>	The unit number in which the USB device is inserted in, if the unit is a part of the stack.

Viewing status of entries in ASCII configuration script table

About this task

Use this procedure to view the status of one or all the entries in the ASCII configuration script table.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show script status [<1-127>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `show script status` command.

Variable	Definition
<1-127>	The index of the entry to be used.

show script status command

Use the **`show script status`** command to view the status of one or all the entries. The syntax for the **`show script status`** command is:

```
show script status [<1-127>]
```

The **show script status** command is executed in the Privileged EXEC command mode.

Table 12: show script status parameters on page 107 outlines the parameters for this command.

Table 12: show script status parameters

Parameters	Description
<1-127>	The index of the entry to be used.

Storing configuration in binary file

You can store the current configuration into binary files, on a TFTP server, SFTP server or USB Mass Storage Device (through the front panel USB drive).

Storing configuration to TFTP server

About this task

Use this procedure to store configuration in the binary file to a TFTP server.

Important:

When you use the TFTP address parameter to perform copy or download commands, the system overwrites the TFTP server address.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   copy config tftp {address <A.B.C.D> | <WORD> | filename <filename>}
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `copy config tftp` command.

Variable	Description
address <A.B.C.D> | <WORD>	Specifies the IP address of the TFTP server. • A.B.C.D—specifies the IP address • WORD—specifies the IPv6 address
filename <filename>	The name of the file to be retrieved.

Storing configuration to SFTP server

About this task

Use this procedure to store configuration in the binary file to a SFTP server.

Important:

When you use the SFTP address parameter to perform copy or download commands, the system overwrites the SFTP server address.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   copy config sftp address <A.B.C.D> | <WORD> filename <filename>
   username <WORD> [password <WORD>]
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `copy config sftp` command.

Variable	Description
address <A.B.C.D> | <WORD>	Specifies the address of the SFTP server: • A.B.C.D—specifies the IPv4 address. • WORD—specifies the IPv6 address.
filename <filename>	Specifies the name of the configuration file on the SFTP server.
username <WORD>	Specifies the username.
password <WORD>	Specifies the password — mandatory when password authentication is enabled

Storing configuration in a USB device

About this task

Use this procedure to store a configuration file to a USB Mass Storage Device.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   copy config usb {filename <filename> | unit <1-8>}
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `copy config usb` command.

Variable	Description
<filename>	The name of the file to be retrieved.
<1-8>	The unit number in which the USB device is inserted in, if the unit is a part of the stack .

Restoring configuration from an ASCII file

You can restore the configuration from an ASCII file using the following commands:

- configure command on page 109
- script command on page 110

Restoring configuration using the config command

About this task

Use this procedure to restore contents of the current configuration from an ASCII file using the `configure {network | usb | sftp}` command.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   configure {network [address <A.B.C.D> | <WORD>] filename <WORD> |
   usb filename <WORD> [unit <1-8>] | sftp [address <A.B.C.D> | <WORD>]
   filename <WORD> [username <WORD>] [password]}
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `configure {network | usb | sftp}` command.

Variable	Description
network	Retrieve the configuration from a TFTP server.
usb	Retrieve the configuration from an USB mass storage device.
sftp	Retrieve the configuration from a SFTP server.
<1-8>	The unit number in which the USB device is inserted in, if the unit is a part of the stack.
address <A.B.C.D> | <WORD>	Specifies the address of the SFTP server: • A.B.C.D—specifies the IP address

Table continues…

Variable	Description
	• WORD—specifies the IPv6 address
filename <WORD>	The name of the file to be retrieved.
username <WORD>	Specifies the username.
password	Specifies the password.

Creating an entry in the ASCII configuration script table

About this task

Use this procedure to create an entry (either a TFTP, a SFTP or an USB entry) in the ASCII configuration script table.

Important:

When you use the TFTP or SFTP address parameter to perform copy or download commands, the system overwrites the TFTP or SFTP server address.

Procedure

1. Enter Global Configuration mode:

   ```
   enable

   configure terminal
   ```

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

   ```
   script <1-127> {bootp | load-on-boot <1-127> | tftp <A.B.C.D >|
   <WORD> <filename> | sftp <A.B.C.D> | <WORD> <filename> username
   <WORD> [password]| usb [unit<1-8>] <filename>}
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `script` command.

Variable	Description
<1-127>	The index of the entry to be restored.
bootp	Indicates script from the TFTP server, filename, and IP address obtained using BOOTP.
load-on-boot	Specifies the load-on-boot priority. Values range from 1 to 127. If you omit this parameter, the entry is created or modified for manual upload and downloads only.
filename	The name of the file to be restored.
username <WORD>	Specifies the username.
tftp	Restores a TFTP entry
sftp	Restores a SFTP server.

Table continues…

Variable	Description
A.B.C.D > | <WORD>	Specifies the address of the SFTP or TFTP server: • A.B.C.D—specifies the IPv4 address. • WORD—specifies the IPv6 address.
usb	Restores an USB entry.
unit <1-8>	The unit number in which the USB device is inserted in, if the unit is a part of the stack.

Viewing status of entries in ASCII configuration script table

About this task

Use this procedure to view the status of one or all the entries.

Note:

By default, a script table index is present as a bootp entry. If a bootp server is connected to the stack or switch, you can automatically configure the switch using an ASCII file present on the bootp server.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show script status [<1-127>]
   ```

3. Press Enter.

Example

The following is an example output for `show script` command:

```
Switch(config)#show script 2
1970-01-05 06:44:00 GMT+00:00
Table index: 2
Load script on boot: Yes
Boot priority: 1
Script source: bootp://
```

Variable definitions

The following table describes the variables for the `show script status` command.

Variable	Description
<1-127>	The index of the entry to be used.

Loading the script from an ASCII file

About this task

Use this procedure to load the script from an ASCII file to a tftp server, sftp server, or USB Mass Storage Device.

Important:

When you use the TFTP or SFTP address parameter to perform copy or download commands, the system overwrites the TFTP or SFTP server address.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   script run { <1-127> | tftp <A.B.C.D> | <WORD> <filename> | sftp
   <A.B.C.D> | <WORD> <filename> username <WORD> [password]| usb [unit
   <1-8> <filename>]}
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `script run` command.

Variable	Description
<1-127>	The index of the ASCII configuration script table entry to be used.
<filename>	The name of the file to be restored.
username <WORD>	Specifies the user name.
unit <1-8>	The unit number in which the USB device is inserted in, if the unit is a part of the stack.
sftp	Restores a SFTP server.
tftp	Restores a TFTP server.
<A.B.C.D> | <WORD	Specifies the address of the SFTP or TFTP server to load the script. • A.B.C.D—specifies the IPv4 address. • WORD—specifies the IPv6 address.

Displaying the ASCII configuration file status

About this task

Use this procedure to view the status of the ASCII configuration file.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

```
show script block
```

3. Press Enter.

Example

```
Switch(config)#show script block

-------------------------------------------------------
Block  Name               Last Used   Last Status
-------------------------------------------------------
1      script_block_1     YES         Pass
2      script_block_2     NO          Fail
```

Variable definitions

The following table describes the fields in the `show script block` command.

Variables	Description
Block	Specifies the block assigned to the ASCII configuration file when downloaded.
Name	Specifies the name for the local ASCII configuration file. If no ASCII configuration files have been downloaded, this field remains blank.
Last Used	Indicates whether an ASCII configuration file was used the last time the system was booted.
Last Status	Indicates the status of the last execution, either Pass or Fail. If an ASCII configuration file was not used, this field displays Fail.

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 <address> filename <filename> block <1-2>
   [name <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 <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.

For the boot command, see Setting boot parameters on page 127.

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 • 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.

Restoring configuration from a binary file

You can restore the configuration from a binary file.

Note:

The IP of the management VLAN does not change after the binary configuration of the device. As a result, the VRRP configuration for the management VLAN will not be saved or retrieved from the binary configuration file.

Restoring a configuration from a TFTP server

About this task

Use this procedure to restore a configuration from a binary file from a TFTP server. You can also use this command to copy the configuration of a switch in a stack to a stand-alone switch and to replace units in the stack.

Important:

When you use the TFTP address parameter to perform copy or download commands, the system overwrites the TFTP server address.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   copy tftp config address <XXX.XXX.XXX.XXX> filename <name> unit
   <unit number>
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `copy tftp config` command.

Variable	Description
address <XXX.XXX.XXX.XXX>	The IP address of the TFTP server.
filename <name>	The name of the file to be retrieved.
unit <unit number>	The number of the stack unit.

Restoring a configuration from a SFTP server

About this task

Use this procedure to restore a configuration from a binary file from a SFTP server.

Important:

When you use the SFTP address parameter to perform copy or download commands, the system overwrites the SFTP server address.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   copy sftp config [ address <A.B.C.D>|<WORD>] filename <WORD>
   username <WORD> [password]
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `copy sftp config` command.

Variable	Description
address <A.B.C.D>|<WORD>	Specifies the address of the SFTP or TFTP server to load the script. • A.B.C.D—specifies the IPv4 address. • WORD—specifies the IPv6 address.
filename <WORD>	Specifies the name of the file to be retrieved.
username <WORD>	Specifies the username.
password	Specifies the password.

Restoring a configuration file from a USB Mass Storage Device

About this task

Use this procedure to restore a configuration file from a USB Mass Storage Device. The only parameter for this command is the name of the file to be retrieved from the USB device.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   copy usb config filename <name>
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `copy usb config` command.

Variable	Description
filename <filename>	Specifies the name of the file to be retrieved.

Saving the current configuration

The configuration currently in use on a switch is regularly saved to the flash memory automatically. However, you can manually initiate this process using the **`copy config nvram`** command. This command takes no parameters and you must run it in Privileged EXEC mode. If you have disabled the AutosaveToNvramEnabled function by removing the default check in the AutosaveToNvRamEnabled field, the configuration is not automatically saved to the flash memory.

Copying the current configuration to NVRAM using the write command

About this task

Use this procedure to copy the current configuration to NVRAM. This command has no parameters or variables.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   write memory
   ```

3. Press Enter.

Copying the current configuration to NVRAM using the save command

About this task

Use this procedure to copy the current configuration to NVRAM. This command has no parameters or variables.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   save config
   ```

3. Press Enter.

Automatically downloading a configuration file

Enable this feature through ACLI by using the **`configure network`** and **`script load-on-boot`** command. Use these commands to immediately load and run a script and to configure parameters to automatically download a configuration file when the switch or stack is booted.

Important:

When you use the TFTP address parameter to perform copy or download commands, the system overwrites the TFTP server address.

Loading a configuration file using the configure command

About this task

Use this procedure to immediately load the configure parameters to automatically download a configuration file when the switch or stack is booted.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   configure network load-on-boot {disable | use-bootp | use-config}
   [address <A.B.C.D> | <WORD>] [filename <WORD>]
   ```

3. Enter the following command to view the current switch settings for this process:

   ```
   show config-network
   ```

Variable definitions

The following table describes the variables for the `configure network` command.

Variable	Description
load-on-boot {disable | use-bootp | use-config}	The settings to automatically load a configuration file when the system boots: • **disable:** disable the automatic loading of config file • **use-bootp:** load the ASCII configuration file at boot and use BootP to obtain values for the TFTP or SFTP address and file name • **use-config:** load the ASCII configuration file at boot and use the locally configured values for the TFTP or SFTP address and file name **Important:** If you omit this parameter, the system immediately downloads and runs the ASCII configuration file.
address <A.B.C.D | WORD>	Specifies the address of the TFTP server: • A.B.C.D—specifies the IPv4 address. • WORD—specifies the IPv6 address.
filename <WORD>	Specifies the name of the configuration file to use in this process.

Loading a configuration file using script command

About this task

Use this procedure to run a script to automatically download a configuration file when the switch or stack is booted.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   script <1-127> load-on-boot <1-127> [usb [unit <1-8>] <filename> |
   tftp { <A.B.C.D> | <WORD>} <filename> | sftp {<A.B.C.D> | <WORD> }
   filename <WORD> [username <WORD> [password]]| bootp]
   ```

3. Enter the following command to view the current switch settings for this process:

   ```
   show script [status] <1-127>
   ```

Variable definitions

The following table describes the variables for the `script` command.

Variable	Description
script <1-127>	The index of the ASCII configuration script table entry to be used.
load-on-boot <1-127>	The boot priority of the ASCII configuration script table entry.
[usb | tftp | sftp | bootp]	The settings to automatically load a configuration file when the system boots: • **usb:** load the configuration file at boot from an USB mass storage device • **tftp:** load the ASCII configuration file at boot from a TFTP server • **sftp:** load the ASCII configuration file at boot from a SFTP server • **bootp:** load the ASCII configuration file at boot and use BootP to obtain values for the TFTP address and file name
unit <1-8>	The number of the unit in which the USB mass storage device is inserted in.
tftp	Retrieve the configuration from a TFTP server.
sftp	Retrieve the configuration from a SFTP server.
address <A.B.C.D | WORD>	Specifies the address of the SFTP or TFTP server: • A.B.C.D—specifies the IPv4 address. • WORD—specifies the IPv6 address.
filename <WORD>	The name of the configuration file to use in this process.
username <WORD>	Specifies the username.

Viewing USB files

About this task

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

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   show usb-files [ascii <WORD> | binary <WORD> | dir <WORD> | tree |
   unit <1-8>]
   ```

3. Press Enter.

Example

The following is an example output for the `show usb-files` command:

```
Switch#show usb-files
USB file list - Stand-alone
Listing Directory USB_BULK:
657 Feb 17 2009 IP.CFG
6217432 Mar 3 2009 4000_53044.img
1589514 Feb 25 2009 4000_5303.bin
2048 Mar 4 2009 ABC/
```

Variable definitions

The following table describes the variables for the `show usb-files` command.

Variable	Description
ascii <WORD>	Specifies to display the ASCII contents of a file.
binary <unit>	Specifies to display the binary contents of a file
dir <WORD>	Specifies a directory in which to locate USB files to display.
tree	Specifies subdirectories. .
unit <1-8>	The number of the switch unit within a stack.

Viewing USB host port information

About this task

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

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

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

3. Press Enter.

Variable definitions

The following table describes the variables for the `show usb-host-port` command.

Variable	Description
unit <1-8>	Specifies a specific switch unit within a stack. Values range from 1 to 8.

Viewing FLASH files

Use this procedure to view information about the FLASH capacity and current usage. You can display FLASH information on both single and stacked switches. You can also display FLASH information for a specific unit.

Procedure

1. Enter global configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   show flash [unit <1 – 8 >]
   ```

3. Press Enter.

Example

The following is an example output for the `show flash` for a single unit.

```
------------------------------------------------------------
FLASH Memory Usage :
------------------------------------------------------------
Section                Version                Bytes Used        Bytes Allocated
------------------------------------------------------------
Total Flash:                                                        16777216
Boot Image:        ver. 5.6.0.4      311632             524288
Diag Image:       ver. 5.6.0.3     1932309        2097152
Agent Image:        ver. 5.6.0.033    8679792            10485760
Binary Conf:                        478208          1048576
Auxiliary Conf:                    478208         1048576
Reserved Space:                                                     1572864
Available Space:                                                    Available Space:
```

Example

The following is an example for stacked units.

```
------------------------------------------------------------
FLASH Memory Usage 1:
------------------------------------------------------------
Section                Version                Bytes Used        Bytes Allocated
------------------------------------------------------------
Total Flash:                                                        16777216
Boot Image:        ver. 5.0.0.10     524288            524288
Diag Image:       ver. 5.3.0.3     1589514           2097152
Agent Image:        ver. 5.6.0.033    8679792             10485760
Binary Conf:                        467456             1048576
Auxiliary Conf:                    467456          1048576
```

```
Reserved Space:                                                  1572864
Available Space:                                                 1572864
```

```
------------------------------------------------------------
FLASH Memory Usage 2:
------------------------------------------------------------
Section                 Version                Bytes Used        Bytes Allocated
------------------------------------------------------------
Total Flash:                                                         16777216
Boot Image:         ver. 5.6.0.3      311624             524288
Diag Image:        ver. 5.6.0.3     1932309         2097152
Agent Image:         ver. 5.6.0.033    8679792             10485760
Binary Conf:                          484352             1048576
Auxiliary Conf:                     484352         1048576
Reserved Space:                                                  1572864
Available Space:                                                 1572864
```

Variable definitions

The following table describes the variables for the `show flash` command.

Variable	Description
unit <1 –8 >	Provides information from the specified unit 1 to 8. DEFAULT: 1

Viewing FLASH History

Use this procedure to view information about the number of writes or modifications on the FLASH device. You can display FLASH information on both single and stacked switches. You can also display FLASH information for a specific unit.

Procedure

1. Enter global configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   show flash history [unit <1 – 8>]
   ```

3. Press Enter.

Note:

The Flash History does not record programming done from the diagnostics or bootloader.

Example

The following is an example for the `show flash history` command for a single unit.

```
FLASH Write History Unit:
------------------------------------------------------------------------
Section                                          Number of writes
------------------------------------------------------------------------
Diagnostics Image:                                  7
Primary Image:                                     44
```

```
Secondary Image:                                        28
Config Area 1:                                       1,345
Config Area 2:                                          99
Auxiliary Config Area:                               1,444
MCFG Block :                                         4,568
Audit log Area:                                     77,123
-------------------------------------------------------------------------------
* Number of minimum guaranteed writes: 100 000
-------------------------------------------------------------------------------
```

Example

The following is an example for stacked units.

```
FLASH Write History Unit 1:
-------------------------------------------------------------------------------
Section                                          Number of writes
-------------------------------------------------------------------------------
Diagnostics Image:                                  17
Primary Image:                                      54
Secondary Image:                                    10
Config Area 1:                                   1,649
Config Area 2:                                     199
Auxiliary Config Area:                           1,848
MCFG Block :                                     6,569
Audit log Area:                                 68,345
-------------------------------------------------------------------------------
* Number of minimum guaranteed writes: 100 000
-------------------------------------------------------------------------------
FLASH Write History Unit 2:
-------------------------------------------------------------------------------
Section                                          Number of writes
-------------------------------------------------------------------------------
Diagnostics Image:                                  10
Primary Image:                                      24
Secondary Image:                                    19
Config Area 1:                                   2,567
Config Area 2:                                      20
Auxiliary Config Area:                           2,587
MCFG Block :                                     5,179
Audit log Area:                                 98,978
-------------------------------------------------------------------------------
* Number of minimum guaranteed writes: 100 000
-------------------------------------------------------------------------------
```

Variable definitions

The following table describes the variables for the `show flash history` command.

Variable	Description
unit <1 –8 >	Provides information from the specified unit 1 to 8. DEFAULT: 1

Setting up a terminal

You can customize switch terminal settings to suit the preferences of a switch administrator.

About this task

Use this procedure to configure terminal settings. These settings include terminal length and terminal width.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   terminal {length <0-132> | width <1-132>}
   ```

3. Press Enter.

   Important:

   Once you modify the terminal configuration, the new settings are applied to the current active session and to all future sessions (serial, telnet or ssh). Concurrent sessions already opened when the terminal configuration was changed, will not be affected.

   The terminal setting are saved across login sessions. To change the terminal length and width to the default values, use the `default terminal` command from the Global Configuration command mode. The `default terminal length` command sets the length to 23 lines, and the `default terminal width` command sets the width to 79 characters.

   You can use the `show terminal` command at any time to display the current terminal settings. This command takes no parameters and you must run it in the EXEC command mode.

Variable definitions

The following table describes the variables for the `terminal` command.

Variable	Description
length	Set the length of the terminal display in lines; the default is 23. **Important:** If you set the terminal length to 0, the pagination is disabled and the display scrolls continuously.
width	Set the width of the terminal display in characters; the default is 79.

Setting Telnet access

You can access ACLI through a Telnet session. To access ACLI remotely, the management port must have an assigned IP address and remote access must be enabled.

Important:

Multiple users can simultaneously access ACLI system through the serial port, a Telnet session, and modems. The maximum number of simultaneous users is 4, plus 1 each at the serial port for a total of 12 users on the stack. All users can configure the switch simultaneously.

telnet-access command

The `telnet-access` command configures the Telnet connection that you use to manage the switch. Run the `telnet-access` command through the console serial connection.

Note:

You can execute this command in the Global configuration command mode.

The syntax for the `telnet-access` command is:

```
telnet-access [enable | disable] [login-timeout <1-10>] [retry <1-100>]
[inactive-timeout <0-60>] [logging {none | access | failures | all}]
[source-ip <1-50> <XXX.XXX.XXX.XXX> [mask <XXX.XXX.XXX.XXX>]
```

The following table describes the parameters for the `telnet-access` command.

Table 13: telnet-access parameters

Parameters	Description
enable | disable	Enables or disable Telnet connection.
login-timeout <1-10>	Specifies in minutes the time for the Telnet connection to be established after the user connects to the switch. Enter an integer from 1–10.
retry <1-100>	Specifies the number of times the user can enter an incorrect password before the connection closes. Enter an integer from 1–100.
inactive-timeout <0-60>	Specifies in minutes the duration before an inactive session terminates.
logging {none | access | failures | all}	Specifies the events for which you want to store details in the event log: none: Do not save access events in the log. access: Save only successful access events in the log. failure: Save failed access events in the log. all: Save all access events in the log.
[source-ip <1-50> <XXX.XXX.XXX.XXX> [mask <XXX.XXX.XXX.XXX>]	Specifies the source IP address from which connections can occur. Enter the IP address in dotted-decimal notation. Mask specifies the subnet mask from which connections can occur; enter IP mask in dotted-decimal notation.

no telnet-access command

The `no telnet-access` command disables the Telnet connection. The `no telnet-access` command is accessed through the console serial connection.

Note:

You can execute this command in the Global configuration command mode.

The syntax for the `no telnet-access` command is:

```
no telnet-access [source-ip [<1-50>]]
```

The following table describes the variables for the `no telnet-access` command.

Table 14: no telnet-access parameters

Variables	Description
source-ip [<1-50>]	Disables the Telnet access. When you do not use the optional parameter, the source-ip list is cleared, which means the first index is 0.0.0.0./0.0.0.0. and the second to fiftieth indexes are 255.255.255.255/255.255.255.255. When you specify a source-ip address, the specified pair is 255.255.255.255/255.255.255.255. **Important:** These same source IP addresses are in the IP Manager list. For more information about the IP Manager list, see Chapter 3.

default telnet-access command

The `default telnet-access` command sets the Telnet settings to the default values.

Note:

You can execute this command in the Global configuration command mode.

The syntax for the `default telnet-access` command is:

```
default telnet-access
```

Setting boot parameters

About this task

Use this procedure to boot the switch or stack and to set boot parameters. This command is used to perform a soft-boot of the switch or stack.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   boot [default [unit <1-8> ] | nvram block <1-2> | partial-default |
   script block <1-2> | unit <1-8>]
   ```

3. Press Enter.

Important:

When you reset the switch or stack to factory default, the switch or stack retains the stack operational mode, the last reset count, and the reason for the last reset. These three parameters are not reset to factory defaults.

Important:

When you reset the switch or stack to factory partial-default, the switch or stack retains the following settings from the previous configuration:

- IP information
  - IP address
  - subnet mask
  - default gateway
  - bootp mode
  - last bootp IP address
  - last bootp subnet mask
  - last bootp gateway
  - IPV6 management interface address
  - IPV6 default gateway
- software license files
- passwords for console and Telnet/WEB
- SPBM Global Enable state

RADIUS and TACACS authentication settings are not retained. If the console password type is set to local, RADIUS, or TACACS+, after reset, the console password type is set to local.

Variable definitions

The following table describes the variables for the `boot` command.

Variables	Description
default	Restores switch or stack to factory-default settings after rebooting.
nvram block <1–2>	Reboots with the binary configuration data in NVRAM using the block specified.
partial-default	Reboots the stack or switch and use factory partial-default configurations. **Note:** You can use the boot partial-default command on a standalone switch or on an entire stack. You cannot reset individual units in a stack to partial-default.
script block <1–2>	Reboots with the ASCII configuration file using the binary configuration block specified.
unit <unit no>	Specifies which unit of the stack is rebooted. This command is available only in stack mode. Enter the unit number of the switch you want to reboot.

Viewing the agent and image software load status

About this task

Use the following command to display the currently loaded and operational software status for agent and image loads, either individually or combined, for an individual switch or a stack.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   show boot [diag] [image]
   ```

3. Press Enter.

Example

The following is an exemple of the `show boot` command output.

```
Switch>show boot
Unit  Agent Image Active Image Diag Image Active Diag
----- ----------- ------------ ---------- -----------
1     5.8.0.143   5.8.0.143    5.8.0.1    5.8.0.1
* - Unit requires reboot for new Active Image to be made
```

```
operational                                                    .
# - Unit requires reboot for new Diag to be made operational.
```

The following is an exemple of the `show boot diag` command output.

```
Switch>show boot diag
Unit  Diag Image Active Diag
----- ---------- -----------
1     5.8.0.1     5.8.0.1
# - Unit requires reboot for new Diag to be made operational.
```

The following is an exemple of the `show boot image` command output.

```
Switch>show boot image
Unit  Agent Image Active Image
----- ----------- ------------
1     5.8.0.143   5.8.0.143
* - Unit requires reboot for new Active Image to be made operational
```

Variable definitions

Use the data in the following table to use the `show boot` command.

Variable	Definition
diag	Display only information for the agent load.
image	Display only information for the image load.

Important:

When the currently loaded and operational software status is displayed for a stack, the unit number is replaced by the word **All**.

BootP configuration

BootP or Default IP mode (the default mode) operates as follows:

- After the switch is reset or power cycled, if the switch is configured with an IP address other than 0.0.0.0 or the default IP address, then the switch uses the configured IP address.
- If the configured IP address is 0.0.0.0 or the default IP address is 192.168.1.1/24, then the switch attempts BootP for 1 minute.
- If BootP succeeds, then the switch uses the IP information provided.
- If BootP fails and the configured IP address is the default, then the switch uses the default IP address (192.168.1.1/24).
- If BootP fails and the configured IP address is 0.0.0.0, then the switch retains this address.

Note:

With the features introduced in release 5.6.3, the switch contains default value for IP as mentioned in this feature. You can access the Quick Install feature previously available by default from CLI using install command.

Use the information in this section to configure BootP parameters.

Changing the BootP value

About this task

Use this procedure to change the value of BootP from the default value, which is Default IP. The `ip bootp server` command configures BootP on the current instance of the switch or server.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   ip bootp server {always | disable | last | default-ip}
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `ip bootp server` command.

Variable	Definition
always | disable | last | default-ip	Specify when to use BootP: • always: Always use BootP. • disable: Never use BootP. • last: Use BootP or the last known address. • default-ip: Use BootP or the default IP. **Note:** The default value is to use default-ip.

Disabling the BootP/DHCP server

About this task

Use this procedure to disable the BootP/DHCP server.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no ip bootp server
   ```

3. Press Enter.

Resetting the BootP value

About this task

Use this procedure to reset the BootP value to Default IP.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   default ip bootp server
   ```

3. Press Enter.

ACLI banner customization

You can configure the banner that is presented when a user logs on through ACLI to a user-defined value. The banner cannot exceed 1539 bytes, or 19 rows by 80 columns plus line termination characters.

The banner control setting is saved to NVRAM, and both the banner file and control setting are distributed to all units within a stack.

Use the information in this section to customize the ACLI logon banner.

Displaying the ACLI banner

About this task

Use this procedure to display the ACLI banner

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show banner [static | custom]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `show banner` command.

Variable	Definition
static | custom	Specify which banner is currently set to be displayed: • static • custom

Configuring the ACLI logon banner

About this task

Use this procedure to configure the ACLI logon banner to display a warning message to users before authentication.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   banner {static | custom} <line number> "<LINE>" [disabled]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `banner` command.

Variable	Definition
static	Activates static banner.
custom	Activates the custom banner.
<line number>	Specifies the banner line number you are setting. The range is 1–19.

Table continues…

Variable	Definition
<LINE>	Specifies the characters in the line number.
disabled	Skips the banner display.

Resetting the ACLI logon banner

About this task

Use this procedure to clear all lines of a previously stored custom banner and to set the banner type to the default setting (static).

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no banner
   ```

3. Press Enter.

Displaying help text on ACLI commands

About this task

Use this procedure to obtain help on the navigation and use of the Command Line Interface (ACLI). You can also request Help at any point by entering a question mark after a command, which shows the available options.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   help {commands | modes}
   ```

   Note:

   You can use this command in any mode.

3. Press Enter.

Variable definitions

Use the data in the following table to use the `help` command.

Variable	Definition
commands	Displays commands available by mode. A short explanation of each command is also included.
modes	Displays available modes with information about how to enter each mode.

AUR configuration

Use the information in this section to configure Auto Unit Replacement (AUR).

Displaying the AUR settings

About this task

Use this procedure to display the current AUR settings.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   show stack auto-unit-replacement
   ```

3. Press Enter.

Enabling AUR

About this task

Use this procedure to enable AUR on the switch.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   stack auto-unit-replacement enable
   ```

3. Press Enter.

Disabling AUR

About this task

Use this procedure to disable AUR on the switch.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no stack auto-unit-replacement enable
   ```

3. Press Enter.

Restoring default AUR settings

About this task

Use this procedure to restore the default AUR settings.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   default stack auto-unit-replacement enable
   ```

3. Press Enter.

Enabling AUR automatic configuration saves

About this task

Use this procedure to enable automatic configuration saves for non-base units.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   ```

```
configure terminal
```

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

```
stack auto-unit-replacement config save enable
```

3. Press Enter.

Disabling AUR automatic configuration saves

About this task

Use this procedure to disable automatic configuration saves for non-base units.

Procedure

1. Enter Global Configuration mode:

```
enable
configure terminal
```

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

```
stack auto-unit-replacement config save disable
```

3. Press Enter.

Restoring AUR saved configuration

About this task

Use this procedure to restore the AUR saved configuration to a non-base unit.

Procedure

1. Enter Privileged EXEC mode:

```
enable
```

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

```
stack auto-unit-replacement config restore unit <1-8>
```

Note:

Use the base unit console to enter this command.

3. Press Enter.

Saving AUR configuration

About this task

Use this procedure to save the configuration of the selected non-base unit to the base unit, regardless of the state of the AUR feature.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   stack auto-unit-replacement config save unit <1-8>
   ```

   Note:

   Use the base unit console to enter this command.

3. Press Enter.

Agent Auto Unit Replacement

Use the information in this section to manage and configure Agent Auto Unit Replacement (AAUR). You can currently manage this functionality only through ACLI.

Enabling AAUR

About this task

Use this procedure to enable AAUR. Because AAUR is enabled by default, use this command only if this functionality was previously disabled.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   stack auto-unit-replacement-image enable
   ```

3. Press Enter.

Disabling AAUR

About this task

Use this procedure to disable AAUR. Because AAUR is enabled by default, you must run this command if you do not want AAUR functionality on a switch.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no stack auto-unit-replacement-image enable
   ```

3. Press Enter.

Restoring default AAUR functionality

About this task

Use this procedure to set the AAUR functionality to the factory default of enabled.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   default stack auto-unit-replacement-image enable
   ```

3. Press Enter.

Displaying the AAUR configuration

About this task

Use this procedure to view the current status of the AAUR functionality.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   show stack auto-unit-replacement-image
   ```

3. Press Enter.

Configuring Stack Forced Mode

About this task

Use this procedure to configure Stack Forced Mode on a two unit stack.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   [no | default | show] stack forced-mode
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `stack forced-mode` command.

Variable	Definition
stack forced-mode	Enables Stack Forced Mode.
no stack forced-mode	Disables Stack Forced Mode.
default stack forced-mode	Restores the default setting for Stack Forced Mode.
show stack forced-mode	Displays Stack Forced Mode status for the switch. The following list shows the possible responses: • Forced-Stack Mode: Enabled Device is not currently running in forced Stack Mode. • Forced-Stack Mode: Enabled Device is currently running in forced Stack Mode. • Forced-Stack Mode: Disabled Device is not currently running in forced Stack Mode.

Displaying complete GBIC information

About this task

Use this procedure to obtain complete information for a GBIC port.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   show interfaces gbic-info <port-list>
   ```

   Note:

   If no GBIC is detected, this command shows no information.
3. Press Enter.

Variable definitions

Use the data in the following table to use the `gbic-info` command.

Variable	Definition
<port-list>	Specifies the GBIC port or list of ports for which to display information.

Displaying hardware information

About this task

Use this procedure to display a complete listing of information about the status of switch hardware.

Note:

Switch hardware information is displayed in a variety of locations in EDM. You need no special options in these interfaces to display the additional information.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```
2. At the command prompt, enter the following command:

   ```
   show system [verbose]
   ```
3. Press Enter.

Variable definitions

Use the data in the following table to use the `show system` command.

Variable	Definition
[verbose]	Displays additional information about fan status, power status, and switch serial number.

Shutting down a switch

About this task

Use this procedure to safely shut down a switch or stack without interrupting a process or corrupting the software image.

After you initiate the shutdown command, the switch saves the current configuration which allows users to power off the switch within the specified time period (1 to 60 minutes); otherwise, the switch performs a reset.

While existing ACLI sessions do not receive a warning message, all subsequent ACLI sessions display the following message: `The shutdown process is in progress. It is safe to poweroff the stack. Configuration changes will not be saved. Shutdown has blocked the flash. Autoreset in <xxxx> seconds.`

EDM does not receive any shutdown warning messages.

Note:

Any configurations or logins performed on the switch after you initiate the shutdown command are not saved to NVRAM and are lost after the reset.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   shutdown [force] [minutes-to-wait <1-60>] [cancel]
   ```

3. Press Enter.
4. The following message appears: `Shutdown (y/n) ?` Enter `yes`.

Variable definitions

Use the data in the following table to use the `shutdown` command.

Variable	Definition
force	Forces the shutdown without confirmation prompt.
minutes-to-wait <1-60>	Specifies the number of minutes that pass before the switch resets itself. The default wait time is 10 minutes.
cancel	Cancels all scheduled switch shutdowns.

Reloading remote devices

About this task

Use this procedure to temporarily disable the autosave feature for a specified time period, so you can make configuration changes on remote switches without affecting the currently saved configuration. For example, if you make an error while executing the dynamic switch configuration commands that results in loss of switch connectivity (such as an error in the IP address mask, in the Multi-Link Trunking configuration, or in VLAN trunking), the **`reload`** command provides you with a safeguard. When the reload timer expires, the switch reboots to the last saved configuration, and connectivity is re-established. Consequently, you need not travel to the remote site to reconfigure the switch.

During the interval in which the autosave feature is disabled by the reload command, you must use the copy config nvram command to manually save your configurations.

After the reload timer expires, the switch resets, reloads the last saved configuration, and re-enables the autosave feature.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   reload [force] [minutes-to-wait] [cancel]
   ```

   Note:

   Initiate the reload command before you start the switch configuration commands.

3. Press Enter.
4. The following message appears: `Reload (y/n) ?`. Enter `yes` .

Example

The following example describes how you can use the reload command to prevent connectivity loss to a remote switch:

- Enter ACLI command `reload force minutes-to-wait 30`. This instructs the switch to reboot in 30 minutes and load the configuration from NVRAM. During the 30-minute period, autosave of the configuration to NVRAM is disabled.

- Execute dynamic switch configuration commands, which take effect immediately. These configurations are not saved to NVRAM.
- If the configurations cause no problems and switch connectivity is maintained, you can perform one of the following tasks:
  - Save the current running configuration using the `copy config nvram` command.
  - Cancel the reload using the `reload cancel` command.

Variable definitions

Use the data in the following table to use the `reload` command.

Variable	Definition
force	Forces the reload without confirmation.
minutes-to-wait <1-60>	Specifies the number of minutes that pass before the switch resets itself. The default wait time is 10 minutes.
cancel	Cancels all scheduled switch reloads.

Restoring the factory default configuration

About this task

Use this procedure to reset the switch or stack NVRAM blocks back to the default configuration. The first NVRAM block will be active after the switch and stack resets.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   restore factory-default [-y]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `restore factory-default` command.

Variable	Definition
[-y]	Instructs the switch not to prompt for confirmation.

IPv4 socket information

Use the following procedures to view the IPv6 information.

Displaying information for TCP and UDP connections

About this task

Use the following procedure to display the IPv4 socket information for TCP and UDP connections.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   show ip netstat
   ```

3. Press Enter.

Example

The following example shows the results of the `show ip netstat` command

```
Switch(config)#show ip netstat
Proto Recv-Q Send-Q  Local Address          Foreign Address        State
----- ------ ------  --------------------- ---------------------- -----------
TCP        0      0  0.0.0.0.23            0.0.0.0.0              LISTEN
TCP        0      0  0.0.0.0.80            0.0.0.0.0              LISTEN
TCP        0     82  172.16.120.67.23      207.179.154.36.56518   ESTABLISHED
UDP        0      0  0.0.0.0.161           0.0.0.0.0
UDP        0      0  0.0.0.0.0             0.0.0.0.0
UDP        0      0  0.0.0.0.0             0.0.0.0.0
UDP        0      0  172.16.120.67.3491    0.0.0.0.0
--------------------------------------------------------------------------------
Proto Port  Service
----- ----- -------
TCP   23    TELNET
TCP   80    HTTP
UDP   161   SNMP
UDP   3491  RADIUS
```

Displaying information for TCP connections

About this task

Use this procedure to display the IPv4 socket information for TCP connections.

Procedure

1. Enter Global Configuration mode:

```
enable

configure terminal
```

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

```
show ip netstat tcp
```

3. Press Enter.

Example

The following example shows the results of the show ip netstat tcp command.

```
Switch(config)#show ip netstat tcp
Proto Recv-Q Send-Q  Local Address          Foreign Address        State
----- ------ ------  --------------------- ---------------------- -----------
TCP        0      0  0.0.0.0.23            0.0.0.0.0              LISTEN
TCP        0      0  0.0.0.0.80            0.0.0.0.0              LISTEN
TCP        0     82  172.16.120.67.23      207.179.154.36.56518   ESTABLISHED
--------------------------------------------------------------------------------
Proto Port  Service
----- ----- -------
TCP   23    TELNET
TCP   80    HTTP
```

Displaying information for UDP connections

About this task

Use this procedure to display the IPv4 socket information for UDP connections.

Procedure

1. Enter Global Configuration mode:

```
enable

configure terminal
```

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

```
show ip netstat udp
```

3. Press Enter.

Example

The following example shows the results of the show ip netstat udp command.

```
Switch(config)#show ip netstat udp
Proto Recv-Q Send-Q  Local Address          Foreign Address        State
----- ------ ------  --------------------- ---------------------- -----------
UDP        0      0  0.0.0.0.161           0.0.0.0.0
UDP        0      0  0.0.0.0.0             0.0.0.0.0
UDP        0      0  0.0.0.0.0             0.0.0.0.0
UDP        0      0  172.16.120.67.3491    0.0.0.0.0
--------------------------------------------------------------------------------
Proto Port  Service
----- ----- -------
```

```
UDP    161    SNMP
UDP    3491   RADIUS
```

IPv6 Configuration

You can only execute ACLI commands for IPv6 interface configuration on the base unit of a stack. Use the Global Configuration mode to execute IPv6 commands.

Use the following procedures to configure IPv6.

Enabling IPv6 interface on the management VLAN

About this task

Enable an IPv6 interface on the management VLAN.

Procedure

1. Enter VLAN Interface Configuration mode:

   ```
   enable
   configure terminal
   interface vlan <1-4094>
   ```

2. Enable IPv6 interface.

   ```
   ipv6 interface enable
   ```

3. Enter `exit` to return to the main menu.
4. Enable IPv6.

   ```
   ipv6 enable
   ```

Job aid

The following table lists the variables and definitions for **`ipv6 enable`**:

Table 15: IPv6 variables and definitions

Variable	Definition
enable	Default admin status: disable

Configuring IPv6 interface

About this task

Use this procedure to configure IPv6 interface.

Before you begin

Before you can assign an IPv6 address to the interface, you must configure an IPv6 interface for a VLAN.

You must configure a VLAN before you can give the VLAN an interface identifier or an IPv6 address.

Procedure

1. Log on to Interface Configuration mode:

   ```
   enable
   configure terminal
   interface vlan <1-4094>
   ```

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

   ```
   ipv6 interface
   ```

3. Configure the ipv6 address:

   ```
   ipv6 interface address <ipv6 address>
   ```

4. Enable the interface admin status:

   ```
   ipv6 interface enable
   ```

5. Configure the link-local address:

   ```
   ipv6 interface link-local WORD <0-19>
   ```

6. Configure the maximum transmission unit (MTU):

   ```
   ipv6 interface mtu <1280-9216>
   ```

7. Configure the interface description:

   ```
   ipv6 interface name WORD <0-255>
   ```

8. Enable processing ipv6 redirect message:

   ```
   ipv6 interface processing-redirect
   ```

9. Configure the time a neighbor is considered reachable after receiving a reachability confirmation:

   ```
   ipv6 interface reachable—time <1-3600000>
   ```

10. Configure the time between retransmissions of neighbor solicitation messages to a neighbor when resolving the address or when probing the reachability of a neighbor:

```
ipv6 interface retransmit-timer<0-3600000>
```

11. Press Enter.

Configuring IPv6 interface on the management VLAN

About this task

Assigns an IPv6 address to a VLAN.

Procedure

1. Enter VLAN Interface Configuration mode:

   ```
   enable
   configure terminal
   interface vlan <1-4094>
   ```

2. Enable IPv6 interface.

   ```
   ipv6 interface enable
   ```

3. Return to the main menu.

   ```
   exit
   ```

Displaying the IPv6 interface information

About this task

Displays the IPv6 interface information.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. Display IPv6 interface information.

   ```
   show ipv6 interface
   ```

Job aid

Following is the sample output for the **`show ipv6 interface`** command.

```
Switch(config-if)#show ipv6 interface
1970-01-01 19:54:05 GMT+00:00
================================================================================
            Interface Information
================================================================================
IFINDX VLAN-  MTU PHYSICAL     ADMIN    OPER     RCHBLE    RETRAN     TYPE
    ID    ADDRESS    STATE    STATE    TIME    TIME
--------------------------------------------------------------------------------
-----
10001   1          1500    D4:ea:0e:1c: 24:00     enabled     down    30000    1000
```

```
ETHER
================================================================================
            Address Information
================================================================================
INTF     IPV6                  TYPE     ORIGIN       STATUS
INDEX    ADDRESS
--------------------------------------------------------------------------------------------------
------
10001    fe80::d6ea:eff:felc:2400        UNICAST    LINKLAYER INACCESSIBLE
1 out of 1 Total Num of Interface Entries displayed.
1 out of 1 Total Num of Address Entries displayed.
```

Displaying IPv6 interface addresses

About this task

View IPv6 interface addresses to learn the addresses.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. Display IPv6 interface addresses.

   ```
   show ipv6 address interface [summary | vlan <1-4094> |
   <ipv6_address>]
   ```

Example

```
Switch>enable
Switch#show ipv6 address interface
================================================================================
                                        Address Information
================================================================================
IPV6                                    VID/MID/     TYPE    ORIGIN    STATUS
ADDRESS                                 TID/LID

--------------------------------------------------------------------------------
fe80::fea8:41ff:fefb:4000               V-1          UNICAST LINKLAYER PREF
================================================================================
                                        Address Lifetime Information
================================================================================
IPV6                                    VID/MID/     VALID    PREF
ADDRESS                                 TID/LID      LIFETIME LIFETIME

--------------------------------------------------------------------------------
fe80::fea8:41ff:fefb:4000               V-1          INF      INF

STATUS Legend:
PREF=PREFERRED, DEPR=DEPRECATED, INV=INVALID, INAC=INACCESSIBLE, UNK=UNKNOWN
TENT=TENTATIVE, DUP=DUPLICATE
```

Variable definitions

The following table list the variables and definitions.

Variable	Definition
address-type <1-2>	Address type
name <1-255>	Name: integer from 1–255
link-local <WORD 0-19>	Local link
mtu <1280-9600>	Default status: MTU 1280
reachable-time <0-3600000>	Time in milliseconds neighbor is considered reachable after a reachable confirmation message. Default: 30000
retransmit-timer <0-3600000>	Time in milliseconds between retransmissions of neighbor solicitation messages to a neighbor. Default: 1000
enable	Enables the interface administrative status.

Configuring an IPv6 address for a switch or stack

About this task

Configures an IPv6 address for a switch or stack.

Procedure

1. Enter Global Configuration mode:

   ```
   enable

   configure terminal
   ```

2. Configure an IPv6 address.

   ```
   ipv6 address {[<ipv6_address/prefix_length>] [stack <ipv6_address/
   prefix_length>] [switch <ipv6_address/prefix_length>] [unit <1-8>
   <ipv6_address/prefix_length>]}
   ```

Variable definitions

The following table defines the variables used to configure an IPv6 address for a switch or stack.

Variable	Definition
`ipv6_address/prefix_length`	
`stack`	IP address of stack
`switch`	IP address of switch
`unit`	Unit number: 1-8

Displaying the IPv6 address for a switch or stack

About this task

Displays the IPv6 address for a switch or stack.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. Display the IPv6 address.

   ```
   show ipv6 address
   ```

3. Display IPv6 address interface.

   ```
   show ipv6 address interface <ipv6_address>
   ```

Job aid

Following is the sample output for the **show ipv6 address interface** command.

```
Switch(config)#show ipv6 address interface
================================================================================
Address Information
================================================================================
IPV6 ADDRESS        VID/BID/TID      TYPE    ORIGIN    STATUS
--------------------------------------------------------------------------------
--------------
3000:0:0:0:0:0:0:99          V-1          UNICAST    MANUAL    PREFERRED
fe80:0:0:0:211:f9ff:fe34:8800       V-1        UNICAST    OTHER    UNKNOWN
2out of 2Total Num of Address Entries displayed.
```

Configuring IPv6 interface properties

About this task

Configures the IPv6 interface, creates the VLAN IPv6 interface, and sets the parameters.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

2. Configure the IPv6 interface properties.

   ```
   ipv6 interface [address <ipv6_address/prefix_length>
   ```

Variable definitions

Use the data in the following table to help you use the **show ipv6 address interface** command.

Variable	Definition
`vlan <1-4094>`	Specifies a specific VLAN for which to display IPv6 addresses.
`<WORD 0-45>`	Specifies the IPv6 address and prefix to be displayed.

The following table shows the field descriptions for this command.

Table 16: show ipv6 address interface command field descriptions

Field	Description
IPV6 ADDRESS	Specifies the IPv6 destination address.
TYPE	Specifies Unicast, the only supported type.
ORIGIN	Specifies a read-only value indicating the origin of the address. The origin of the address is other, manual, DHCP, linklayer, or random.
STATUS	Indicates the status of the IPv6 address. The values of the status are as follows: • PREFERRED • DEPRECATED • INVALID • INACCESSIBLE • UNKNOWN • TENTATIVE • DUPLICATE
VID/BID/TID	Specifies the VLAN ID corresponding with the IPv6 address configured.

Disabling IPv6 interface

About this task

Disables the IPv6 interface.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

2. Disable IPv6.

   ```
   no ipv6 interface [address <ipv6_address>] [all] [enable]
   ```

Displaying the global IPv6 configuration

About this task

Displays the IPv6 global configuration.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. Display the IPv6 global configuration.

   ```
   show ipv6 global
   ```

Example

```
Switch(config)#show ipv6 global
1970-01-01 20:31:47 GMT+00:00

forwarding                      : disabled
default-hop-cnt                 : 30
number-of-interfaces            : 1
admin-status                    : disabled
icmp-error-interval             : 1000
icmp-redirect-msg               : disabled
icmp-unreach-msg                : disabled
multicast-admin-status          : disabled
icmp-error-quota                : 50
block-multicast-replies         : disabled
```

Job aid

Following is the sample output for the **`show ipv6 global`** command.

```
Switch(config)#show ipv6 global
1970-01-01 20:31:47 GMT+00:00

forwarding                      : disabled
default-hop-cnt                 : 30
number-of-interfaces            : 1
admin-status                    : disabled
icmp-error-interval             : 1000
icmp-redirect-msg               : disabled
icmp-unreach-msg                : disabled
multicast-admin-status          : disabled
icmp-error-quota                : 50
block-multicast-replies         : disabled
```

The following table describes the default settings for the fields in the **`show ipv6 global`**.

Field	Default setting
forwarding	disabled
default-hop-cnt	30
number-of-interfaces	1
admin-status	enabled

Table continues…

Field	Default setting
icmp-error-interval	1000
icmp-error-quota	50
icmp-redirect-msg	disabled
icmp-unreach-msg	disabled
multicast-admin-status	disabled
block-multicast-replies	disabled

Configuring an IPv6 default gateway

About this task

Use this procedure to configure an IPv6 default gateway for the switch or stack.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   ipv6 default—gateway <ipv6_addr>
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `ipv6 default—gateway` command.

Variable	Definition
<ipv6_addr>	Specifies an IPv6 address as the network default gateway.

Deleting an IPv6 default gateway

About this task

Use this procedure to delete the IPv6 address that was assigned as the default gateway.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

```
no ipv6 default-gateway
```

3. Press Enter.

Displaying the IPv6 default gateway

About this task

Use this procedure to display the IPv6 address for the default gateway.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

```
show ipv6 default-gateway
```

3. Press Enter.

Configuring the IPv6 neighbor cache

About this task

Use this procedure to add a static neighbor cache entry.

Procedure

1. Enter Global Configuration mode:

```
enable
configure terminal
```

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

```
ipv6 neighbor <ipv6_address> port <unit/port> mac <H.H.H>
```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `ipv6 neighbor` command.

Variable	Definition
<ipv6_address>	Specifies the IPv6 address.
<unit/port>	Specifies the port on which to add a neighbor.
<H.H.H>	Specifies the MAC address.

Deleting a static IPv6 neighbor

About this task

Use this procedure to remove a static neighbor cache entry.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no ipv6 neighbor <ipv6_address>
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `no ipv6 neighbor` command.

Variable	Definition
<ipv6_address>	Specifies the IPv6 address of the neighbor to delete from the cache.

Displaying the IPv6 neighbor information

About this task

Use this procedure to display IPv6 neighbor information.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show ipv6 neighbor [interface {loopback  <1-16> | tunnel
   <1-2147483647> | vlan <1-4094>} | summary | type {dynamic | local |
   other | static} | <ipv6_address> type {dynamic | local | other |
   static}]
   ```

3. Press Enter.

Example

The following is an example of the **`show ipv6 neighbor`** command output.

```
Switch(config)#show ipv6 neighbor

================================================================================
```

```
                                        Neighbor Information
================================================================================================
NET ADDRESS/ PHYSICAL ADDRESS                  PHYS INTF    TYPE     STATE    LAST UPD
------------------------------------------------------------------------------------------------
3000:0:0:0:0:0:0:0/ 00:11:F9:34:88:00             V-1 LOCAL   REACHABLE 0
3000:0:0:0:0:0:0:1/ 00:01:02:03:04:05             1/5 STATIC  REACHABLE 387452
3000:0:0:0:0:0:0:99/ 00:11:f9:34:88:00            V-1 LOCAL   REACHABLE 385251
fe80:0:0:0:211:f9ff:fe34:8800/ 00:11:f9:34:88:00  V-1 LOCAL   REACHABLE 385193
```

Variable definitions

Use the data in the following table to use the `show ipv6 neighbor` command.

Variable	Definition
interface	Displays entries by interface.
loopback <1-16>	Displays entries per loopback IPv6 interfaces.
tunnel <1-2147483647>	Displays entries by tunnel.
vlan <1-4094>	Displays entries by VLAN.
summary	Displays summary of IPv6 Neighbor Table.
type {other|dynamic|static|local}	Specifies the type of mapping as one of the following: • dynamic: dynamically learned neighbor • local: local neighbor address • other: other neighbor entry • static: manually configured neighbor
<ipv6_address>	Specifies the neighbor IPv6 address.

Displaying IPv6 interface ICMP statistics

About this task

Use this procedure to display IPv6 interface ICMP statistics.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show ipv6 interface icmpstatistics [<1-4094>]
   ```

3. Press Enter.

Example

The following is an example of the **`show ipv6 interface icmpstatistics`** command output.

```
Switch(config)#show ipv6 interface icmpstatistics
================================================================================
                                    Icmp Stats
```

```
================================================================================
Icmp stats for IfIndex = 10001
IcmpInMsgs: 1
IcmpInErrors: 1
IcmpInDestUnreachs: 1
IcmpInAdminProhibs: 0
IcmpInTimeExcds: 0
IcmpInParmProblems: 0
IcmpInPktTooBigs: 0
IcmpbInEchos: 0
IcmpInEchoReplies: 0
<truncated>
```

Displaying IPv6 interface statistics

About this task

Use this procedure to display IPv6 interface statistics.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show ipv6 interface statistics
   ```

3. Press Enter.

Example

The following is an example of the **`show ipv6 interface statistics`** command output.

```
Switch(config)# show ipv6 interface statistics
================================================================================
                                      Icmp Stats
================================================================================
IF stats for IfIndex = 10001
InReceives: 0
InHdrErrors: 0
InTooBigErrors: 0
InNoRoutes: 0
InAddrErrors: 0
InUnknownProtos: 0
InTruncatedPkts: 0
InDiscards: 0
InDelivers: 20
<truncated>
```

Displaying IPv6 interface process-redirect

About this task

Display IPv6 interface processing redirect.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. Display IPv6 interface processing redirect.

   ```
   show ipv6 interface process-redirect [vlan <1-4094>]
   ```

3. Press Enter.

Example

```
Switch>show ipv6 interface process-redirect
================================================================================
                                        Process ICMP redirect status
================================================================================
Process ICMP redirect status for IfIndex = 10001

Disabled
```

Displaying IPv6 TCP statistics

About this task

Use this procedure to display IPv6 TCP statistics.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show ipv6 tcp
   ```

3. Press Enter.

Example

The following is an example of the **`show ipv6 tcp`** command output.

```
Switch# show ipv6 tcp

 show ipv6 tcp global statistics:
 ----------------------------------------
 ActiveOpens: 0
 PassiveOpens: 0
 AttemptFails: 0
 EstabResets: 0
 CurrEstab: 1
 InSegs: 24
 OutSegs: 20
 RetransSegs: 2
 InErrs: 0
 OutRsts: 0
 HCInSegs: 24
 HCOutSegs: 20
```

Displaying IPv6 TCP connections

About this task

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show ipv6 tcp connections
   ```

3. Press Enter.

Displaying IPv6 TCP listeners

About this task

Use this procedure to display IPv6 TCP listeners.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show ipv6 tcp listener
   ```

3. Press Enter.

Displaying IPv6 UDP statistics

About this task

Use this procedure to display IPv6 UDP statistics.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show ipv6 udp
   ```

3. Press Enter.

Displaying IPv6 UDP endpoints

About this task

Use this procedure to display IPv6 UDP endpoints.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show ipv6 udp endpoints
   ```

3. Press Enter.

Clearing IPv6 statistics

Clear all IPv6 statistics if you do not require previous statistics.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. Enter the following command to clear all the IPv6 statistics:

   ```
   clear ipv6 statistics all
   ```

3. Enter the following command to clear interface statistics:

   ```
   clear ipv6 statistics interface [general|icmp] [loopback <1-16> |
   vlan <1-4094>]
   ```

4. Enter the following command to clear TCP statistics:

   ```
   clear ipv6 statistics tcp
   ```

5. Enter the following command to clear UDP statistics:

   ```
   clear ipv6 statistics udp
   ```

Variable definitions

Use the information in the following table to use the **`clear ipv6 statistics`** command.

Variable	Value
<1–4094>	Specifies the VLAN id for clearing IPv6 VLAN interface statistics.
<1–16>	Specifies the loopback id for clearing IPv6 loopback interface statistics.

PoE configuration

Use the information in this section to configure Power over Ethernet (PoE).

Enabling port power

About this task

Use this procedure to enable PoE to a port.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   poe poe-shutdown [port <portlist>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `poe poe-shutdown` command.

Variable	Definition
<portlist>	Specifies the ports for which PoE is enabled. **Note:** If you omit this parameter, the system uses the port number you specified in the interface command.

Disabling port power

About this task

Use this procedure to disable PoE to a port.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   no poe-shutdown [port <portlist>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `no poe-shutdown` command.

Variable	Definition
<portlist>	Specifies the ports for which PoE is disabled. **Note:** If you omit this parameter, the system uses the port number you specified in the interface command.

Setting port power priority

About this task

Use this procedure to set the port power priority.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   poe poe-priority [port <portlist>] {critical | high | low}
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `poe poe-priority` command.

Variable	Definition
<portlist>	Specifies the ports for which to set the priority. **Note:** If you omit this parameter, the system uses the port number you specified in the interface command.
{low | high | critical}	Specifies the PoE priority for the port.

Setting power limit for channels

About this task

Use this procedure to set the power limit for channels.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   poe poe-limit [port <portlist>] <3-16>
   ```

   Note:

   Use this command for PoE units.

   OR

   ```
   poe poe-limit [port <portlist>] <3-32>
   ```

   Note:

   Use this command for PoE+ units.

3. Press Enter.

Variable definitions

Use the data in the following table to use the `poe poe-limit` command.

Variable	Definition
<portlist>	Specifies the ports for which to set the limit. **Note:** If you omit this parameter, the system uses the port number you specified in the interface command.
<3–16>	Specifies the power range limit for PoE units, from 3 to 16 Watts.
<3–32>	Specifies the power range limit for PoE+ units, from 3 to 32 Watts.

Displaying PoE main configuration

About this task

Use this procedure to display the main PoE configuration.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show poe-main-status [unit <1-8>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `show poe-main-status` command.

Variable	Definition
unit <1-8>	Displays main PoE configuration for the specified unit in the stack.

Setting a power usage threshold

About this task

Use this procedure to set a percentage threshold above which the switch sends a warning trap message.

If the PoE power usage exceeds the threshold and SNMP traps are configured appropriately, the switch sends the pethMainPowerUsageOnNotification trap. If the power consumption exceeds and then falls below the threshold, the switch sends the pethMainPowerUsageOffNotification trap.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   poe poe-power-usage-threshold [unit <1-8>] <1-99>
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `poe poe-power-usage-threshold [unit <1-8>] <1-99>` command.

Variable	Definition
unit <1-8>	Specifies the unit in the stack for which to set the power threshold.
<1-99>	Specifies the percentage of total available power you want the switch to use prior to sending a trap.

Setting the method to detect power devices

About this task

Use this procedure to set the method the switch uses to detect the power devices connected to the front ports.

The `poe-pd-detect-type` command enables 802.3at or Legacy compliant PD detection methods for PWR+ units.

Note:

This setting applies to the entire switch, not port-by-port. You must ensure that this setting is configured correctly for all the IP appliances on a specified switch.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   poe poe-pd-detect-type [unit <1-8>] {802dot3at |
   802dot3at_and_legacy}
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `poe poe-pd-detect-type` command.

Variable	Definition
unit <1-8>	Specifies the unit in the stack to set the detection mode.
802dot3at | 802dot3at_and_legacy	Sets the detection method the switch uses to detect power needs of devices connected to the front ports: • 802dot3at • 802dot3at_and_legacy

Displaying PoE port configuration

About this task

Use this procedure to display port PoE configuration.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show poe-port-status [<portlist>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `show poe-port-status` command.

Variable	Definition
<portlist>	Specifies a specific port or list of ports.

Displaying PoE power measurement

About this task

Use this procedure to display the power configuration.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   show poe-power-measurement [<portlist>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `show poe-power-measurement` command.

Variable	Definition
<portlist>	Specifies the ports for which to display configuration.

PoE configuration for IP phones using ACLI

Use the information in this section to configure PoE for IP phones.

Configuring PoE priority for IP Phone

About this task

Set the PoE priority for the IP Phone and the power limit to the PoE port for power consumption.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

2. Configure PoE priority for IP phone.

   ```
   poe ip-phone [poe-limit <3-32>] [poe-priority <low | high | critical>]
   ```

   Note:

   This command is not supported on non-PoE models (for example, 4850GTS, 4826GTS).

Variable definitions

Use the information in the following table to set the PoE priority for the IP Phone and the power limit to the PoE port for power consumption.

Variable definition

Variable	Value
poe-limit <3–32>	The power limit, range is from 3 to 32 W, The maximum for PoE switch models is 16W, and 32W for PoE+ models
Poe-priority <low | high | critical>	The PoE priority for the port.

Disabling PoE priority and power limit

About this task

Use this procedure to disable the PoE priority and power limit settings.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no poe-ip-phone [poe-limit] [poe-priority]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `no poe-ip-phone` command.

Variable	Definition
poe-limit <3–32>	Specifies the power limit. Range is from 3 to 32 W
poe-priority {low | high | critical}	Specifies the PoE priority for the port.

NTP configuration using ACLI

Use these procedures to configure the Network Time Protocol (NTP) using the Avaya command line interface (ACLI). Perform the procedures in the order they are provided.

Prerequisites to NTP configuration

Unless otherwise stated, to perform the procedures in this section, you must log on to the Global Configuration mode in the ACLI. For more information about using ACLI, see *Using ACLI and EDM on Avaya Ethernet Routing Switch 4800 Series*, NN47205-102.

Before you configure NTP, you must perform the following task:

Configure an IP interface on the switch and ensure that the NTP server is reachable through this interface. For instructions, see *Configuring IP Routing and Multicast on Avaya Ethernet Routing Switch 4800 Series*, NN47205-506.

Important:

NTP server MD5 authentication does not support passwords (keys) that start with a special character or that contain a space between characters.

NTP configuration procedures

Use the task flow shown in the following figure to determine the sequence of procedures to perform to configure NTP.

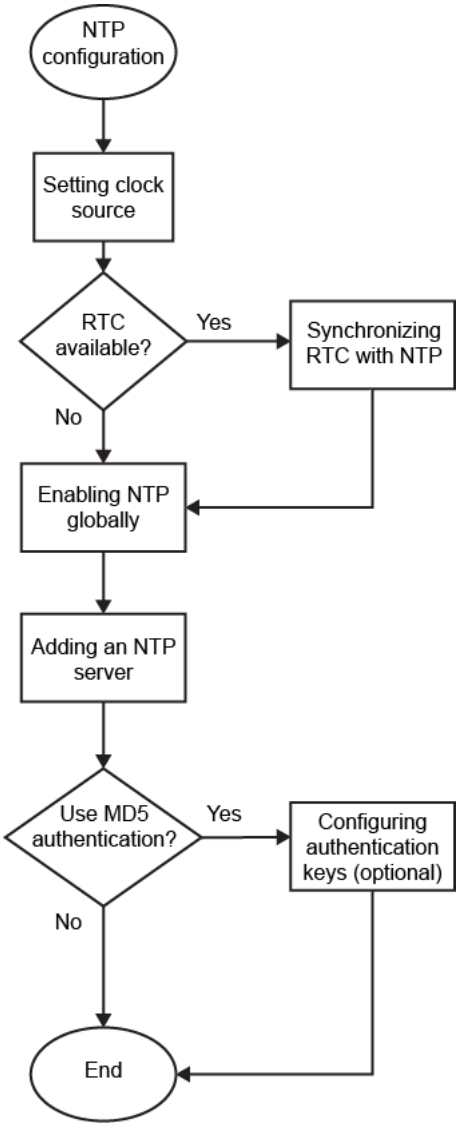


Figure 13: NTP configuration procedures in ACLI

Setting clock source

About this task

Use this procedure to set the clock source as ntp.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   [default] clock source {ntp | sntp | sysUpTime}
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `clock source` command.

Variable	Definition
default	Resets the clock source to the default value. DEFAULT: sntp
clock source {ntp | sntp | sysUpTime}	Sets the clock source as one of: • ntp • sntp • sysUpTime

Enabling NTP globally

About this task

Use this procedure to enable NTP globally. Default values are in effect for most parameters. You can customize NTP by modifying parameters.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   [no] [default] ntp [interval <10-1440>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `ntp` command.

Variable definition

Variable	Value
interval *<10-1440>*	Specifies the time interval, in minutes, between successive NTP updates using an integer within the range of 10 to 1440.

Table continues…

Variable	Value
	DEFAULT: 15 To reset this option to the default value, use the default operator with the command. **Important:** If NTP is already activated, this configuration does not take effect until you disable NTP, and then re-enable it.
no	Disables NTP globally.
default	Resets NTP interval to the default interval of 15 minutes.

Creating authentication keys

About this task

Use this procedure to create authentication keys for MD5 authentication. You can create a maximum of 10 keys.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   [no] [default] ntp authentication-key <1-2147483647> <word>
   ```

3. Press Enter.

Example

The following is an example of authentication key creation:

1. Create the authentication key:

   ```
   Switch(config)# ntp authentication-key 5 test
   ```

2. Enable MD5 authentication for the NTP server:

   ```
   Switch(config)# ntp server 47.140.53.187 auth-enable
   ```

3. Assign an authentication key to the NTP server:

   ```
   Switch(config)# ntp server 47.140.53.187 authentication-key 5
   ```

Variable definitions

Use the data in the following table to use the `ntp authentication-key` command.

Variable	Definition
authentication-key <1-2147483647>	Creates an authentication key for MD5 authentication.
no	Disables all NTP authentication keys.
default	Returns NTP authentication keys to the default value.
<word>	Specifies an alphanumeric secret key with a maximum of 8 characters.

Adding or deleting an NTP server

About this task

Use this procedure to add or delete an NTP server. You can configure a maximum of 10 time servers.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   [no] [default] ntp server <A.B.C.D>
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `ntp server` command.

Variable	Definition
no	Deletes the NTP server.
default	Resets the NTP server to the default. DEFAULT: Not enabled, No Authentication, No Authentication keys

Modifying options for an NTP server

About this task

Use this procedure to modify the existing options for an NTP server that is identified by its IP address.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   ```

```
configure terminal
```

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

```
[default] [no] ntp server <A.B.C.D.> [auth-enable] [authentication-key <1-2147483647>] [enable]
```

3. Press Enter.

Example

```
Switch(config)# ntp server 47.140.53.187
```

Variable definitions

Use the data in the following table to use the `ntp server` command.

Variable	Definition
auth-enable	Activates MD5 authentication on this NTP server. DEFAULT: no MD5 authentication To set this option to the default value, use the default operator with the command.
authentication-key <1-2147483647>	Specifies the key ID value used to generate the MD5 digest for the NTP server within the range of 1 to 2147483647. If this parameter is omitted, the key defaults to 1 (disabled authentication). To set this option to the default value, use the default operator with the command.
default	Sets the NTP server to the default. DEFAULT: No MD5 authentication. Disabled authentication.
no	Deletes the NTP server.

Displaying NTP settings

About this task

Use this procedure to view the NTP, NTP key, NTP server settings and NTP statistics.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

```
show ntp [key] [server] [statistics]
```

3. Press Enter.

Example

```
Switch:#show ntp

NTP Client global configuration
```

```
NTP Client enabled    : true
Update Interval    : 15 minutes
Switch:#show ntp key

Key ID    Key
1        test 1
1911        test 2
Switch:#show ntp server

Server IP            Enabled    Auth    Key ID
192.167.120.22        true        true    1911
Switch:5#show ntp statistics

             NTP Server : 192.167.120.22
----------------------------------------
                Stratum : 5
                Version : 2
            Sync Status : synchronized
           Reachability : reachable
             Root Delay : 0.190536547
              Precision : 0.00003051
       Access Attempts : 1
            Server Fail : 0
```

Variable definitions

Use the data in the following table to use the `show ntp` command.

Variable	Definition
server	Display NTP server information.
key	Display NTP authentication keys.
statistics	Displays information about the status of the NTP server: • Number of NTP requests sent to this NTP server • Number of times this NTP server updated the time • Number of times this NTP server was rejected attempting to update the time • Stratum • Version • Sync Status • Reachability • Root Delay • Precision

Link-state configuration

The Link-state (LST) tracking feature identifies the upstream and downstream interfaces. The associations between these two interfaces form link-state tracking group. To enable link-state

tracking, create a link-state group, and specify the interfaces that are assigned to the link-state group. An interface can be an aggregation of ports, multi link trunks (MLT) or link aggregation groups (LAG). In a link-state group, these interfaces are bundled together.

Enabling link-state tracking

About this task

Use this procedure to enable link-state tracking group with upstream or downstream interface.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   link-state group <1-2> {{upstream | downstream>} interface
   <interface-type><interface-id> | enable}
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `link-state group` command.

Variable	Definition
link-state group <1-2>	Specifies the link-state group. Only two link-state tracking groups are supported.
upstream | downstream	Specifies if the set is upstream or downstream and adds the interface to the specific set.
<interface-type>	Specifies the interface type. It can be an aggregation of ports, multi link trunks (MLT) or link aggregation groups (LAG).
<interface-id>	Specifies the interface ID.
enable	Enables the tracking group.

Disabling link-state tracking

About this task

Use this procedure to disable link-state tracking group with upstream or downstream interface.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   ```

```
configure terminal
```

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

```
no link-state group <1-2> {{upstream | downstream>} interface
<interface-type><interface-id> | enable}
```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `no link-state group` command.

Variable	Definition
link-state group <1-2>	Specifies the link-state group. Only two link-state tracking groups are supported.
upstream | downstream	Specifies if the set is upstream or downstream and adds the interface to the specific set.
<interface-type>	Specifies the interface type. It can be an aggregation of ports, multi link trunks (MLT) or link aggregation groups (LAG).
<interface-id>	Specifies the interface ID.
enable	Enables the tracking group.

Assigning default values to link-state tracking

About this task

Use this procedure to assign default values to link-state tracking.

Procedure

1. Enter Global Configuration mode:

```
enable
configure terminal
```

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

```
default link-state group <1-2> [upstream | downstream]
```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `default link-state group` command.

Variable	Definition
link-state group <1-2>	Specifies the link-state group. Only two link-state tracking groups are supported.

Table continues…

Variable	Definition
upstream | downstream	Specifies if the set is upstream or downstream and adds the interface to the specific set.

Displaying link-state tracking

About this task

Use this procedure to view link-state tracking details.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   show link-state [group <1-2>] [detail]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `show link-state` command.

Variable	Definition
link-state group <1-2>	Specifies the link-state group. Only two link-state tracking groups are supported.
detail	Specifies to display detailed tracking group information.

Job aid: sample configuration

This section provides sample steps for configuring link-state tracking group 1 with ports 1/1, 2/1 and MLT 1 as upstream members and ports 1/2, 2/2 and MLT 2 as downstream members.

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

2. Set ports 1/1 and 2/1 as upstream interfaces for LST group 1:

   ```
   link-state group 1 upstream interface Ethernet 1/1,2/1
   ```

3. Add MLT 1 to LST group 1 upstream members:

   ```
   link-state group 1 upstream interface mlt 1
   ```

4. Define ports 1/2 and 2/2 as downstream members for LST group 1:

```
link-state group 1 downstream interface Ethernet 1/2, 2/2
```

5. Add MLT 2 to LST group 1 downstream members:

```
link-state group 1 downstream interface mlt 2
```

6. Enable LST group 1:

```
link-state group 1 enable
```

General switch administration using ACLI

This section describes the ACLI commands used in general switch administration.

Multiple switch configurations

The switch supports the storage of two switch configurations in flash memory. The switch can use either configuration and must be reset for the configuration change to take effect.

A regular reset of the switch synchronizes configuration changes to the active configuration, whereas a reset to defaults sets configuration to factory defaults. The inactive block is not affected.

In stack configurations, all units in the stack must use the same active configuration. If a unit joins a stack, a check is performed between the unit active configuration and the stack active configuration. If the two differ, the new stack unit resets and loads the stack active configuration.

The following considerations apply to NVRAM commands:

- The Nvram block that is not active is not reset to default after downgrade.
- You can save the switch binary configuration to the non-default NVRAM block.
- When you perform an agent code downgrade on the switch, only the configuration from the default block resets to default.

Displaying the stored configurations

About this task

Use this procedure to show the configurations currently stored on the switch.

Procedure

1. Enter Privileged EXEC mode:

```
enable
```

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

```
show nvram block
```

3. Press Enter.

Copying a configuration to flash memory

About this task

Use this procedure to copy the current configuration to one of the flash memory locations.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   copy config nvram block <1-2> name <block_name>
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the command.

Variable	Definition
block <1–2>	The flash memory location to store the configuration.
name <block_name>	The name to attach to this block. Names can be up to 40 characters in length with no spaces.

Copying a configuration from flash memory

About this task

Use this procedure to copy the configuration stored in flash memory at the specified location and make it the active configuration.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   copy nvram config block <1-2>
   ```

   Substitute <1-2> with the configuration file to load.

   Note:

   This command causes the switch to reset so that the new configuration can be loaded.

3. Press Enter.

System IP addresses and boot mode configuration

Use the information in this section to configure, clear, and view IP addresses, gateway addresses, and boot mode information .

Configuring system IP addresses and boot mode

About this task

Use this procedure to set the IP address and subnet mask for a switch or a stack, and to select BootP or DHCP as the boot mode for the next switch reboot.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   ip address <A.B.C.D> [netmask <A.B.C.D>] source {bootp-always|bootp-last-address|bootp-when-needed|configured-address|dhcp-always|dhcp-last-address|dhcp-when-needed} [stack|switch|unit]
   ```

   If the stack or switch parameter is not specified, the system automatically modifies the stack IP address when in stack mode and modifies the switch IP address when in standalone mode

   Note:

   When you change the IP address or subnet mask, connectivity to Telnet and the Web can be lost.

3. Press Enter.

Variable definitions

Use the data in the following table to use the `ip address` command.

Variable	Definition
A.B.C.D	Specifies the IP address in dotted-decimal notation.
netmask	Specifies the IP subnet mask for the stack or switch. The netmask is optional.
source	Specifies whether to use the BootP or DHCP server to assign an IPv4 address for the management VLAN at the next switch reboot. Values include: • bootp-always—always use the BootP server • bootp-last-address—use the BootP server last used

Table continues…

Variable	Definition
	• bootp-when-needed—use the BootP server when needed • configured-address—use configured server IP address • dhcp-always—always use the DHCP server • dhcp-last-address—use the DHCP server last used • dhcp-when-needed—use the DHCP server when needed
stack | switch | unit	Specifies the IP address and netmask of the stack or the switch, or another unit in at a stack.

Resetting system IP addresses, subnet mask, and boot mode

About this task

Use this procedure to set to default the IP address, subnet mask, and boot mode for a switch or a stack.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   default ip address [source]
   ```

   Note:

   When the IP gateway changes, connectivity to Telnet and the Internet can be lost.

3. Press Enter.

Variable definitions

Use the data in the following table to use the `default ip address` command.

Variable	Definition
source	Configures the BootP and DHCP boot mode to default for the next system reboot.

Clearing the IP address and subnet mask for a switch or a stack

About this task

Use this procedure to clear the IP address and subnet mask for a switch or a stack. This command sets the IP address and subnet mask for a switch or a stack to all zeros (0).

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   ```

```
configure terminal
```

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

```
no ip address {stack | switch | unit}
```

Note:

When you change the IP address or subnet mask, connectivity to Telnet and the Web Interface can be lost. Any new Telnet connection can be disabled and must connect to the serial console port to configure a new IP address.

3. Press Enter.

Variable definitions

Use the data in the following table to use the `no ip address` command.

Variable	Definition
stack | switch	Zeroes out the stack IP address and subnet mask or the switch IP address and subnet mask.
unit	Zeroes out the IP address for the specified unit.

Displaying the boot mode

About this task

Use this procedure to display the configured boot mode for the next switch reboot.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

```
show ip address source
```

3. Press Enter.

Configuring DHCP client lease time

About this task

Use this procedure to configure the DHCP client lease time in seconds, minutes, hours, days, and weeks.

Procedure

1. Enter Global Configuration mode:

```
enable
configure terminal
```

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

```
ip dhcp client lease <time>
```

Note:

When you change the IP address or subnet mask, connectivity to Telnet and the Web can be lost.

3. Press Enter.

Variable definitions

Use the data in the following table to use the `ip dhcp client lease` command.

Variable	Definition
<time>	Specifies the DHCP client lease time. Values include: • seconds—from 10–4294967295 • minutes—from 1–71582788 • hours—from 1–1193046 • days—from 1–49710 • weeks—from 1–7101

Resetting DHCP client lease time

About this task

Use this procedure to set the DHCP client lease time (seconds, minutes, hours, days, and weeks) to default values.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   default ip dhcp client lease
   ```

   Note:

   When you change the IP address or subnet mask, connectivity to Telnet and the Web can be lost.

3. Press Enter.

Deleting the DHCP client lease time

About this task

Use this procedure to delete the DHCP client lease time.

Procedure

1. Enter Global Configuration mode:

```
enable
configure terminal
```

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

```
no ip dhcp client lease
```

3. Press Enter.

Displaying the DHCP client lease time

About this task

Use this procedure to display the configured and granted DHCP client lease time.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

```
show ip dhcp client lease
```

3. Press Enter.

Renewing the DHCP client lease

About this task

Use this procedure to renew the DHCP client lease.

Procedure

1. Enter Global Configuration mode:

```
enable
configure terminal
```

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

```
renew dhcp
```

3. Press Enter.

Configuring the default IP gateway address for a switch or a stack

About this task

Use this procedure to set the default IP gateway address for a switch or a stack.

Procedure

1. Enter Global Configuration mode:

```
enable
configure terminal
```

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

```
ip default-gateway <XXX.XXX.XXX.XXX>
```

Note:

When you change the IP gateway, connectivity to Telnet and the Web Interface can be lost.

3. Press Enter.

Variable definitions

Use the data in the following table to use the `ip default-gateway` command.

Variable	Definition
XXX.XXX.XXX.XXX	Specifies the dotted-decimal IP address of the default IP gateway.

Clearing the IP default gateway address

About this task

Use this procedure to set the IP default gateway address to zero (0).

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no ip default-gateway
   ```

   Note:

   When you change the IP gateway, connectivity to Telnet and the Web Interface can be lost.

3. Press Enter.

Displaying IP configurations

About this task

Use this procedure to display the IP configurations, BootP mode, stack address, switch address, subnet mask, and gateway address. The show ip command displays these parameters for what is configured, what is in use, and the last BootP. If you do not enter any parameters, this command displays all IP-related configuration information.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   show ip [bootp] [default-gateway] [address]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `show ip` command.

Variable	Definition
bootp	Displays BootP-related IP information.
default-gateway	Displays the IP address of the default gateway.
address	Displays the current IP address.

IP addresses configuration for specific units

Use the information in this section to assign and clear IP addresses for a specific unit in a stack.

Assigning IP addresses for a specific unit

About this task

Use this procedure to set the IP address and subnet mask of a specific unit in the stack.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   ip address unit <1-8> [A.B.C.D]
   ```

   Note:

   When the IP address or subnet mask changes, connectivity to Telnet and the Internet can be lost.

3. Press Enter.

Variable definitions

Use the data in the following table to use the `ip address unit` command.

Variable	Definition
unit <1—8>	Sets the unit you are assigning an IP address.
A.B.C.D	Enter IP address in dotted-decimal notation.

Clearing the IP address for a specific unit

About this task

Use this procedure to set the IP address for the specified unit in a stack to zeros (0).

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no ip address unit <1-8>
   ```

   Note:

   When you change the IP address or subnet mask, connectivity to Telnet and the Internet can be lost.

3. Press Enter.

Variable definitions

Use the data in the following table to use the `no ip address unit` command.

Variable	Definition
unit <1—8>	Zeroes out the IP address for the specified unit.

Displaying Interfaces

About this task

Use this procedure to view the status of all interfaces on the switch or stack, including MultiLink Trunk membership, link status, autonegotiation, and speed.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   show interfaces [<portlist>] [admin-disabled] [admin-enabled] [gbic-info] [LINE] [link-down] [link-up] [names] [verbose]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `show interfaces` command.

Variable	Definition
admin-disabled	Displays the admin disabled interfaces.
admin-enabled	Displays the admin enabled interfaces.
gbic-info	Displays the GBIC details.

Table continues…

Variable	Definition
LINE	Display a list of existing ports with names (displays interface names).
link-down	Displays the interfaces with the link down.
link-up	Displays the interfaces with the link up.
names <portlist>	Displays the interface names; enter specific ports to see only those ports.
verbose	Displays the port status information for several applications.

Displaying configuration information for ports

About this task

Use this procedure to show all the configuration information for a specific port. You can view information related to port configuration, VLAN interface, VLAN port member, and Spanning-Tree configuration.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show interfaces <portlist> config
   ```

3. Press Enter.

Example

The following example displays sample output for the show port enhancement:

```
Switch>enable
Switch#show interfaces 1/22 config
Port:  1
    Trunk:
    Admin Status:  Enable
    Oper Status:  Up
    EAP Oper Status:  Up
    VLACP Oper Status:  Down
    STP Oper Status:  Forwarding
    Link: Up
    Last Change: 4 days(s), 07h:23m:23s ago
    Link Autonegotiation:  Enabled
    Link Speed:  100Mbps
    Link Duplex:  Full-Duplex
    Flow Control:  Disable
    Energy Saver: Disabled
    Energy Saver Oper Status: No Power Saving
    BPDU-guard (BPDU Filtering): Disabled
    BPDU-guard (BPDU Filtering) Oper Status: N/A
    SLPP-guard: Disabled
    SLPP-guard Oper Status: N/A


*****VLAN interfaces configuration*****
          Filter      Filter
         Untagged    Unregistered
```

```
Unit/Port  Frames        Frames    PVID PRI    Tagging    Name
---------  --------    ------------ ---- --- ------------ ---------------
1/22       No          Yes          1    0   UntagAll     Unit 1, Port 22

*****VLAN ID port member configuration*****
Unit/Port VLAN VLAN Name         VLAN VLAN Name         VLAN VLAN Name
--------- ---- ----------------  ---- ----------------  ---- -------------
1/22      1    VLAN #1
--------- ---- ----------------  ---- ----------------  ---- -------------

*****Spanning-tree port configuration*****
Unit Port Trunk   Participation   Priority  Path Cost    State
---- ---- -----  ---------------  --------  ---------  -----------
1    22          Normal Learning  128       1          Forwarding x
```

Variable definitions

Use the data in the following table to use the `show interfaces` command.

Variable	Definition
<portlist>	Specifies the ports that you want to display.

Port speed configuration

Use the information in this section to set port speed and duplexing.

Setting the port speed

About this task

Use this procedure to set the port speed.

Note:

Enabling or disabling autonegotiation for speed also enables or disables it for duplex operation. When you set the port speed for autonegotiation, ensure that the other side of the link is also set for autonegotiation.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   speed [port <portlist>] {10 | 100 | 1000 | 10000 | auto}
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `speed` command.

Variable	Definition
port <portlist>	Specifies the port numbers to configure the speed. **Note:** If you omit this parameter, the system uses the port number you specified in the interface command.
10|100|1000|auto	Sets the speed to: • 10: 10 Mb/s • 100: 100 Mb/s • 1000: 1000 Mb/s or 1 GB/s • 10000: 10000 Mb/s or 10 GB/s • auto: autonegotiation

Resetting port speed

About this task

Use this procedure to set the port speed to the factory default speed.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   default speed [port <portlist>]
   ```

3. Press Enter.

   Note:

   After upgrading the software image from 5.6.x to >=5.7.0 releases the port speed and auto-negotiation-advertisements settings must be defaulted for the SFP+ ports (25-26 on ERS4826 and 49-50 on ERS4850) to avoid link issues on these ports. In order to correct the settings after the upgrade, run `default auto-negotiation-advertisements port <25-26 | 49-50>` followed by `default speed port <25-26 | 49-50>`.

Variable definitions

Use the data in the following table to use the `default speed` command.

Variable	Definition
port <portlist>	Specifies the port numbers for which to set the speed to factory default.

Variable	Definition
	Note: If you omit this parameter, the system uses the port number you specified in the interface command.

Configuring duplex operation

About this task

Use this procedure to configure the duplex operation for a port.

Note:

Enabling or disabling autonegotiation for speed also enables or disables it for duplex operation. When you set the duplex mode for autonegotiation, ensure that the other side of the link is also set for autonegotiation.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   duplex [port <portlist>] {full | half | auto}
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `duplex` command.

Variable	Definition
port <portlist>	Specifies the port numbers to reset the duplex mode to factory default values. The default value is autonegotiation. **Note:** If you omit this parameter, the system uses the ports you specified in the interface command.
full | half | auto	Sets duplex to • full: full-duplex mode • half: half-duplex mode • auto: autonegotiation

Resetting the duplex operation

About this task

Use this procedure to set the duplex operation for a port to the factory default duplex value.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   default duplex [port <portlist>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `default duplex` command.

Variable	Definition
port <portlist>	Specifies the port numbers for which to reset the duplex mode to factory default values. The default value is autonegotiation. **Note:** If you omit this parameter, the system uses the ports you specified in the interface command.

Cable diagnostic test

Use the information in this section to initiate and display results for a cable diagnostic test globally, or for one or more specific switch ports, using the Time Domain Reflectometer (TDR).

Testing cables with TDR

About this task

Use this procedure to run a cable diagnostic test globally, or for one or more specific switch ports.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   tdr test <portlist>
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `tdr test` command.

Variable	Definition
<WORD>	Specifies a port or list of ports.

Displaying the TDR test results

About this task

Use this procedure to display cable diagnostic test results globally, or for one or more specific switch ports.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show tdr test <portlist>
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `show tdr test` command.

Variable	Definition
<portlist>	Specifies a port or list of ports.

Enterprise Autotopology protocol configuration

Use the information in this section to configure the Enterprise Autotopology protocol.

For more information about Autotopology, see http://www.avaya.com. (The product family for Enterprise and Autotopology is Data and Internet.)

Enabling the Autotopology protocol

About this task

Use this procedure to enable the Autotopology protocol.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

```
autotopology
```

3. Press Enter.

Disabling the Autotopology protocol

About this task

Use this procedure to disable the Autotopology protocol.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no autotopology
   ```

3. Press Enter.

Resetting the Autotopology protocol

About this task

Use this procedure to reset Autotopology to the factory default.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   default autotopology
   ```

3. Press Enter.

Displaying global autotopology settings

About this task

Use this procedure to display the global autotopology settings.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show autotopology settings
   ```

3. Press Enter.

Displaying the autotopology NMM table

About this task

Use this procedure to display the Autotopology network management module (NMM) table.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show autotopology nmm-table
   ```

3. Press Enter.

Flow control configuration

Use the information in this section to configure the traffic rates on ports.

Note:

Due to Quality of Service (QoS) interaction, the switch cannot send pause-frames.

Configuring flow control

About this task

Use this procedure only on Gigabit Ethernet ports to control the traffic rates on ports during congestion.

Note:

With auto-negotiation enabled, you must use the "auto-negotiation-advertisements" command to set the mode for flow control.

The default value for flowcontrol is asymmetric (asymm-pause-frame for auto-negotiation enabled). When upgrading from an older software version that has symmetric/pause-frame as default, the symmetric/pause-frame settings are changed to asymmetric/asymm-pause-frame.

If you select the auto mode for flow control on a port, make sure that the desired autonegotiation advertisements are set on the port.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

```
flowcontrol [port <portlist>] {asymmetric | auto | disable}
```

3. Press Enter.

Example

The following is an example of flow control disabling with autonegotiation enabled:

```
Switch>enable
Switch#configure terminal
Switch(config)#interface ethernet 7-8
Switch(config-if)#auto-negotiation-advertisements port 7 1000-full
Switch(config-if)#show auto-negotiation-advertisements port 7-8
Port Autonegotiation Advertised Capabilities
---- ---------------------------------------------------------------------
7                                1000Full
8    10Full 10Half 100Full 100Half 1000Full           AsymmPause
Switch(config-if)#show interfaces 7-8
              Status           Auto                          Flow
Port Trunk Admin   Oper  Link Negotiation  Speed   Duplex Control
---- ----- ------- ---- ---- ----------- -------- ------ -------
7          Enable  Up   Up   Custom      1000Mbps Full   Disable
8          Enable  Up   Up   Enabled     1000Mbps Full   Disable
The following is an example of flow control enabling with autonegotiation enabled:

Switch(config-if)#auto-negotiation-advertisements port 7 1000-full asymm-pause-frame
Switch(config-if)#show auto-negotiation-advertisements port 7-8
Port Autonegotiation Advertised Capabilities
---- ---------------------------------------------------------------------
7                                1000Full           AsymmPause
8    10Full 10Half 100Full 100Half 1000Full           AsymmPause
Switch(config-if)#show interfaces 7-8
              Status           Auto                          Flow
Port Trunk Admin   Oper  Link Negotiation  Speed   Duplex Control
---- ----- ------- ---- ---- ----------- -------- ------ -------
7          Enable  Up   Up   Custom      1000Mbps Full   Asymm
8          Enable  Up   Up   Enabled     1000Mbps Full   Asymm
```

The following is an example of flow control disabling with autonegotiation disabled:

```
Switch(config-if)#speed port 7-8 1000
Switch(config-if)#duplex port 7-8 full
Switch(config-if)#flowcontrol port 7-8 disable
Switch(config-if)#show interfaces 7-8
              Status           Auto                          Flow
Port Trunk Admin   Oper  Link Negotiation  Speed   Duplex Control
---- ----- ------- ---- ---- ----------- -------- ------ -------
7          Enable  Up   Up   Disabled    1000Mbps Full   Disable
8          Enable  Up   Up   Disabled    1000Mbps Full   Disable
```

The following is an example of flow control enabling with autonegotiation disabled:

```
Switch(config-if)#flowcontrol port 7-8 asymmetric
Switch(config-if)#show interfaces 7-8
              Status           Auto                          Flow
Port Trunk Admin   Oper  Link Negotiation  Speed   Duplex Control
---- ----- ------- ---- ---- ----------- -------- ------ -------
7          Enable  Up   Up   Disabled    1000Mbps Full   Asymm
8          Enable  Up   Up   Disabled    1000Mbps Full   Asymm
```

Variable definitions

Use the data in the following table to use the `flowcontrol` command.

Variable	Definition
port <portlist>	Specifies the port numbers to configure for flow control. **Note:** If you omit this parameter, the system uses the ports you specified in the interface command but only those ports that have speed set to 1000/full.
asymmetric | auto | disable	Set the mode for flow control: • asymmetric: PAUSE frames can flow only in one direction (the switch cannot send pause-frames) • auto: Enables autonegotiation on the port • disable: Disables flow control on the port

Disabling flow control

About this task

Use this procedure to disable flow control (only on Gigabit Ethernet ports).

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   no flowcontrol [port <portlist>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `no flowcontrol` command.

Variable	Definition
port <portlist>	Specifies the port numbers for which to disable flow control. **Note:** If you omit this parameter, the system uses the ports you specified in the interface command, but only those ports that have speed set to 1000/full.

Resetting flow control

About this task

Use this procedure to set the flow control to the default value of automatic, which automatically detects the flow control.

Use the default flowcontrol command only on Gigabit Ethernet ports.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   default flowcontrol [port <portlist>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `default flowcontrol` command.

Variable	Definition
port <portlist>	Specifies the port numbers for which to default to automatic flow control. **Note:** If you omit this parameter, the system uses the port number you specified in the interface command.

Rate-limiting configuration

Use the information in this section to limit the percentage of multicast traffic, broadcast traffic, or both.

Displaying rate-limiting information

About this task

Use this procedure to display the rate-limiting settings and statistics.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show rate-limit
   ```

3. Press Enter.

Configuring rate-limiting on a port

About this task

Use this procedure to configure rate-limiting on a port.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   rate-limit [port <portlist>] {multicast <pct> | broadcast <pct> |
   both <pct>}
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `rate-limit` command.

Variable	Definition
port <portlist>	Specifies the port numbers to configure for rate-limiting. **Note:** If you omit this parameter, the system uses the port number you specified in the interface command.
multicast <pct> | broadcast <pct> | both <pct>	Apply rate-limiting to the type of traffic. Enter an integer from 1–10 to set the rate-limiting percentage: • multicast: Apply rate-limiting to multicast packets • broadcast: Apply rate-limiting to broadcast packets • both: Apply rate-limiting to both multicast and broadcast packets

Disabling rate-limiting on a port

About this task

Use this procedure to disable rate-limiting on a port.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

```
no rate-limit [port <portlist>]
```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `no rate-limit` command.

Variable	Definition
port <portlist>	Specifies the port numbers for which to disable for rate-limiting. **Note:** If you omit this parameter, the system uses the port number you specified in the interface command.

Resetting rate-limiting

About this task

Use this procedure to restore the rate-limiting value for specified ports to the default settings.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   default rate-limit [port <portlist>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `default rate-limit` command.

Variable	Definition
port <portlist>	Specifies the port numbers for which to reset rate-limiting to factory default. **Note:** If you omit this parameter, the system uses the port number you specified in the interface command.

Simple Network Time Protocol configuration

Use the information in this section to configure Simple Network Time Protocol (SNTP).

TheSNTP feature synchronizes the Universal Coordinated Time (UTC) to an accuracy within 1 second. This feature adheres to the IEEE RFC 2030 (MIB is the s5agent). With this feature, the system can obtain the time from any RFC 2030-compliant NTP/SNTP server.

Note:

If problems occur when you use this feature, try various NTP servers. Some NTP servers can be overloaded or currently inoperable.

The system retries connecting with the NTP server a maximum of three times, with 5 minutes between each retry.

Displaying SNTP information

About this task

Use this procedure to display the SNTP information, as well as the configured NTP servers.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show sntp
   ```

3. Press Enter.

Displaying the current system characteristics

About this task

Use this procedure to display the current system characteristics.

Note:

You must have SNTP enabled and configured to display GMT time.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show sys-info
   ```

3. Press Enter.

Enabling SNTP

About this task

Use this procedure to enable SNTP.

Note:

The default setting for SNTP is Disabled

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   sntp enable
   ```

3. Press Enter.

Disabling SNTP

About this task

Use this procedure to disable SNTP.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no sntp enable
   ```

3. Press Enter.

Configuring the SNTP server primary address

About this task

Use this procedure to configure the SNTP server primary address.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   sntp server primary address [<ipv6_address> | <A.B.C.D>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `sntp server primary address` command.

Variable	Definition
ipv6_address	Specifies the IPv6 address of the primary NTP server.
<A.B.C.D>	Specifies the IP address of the primary NTP server in dotted-decimal notation.

Configuring the SNTP server secondary address

About this task

Use this procedure to configure the SNTP server secondary address.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   sntp server secondary address [<ipv6_address> | <A.B.C.D>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `sntp server secondary address` command.

Variable	Definition
ipv6_address	Specifies the IPv6 address of the secondary NTP server.
<A.B.C.D>	Specifies the IP address of the secondary NTP server in dotted-decimal notation.

Clearing SNTP addresses

About this task

Use this procedure to clear the NTP server IP addresses. The no sntp server command clears the primary and secondary server addresses.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no sntp server {primary | secondary}
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `no sntp server` command.

Variable	Definition
primary	Clears the primary SNTP server address.
secondary	Clears the secondary SNTP server address.

Performing a manual SNTP synchronization

About this task

Use this procedure to perform a manual synchronization with the NTP server.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   sntp sync-now
   ```

3. Press Enter.

Configuring a recurring synchronization

About this task

Use this procedure to configure a recurring synchronization with the secondary NTP server. You specify the synchronization interval in hours relative to initial synchronization.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   sntp sync-interval <0-168>
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `sntp sync-interval` command.

Variable	Definition
<0-168>	Specifies the number of hours for periodic synchronization with the NTP server. 0 is boot-time only, and 168 is once a week.

Configuring local time zone

Before you begin

SNTP server must be enabled.

About this task

Use this procedure to configure your switch for your local time zone.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   clock time-zone zone hours [minutes]
   ```

3. Press Enter.

Example

The following is an example of setting the time zone to UTP minus 8 hours and displaying the time zone as "PST".

```
Switch(config)#clock time-zone PST -8
```

Variable definitions

Use the data in the following table to use the `clock time-zone zone hours` command.

Variable	Definition
zone	Specifies the time zone acronym to be displayed when showing system time (up to 4 characters).
hours	Specifies the difference from UTC in hours. This can be any value between -12 and +12.
[minutes]	Specifies the number of minutes difference from UTC. Minutes can be any value between 0 and 59.

Configuring daylight savings time

Before you begin

SNTP server must be enabled.

About this task

Use this procedure to set the daylight savings time change dates..

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   clock summer-time <zone> [date <day> <month> <year> <hh:mm> <end-day> <end-month> <end-year> <end-hh:mm>] [offset]
   ```

3. Press Enter.

Example

The following command sets the daylight savings time to begin at 02:00 on March 28, 2007 and end on August 30th, 2007 at 15:00. The change to daylight savings moves the clock forward by 60 minutes and "BST" will be displayed as the time zone acronym. These changes to and from daylight savings time will happen automatically.

```
Switch(config)#clock summer-time BST date 28 Mar 2007 2:00 30 Aug 2007 15:00 +60
```

Variable definitions

Use the data in the following table to use the `clock summer-time` command.

Variable	Definition
<zone>	Specifies the time zone acronym to display when daylight savings time is in effect. If unspecified, the default is the current time zone acronym.
date	Specifies daylight savings time to start and end on the following dates.
<day>	Specifies the start day.
<month>	Specifies the start month.
<year>	Specifies the start year.
<hh:mm>	Specifies the hour and minute to start daylight savings time.
<end-day>	Specifies the end day.

Configuring recurring daylight savings time

Before you begin

SNTP server must be enabled.

About this task

Use this procedure to configure recurring daylight savings time start and end dates.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   ```

```
configure terminal
```

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

```
clock summer-time recurring {<startWeek:1-5|last>} <start:DAY>
<start:MONTH> <start:hh:mm> {<endWeek:1-5>|last>} <end:DAY>
<end:MONTH> <end:hh:mm> [offset <1-1440>]
```

3. Press Enter.

Example

The following command configures the recurring daylight savings time to start on day 13 of the third week in March, and end on day 6 of the second week in November.

```
Switch(config)# clock summer-time recurring 3 13 March 02:00 2 6 November 02:00 offset 60
```

Variable definitions

Use the data in the following table to use the `clock summer-time recurring` command.

Variable	Definition
<startWeek:1–5> | last>	Specifies the week of the month (starting on Sunday) you want recurring daylight savings time to start. Values include: • <1–5> — the first to the fifth week for months of the year that include five Sundays. • last — the last week of months of the year that do not include five Sundays. **Note:** For the <1–5> parameter, weeks count from the first day of the month, not calendar weeks. Therefore, weeks 1–4 may not always apply. Week 5 may not apply in certain years. In that case, summer time start/end uses the last parameter. For years without a Sunday in the fifth week of March, summer time starts on the last Sunday of March.
<start:DAY>	Specifies the day recurring daylight savings time starts.
<start:MONTH>	Specifies the month recurring daylight savings time starts.
<start:hh:mm>	Specifies the hour and minutes of the day recurring daylight savings time starts.
<endWeek:1–5> | last>	Specifies the week of the month (starting on Sunday) you want recurring daylight savings time to end. Values include: • <1–5> — the first to the fifth week for months of the year that include five Sundays. • last — the last week of months of the year that do not include five Sundays.

Table continues…

Variable	Definition
	Note: For the <1–5> parameter, weeks count from the first day of the month, not calendar weeks. Therefore, weeks 1–4 may not always apply. Week 5 may not apply in certain years. In that case, summer time start/end uses the last parameter.
<end:DAY>	Specifies the day recurring daylight savings time ends.
<end:MONTH>	Specifies the month recurring daylight savings time ends.
<end:hh:mm>	Specifies the hour and minutes of the day recurring daylight savings time ends.
offset<1–1440>	Specifies the time change in minutes when daylight savings time starts and ends. The offset is added when daylight savings time begins, and subtracted when daylight savings time ends. Value range is 1 to 1440 minutes.

Clock configuration

In addition to SNTP time configuration, a clock provides the switch with time information. This clock provides the switch information in the instance that SNTP time is not available.

Use the information in this section to view and configure the clock.

Configuring the clock source for a switch

About this task

Use this procedure to set the clock source for the switch.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   [default] clock source {ntp|sntp|sysUpTime}
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `clock source` command.

Variable	Definition
sntp	Specifies Simple Network Time Protocol (SNTP) as the time source.
ntp	Specifies Network Time Protocol (NTP) as the time source.

Table continues…

Variable	Definition
sysUpTime	Specifies System Up Time as the time source.
[default]	Restores the clock source to factory defaults.

Custom Autonegotiation Advertisements

Custom Autonegotiation Advertisement (CANA) customizes the capabilities that are advertised. It also controls the capabilities that the switch advertises as part of the auto negotiation process.

Use the information in this section to configure CANA.

Configuring CANA

About this task

Use this procedure to configure Custom Autonegotiation Advertisements (CANA) for one or more switch ports.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable

   configure terminal

   interface Ethernet <port>
   ```

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

   ```
   auto-negotiation-advertisements [port <portlist>] {10-full | 10-half
   | 100-full | 100-half | 1000-full | asymm-pause-frame | none |
   pauseframe}
   ```

3. Press Enter.

Example

The following is an example of setting port 5 to 10 Mb/s and full duplex.

```
Switch(config)#interface ethernet 5
Switch(config-if)#auto-negotiation-advertisements port 5 10-full
Switch(config-if)#
```

Variable definitions

Use the data in the following table to use the `auto-negotiation-advertisements` command.

Variable	Definition
<portlist>	Specifies a port or list of ports for which to configure CANA.
10-full	Advertise 10Mbps full-duplex
10-half	Advertise 10Mbps half-duplex

Table continues…

Variable	Definition
100-full	Advertise 100Mbps full-duplex
100-half	Advertise 100Mbps full-duplex
1000-full	Advertise 1000Mbps full-duplex
asymm-pause-frame	Advertise the use of asymmetric pause frames half-duplex
none	Do not advertise during autonegotiation

Displaying CANA information

About this task

Use this procedure to view the autonegotiation advertisements for a switch.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show auto-negotiation-advertisements [port <portlist>]
   ```

3. Press Enter.

Example

The following is an example of the `show auto-negotiation-advertisements` command output.

```
Switch#show auto-negotiation-advertisements port 5
Unit/Port Autonegotiation Advertised Capabilities
--------- ------------------------------------------------------------------
1/5       10Full
```

Variable definitions

Use the data in the following table to use the `show auto-negotiation-advertisements` command.

Variable	Definition
<portlist>	Specifies a port or list of ports for which to display autonegotiation advertisement configuration information.

Displaying hardware capabilities

About this task

Use this procedure to display operational modes for the device.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show auto-negotiation-capabilities [port <portlist>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `show auto-negotiation-capabilities` command.

Variable	Definition
port <portlist>	Specifies a port or list of ports for which to display autonegotiation advertisement capabilities information.

Restoring CANA to default

About this task

Use this procedure to restore CANA to default.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   default auto-negotiation-advertisements [port <portlist>]
   ```

3. Press Enter.

Note:

After upgrading the software image from 5.6.x to >=5.7.0 releases the port speed and auto-negotiation-advertisements settings must be defaulted for the SFP+ ports (25-26 on ERS4826 and 49-50 on ERS4850) to avoid link issues on these ports. In order to correct the settings after the upgrade, run `default auto-negotiation-advertisements port <25-26 | 49-50>` followed by `default speed port <25-26 | 49-50>`.

Variable definitions

Use the data in the following table to use the `default auto-negotiation-advertisements` command.

Variable	Definition
port <portlist>	Specifies a port or list of ports for which to restore CANA to default settings. The default setting makes a port advertise all auto negotiation capabilities.

Disabling CANA

About this task

Use this procedure to disable CANA on one or more ports.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   no auto-negotiation-advertisements [port <portlist>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `no auto-negotiation-advertisements` command.

Variable	Definition
port <portlist>	Specifies a port or list of ports for which to disable CANA.

Connecting to Another Switch

Use the information in this section to communicate with another switch while maintaining the current switch connection, by running the **`ping`** and **`telnet`** commands.

Using the ping command to test communication with another switch

Before you begin

To ping from the local IP address, set the local IP address before you issue the ping command.

About this task

Use this procedure to determine whether or not you can establish communication between two switches. The ping command tests the network connection to another network device by sending an Internet Command Message Protocol (ICMP) packet from the local IP address (ipv6 or dns host name) or a specified source ipv4 address. The **`ping`** command waits for a reply within a predetermined time period. If the reply arrives within the established timeout interval, the host is considered to be reachable.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

```
ping <ipv6_address | dns_host_name> [datasize <64-4096>] [{count
<1-9999>} | continuous] [{timeout | -t} <1-120>] [interval <1-60>]
[debug][source <WORD>]
```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `ping` command.

Variable definition

Parameter	Description
ipv6_address | dns_host_name	Specifies the IPv6 address or DNS host name of the unit to test.
datasize <64–4096>	Specifies the size of the ICMP packet to be sent within a range of 64 to 4096 bytes. DEFAULT: 64 bytes
count <1–9999> | continuous	Sets the number of ICMP packets to be sent within a range of 1 to 9999 packets. The continuous mode sets the ping running until the user interrupts it by entering Ctrl+C. DEFAULT: 5 packets
timeout | -t | <1–120>	Sets the timeout using either the timeout with the –t parameter followed by the number of seconds the switch must wait before timing out. Range is within 1 to 120 seconds. DEFAULT: 5 seconds
interval <1–60>	Specifies the number of seconds between transmitted packets within a range of 1 to 60 seconds. DEFAULT: 1 second
debug	Provides additional output information such as the ICMP sequence number and the trip time.
source <WORD>	Specifies the source 1Pv4 address of the outgoing ICMP request message. Must be one of the device's layer 3 active interfaces. If no source address is specified, the address of the interface used to send out the packets is used as the source address.

Using Telnet to communicate with another switch

About this task

Use the telnet command to establish communications with another switch during the current ACLI session. Communication can be established to only one external switch at a time using the **`telnet`** command.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   telnet <ipv6_address | dns_host_name | ipv4_address>
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `telnet` command.

Variable	Definition
ipv6_address	Specifies the IPv6 address of the unit with which to communicate.
dns_host_name	Specifies the DNS host name of the unit with which to communicate.
ipv4_address	Specifies the IPv4 address of the unit with which to communicate.

Domain Name Server (DNS) Configuration

Use domain name servers when the switch needs to resolve a domain name (such as avaya.com) to an IP address.

Use the information in this section to configure DNS.

Displaying DNS-related information

About this task

Use this procedure to display DNS-related information. This information includes the default switch domain name and any configured DNS servers.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   show ip dns
   ```

3. Press Enter.

Configuring a Domain Name Server

About this task

Use this procedure to set the default DNS domain name for the switch.

Note:

This default domain name is appended to all DNS queries or commands that do not already contain a DNS domain name.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   ip domain-name <domain_name>
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `ip domain-name` command.

Variable	Definition
<domain_name>	Specifies the default domain name to be used. A domain name is determined to be valid if it contains alphanumeric characters and contains at least one period (.).

Clearing the DNS domain name

About this task

Use this procedure to clear a previously configured default DNS domain name for the switch.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no ip domain-name
   ```

3. Press Enter.

Restoring DNS domain name to default

About this task

Use the default ip domain-name command to set the system default switch domain name. Because this default is an empty string, this command has the same effect as the no ip domain-name command.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   default ip domain-name
   ```

3. Press Enter.

Resolving domain names to IP addresses

About this task

Use this procedure to set the domain name servers the switch uses to resolve a domain name to an IP address. A switch can have up to three domain name servers specified for this purpose.

Note:

To enter all three server addresses you must enter the command three times, each with a different server address.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   ip name-server [<ipv6_address> | <ip_address_1> ip name-server
   [<ipv6_address> | <ip_address_2>] ip name-server [<ipv6_address> |
   <ip_address_3>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `ip name-server` command.

Variable	Definition
ipv6_address	Specifies the IPv6 address of the domain name server used by the switch.
<ip_address_1>	Specifies the IP address of the domain name server used by the switch.
<ip_address_2>	Optional. Specifies the IP address of a domain name server to add to the list of servers used by the switch.
<ip_address_3>	Optional. Specifies the IP address of a domain name server to add to the list of servers used by the switch.

Removing domain name servers

About this task

Use this procedure to remove domain name servers from the list of servers used by the switch to resolve domain names to an IP address.

Note:

To remove all three server addresses, you must enter the command three times, each with a different server address.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no ip name-server <ip_address_1> no ip name-server [<ip_address_2>]
   no ip name-server [<ip_address_3>]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `no ip name-server` command.

Variable	Definition
<ip_address_1>	Specifies the IP address of the domain name server to remove.
<ip_address_2>	Optional. Specifies the IP address of a domain name server to remove from the list of servers used by the switch.
<ip_address_3>	Optional. Specifies the IP address of a domain name server to remove from the list of servers used by the switch.

Serial Security configuration

When enabled, the serial-security feature secures the console interface by logging you out if the serial console is removed from the port.

Note:

When loading an ASCII configuration file on switch, removing the console cable does not involve a logout event.

Use the information in this section to configure serial security.

Enabling the serial security

About this task

Use this procedure to enable serial security on a switch.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   ```

```
configure terminal
```

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

```
serial-security enable
```

3. Press Enter.

Disabling the serial security

About this task

Use this procedure to disable serial security on a switch.

Procedure

1. Enter Global Configuration mode:

```
enable
configure terminal
```

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

```
no serial-security enable
```

3. Press Enter.

Restoring serial security to default

About this task

Use this procedure to restore serial security to default (disabled).

Procedure

1. Enter Global Configuration mode:

```
enable
configure terminal
```

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

```
default serial-security enable
```

3. Press Enter.

Displaying serial security status

About this task

Use this procedure to display the serial security on the switch.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

```
show serial-security
```

3. Press Enter.

Configuring LLDP using ACLI

You can enable and configure LLDP using ACLI. For more information about LLDP, see Link Layer Discovery Protocol (IEEE 802.1AB) Overview on page 74.

Setting LLDP transmission parameters

About this task

Use this procedure to set the LLDP transmission parameters.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   lldp [tx-interval <5-32768>] [tx-hold-multiplier <2-10>] [reinit-delay <1-10>] [tx-delay <1-8192>] [notification-interval <5-3600>] [med-fast-start <1-10>] [vendor-specific avaya {call-server | file-server}]
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `lldp` command.

Variables	Description
tx-interval <5-32768>	Sets the interval between successive transmission cycles.
tx-hold-multiplier <2-10>	Sets the multiplier for the tx-interval used to compute the Time To Live value for the TTL TLV.
reinit-delay <1-10>	Sets the delay for the reinitialization attempt if the adminStatus is disabled.
tx-delay <1-8192>	Sets the minimum delay between successive LLDP frame transmissions.
med-fast-start <1-10>	Sets value for med-fast-start.
notification-interval <5-3600>	Sets the interval between successive transmissions of LLDP notifications.

Table continues…

Variables	Description
vendor-specific avaya {call-server | file-server}	Sets the vendor specific details for advertising the call server or file server details to the Avaya IP phones.

Setting LLDP port parameters

About this task

Use this procedure to set the LLDP port parameters.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   lldp port <portlist> [status {rxOnly | txAndRx | txOnly}] [config notification]
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `lldp port` command.

Variables	Description
port <portlist>	Specifies the ports affected by the command.
status {rxOnly | txAndRx | txOnly}	Sets the LLDPU transmit and receive status on the ports. • rxonly: enables LLDPU receive only • txAndRx: enables LLDPU transmit and receive For LLDP support for PoE+, transmission and reception must be enabled. • txOnly: enables LLDPU transmit only
config notification	Enables notification when new neighbor information is stored or when existing information is removed. The default value is *enabled*.

Setting LLDP Media Endpoint Devices (MED)

About this task

Use this procedure to configures LLDP Media Endpoint Devices (MED) policies for switch ports.

Note:

As a safeguard, a LLDP-MED Network Policy TLV is not sent in the LLDPDUs if the policy has the vlan-id set to value 0 (prority tagged frames).

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   lldp med-network-policies [port <portList>] {voice|voice-signaling}
   [dscp <0-63>] [priority <0-7>] [tagging {tagged|untagged}] [vlan-id
   <0-4094>]
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `lldp med-network-policies` command.

Variable	Description
port <portlist>	Specifies the port or ports on which to configure LLDP MED policies.
voice	Specifies voice network policy. The default value is 46.
voice-signaling	Specifies voice signalling network policy.
dscp <0-63>	Specifies the value of the Differentiated Service Code Point (DSCP) as defined in IETF RFC 2474 and RFC 2475 that is associated with the selected switch port or ports. Values range from 0–63. The default value is 46.
priority <0-7>	Specifies the value of the 802.1p priority that applies to the selected switch port or ports. Values range from 0–7. The default value is 6.
tagging {tagged | untagged}	Specifies the type of VLAN tagging to apply on the selected switch port or ports. • tagged—uses a tagged VLAN

Table continues…

Variable	Description
	• untagged—uses an untagged VLAN or does not support port-based VLANs. If you select untagged, the system ignores the VLAN ID and priority values, and recognizes only the DSCP value.
vlan-id <0-4094>	Specifies the VLAN identifier for the selected port or ports. Values range from 0–4094 (0 is for priority tagged frames). If you select priority tagged frames, the system recognizes only the 802.1p priority level and uses a value of 0 for the VLAN ID of the ingress port.

Setting the optional Management TLVs

About this task

Use this procedure to set the optional Management TLVs to be included in the transmitted LLDPDUs.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable

   configure terminal

   interface Ethernet <port>
   ```

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

   ```
   lldp tx-tlv [port <portlist>] [local-mgmt-addr] [port-desc] [sys-cap][sys-desc][sys-name]
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `lldp tx-tlv` command.

Variables	Description
local-mgmt-addr	The local management address TLV. This TLV is enabled by default.
port-desc	The port description TLV This TLV is enabled by default. This TLV is enabled by default.
port <portlist>	Specifies a port or list of ports.
sys-cap	The system capabilities TLV.
sys-desc	The system description TLV. This TLV is enabled by default.
sys-name	The system name TLV. This TLV is enabled by default.
med	The Media Endpoint Device (MED) for a specific TLV.

Setting the optional IEEE 802.1 organizationally-specifc TLVs

About this task

Use this procedure to set the optional IEEE 802.1 organizationally-specifc TLVs to be included in the transmitted LLDPDUs.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   lldp tx-tlv [port <portlist>] dot1 [port-protocol-vlan-id
   <vlanlist>] [port-vlan-id ] [protocol-identity < [EAP] [LLDP]
   [STP]>] [vlan-name <vlanlist>]
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `lldp tx-tlv dot1` command.

Variables	Description
port <portlist>	The ports affected by the command.
port-protocol-vlan-id <vlanlist>	The port and protocol VLAN ID TLV.
port-vlan-id	The port VLAN ID TLV.
protocol-identity <[EAP] [LLDP] [STP]>	Protocol Identity TLV
vlan-name <vlanlist>	The VLAN name TLV.

Setting the optional IEEE 802.3 organizationally-specifc TLVs

About this task

Use this procedure to set the optional IEEE 802.3 organizationally-specifc TLVs to be included in the transmitted LLDPDUs.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   ```

```
interface Ethernet <port>
```

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

```
lldp tx-tlv [port <portlist>] dot3 [link-aggregation][mac-phy-
config-status] [maximum-frame-size][mdi-power-support]
```

3. Press Enter.

Variable definitions

The following table describes the variables for the `lldp tx-tlv dot3` command.

Variables	Description
port <portlist>	The ports affected by the command.
link-aggregation	The link aggregation TLV.
mac-phy-config-status	The MAC/Phy configuration or status TLV.
maximum-frame-size	Maximum Frame Size TLV.
mdi-power-support	Power via MDI TLV is sent only on ports where transmission is enabled. The power via MDI TLV, transmission of this TLV is enabled by default on all POE ports. The transmission can be enabled only on PoE ports.

Setting the optional organizationally specific TLVs

About this task

Use this procedure to set the optional organizationally specific TLVs for use by MED devices to be included in the transmitted LLDPDUs.

Procedure

1. Enter Ethernet Interface Configuration mode:

```
enable

configure terminal

interface Ethernet <port>
```

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

```
lldp tx-tlv [port <portlist>] med [extendedPSE] [inventory]
[location] [med-capabilities] [network-policy]
```

3. Press Enter.

Variable definitions

The following table describes the variables for the `lldp tx-tlv med` command.

Variables	Description
port <portlist>	specifies the ports affected by the command
med-capabilities	MED Capabilities TLV (MED TLVs are transmitted only if MED Capabilities TLVs are transmitted). This TLV is enabled by default.
extendedPSE	Extended PSE TLV, the transmission of this TLV is enabled by default only on POE port switches.
inventory	Inventory TLVs This TLV is enabled by default.
location	Location Identification TLV This TLV is enabled by default.
network-policy	Network Policy TLV This TLV is enabled by default.

Setting the LLDP transmission parameters to default values

About this task

Use this procedure to set the LLDP transmission parameters to their default values.

Note:

If no parameters are specified, the default lldp sets all parameters to their default parameters.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   default lldp [tx-interval ] [tx-hold-multiplier ] [reinit-delay]
   [tx-delay] [notification-interval] [med-fast-start]
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `default lldp` command.

Variables	Description
tx-interval	Sets the retransmit interval to the default value (30).
tx-hold-multiplier	Sets the transmission multiplier to the default value (4).
reinit-delay	Sets the re-initialize delay to the default value (2).
tx-delay	Sets the transmission delay to the default value (2).
notification-interval	Sets the notification interval to the default value (5).
med-fast-start	Sets the MED fast start repeat count to the default value.

Setting the port parameters to default values

About this task

Use this procedure to set the port parameters to their default values.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   default lldp port <portlist> [status] [config notification]
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `default lldp port` command.

Variables	Description
port <portlist>	The ports affected by the command.
status	Sets the LLDPU transmit and receive status to the default value (txAndRx).
config notification	Sets the config notification to its default value (disabled).

Setting the LLDP MED policies to default values

About this task

Use this procedure to set LLDP MED policies for switch ports to default values.

Note:

If no parameter is used, both voice and voice-signaling lldp network policies are restored to default. Starting with release 5.5, a default network policy for voice id is defined on all switch ports. This have L2 priority 6, DSCP 46, tagging parameter set to untagged and vlan ID 0.

Note:

As a safeguard, a LLDP-MED Network Policy TLV is not sent in the LLDPDUs, if the policy has the vlan-id set to value 0 (prority tagged frames).

Procedure

1. Enter Ethernet Interface Configuration mode:

```
enable
configure terminal
interface Ethernet <port>
```

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

```
default lldp med-network-policies {voice|voice-signaling} [port
<portList>]
```

3. Press Enter.

Variable definitions

The following table describes the variables for the `default lldp med-network-policies` command.

Variable	Description
port <portlist>	Specifies the port or ports on which to configure default LLDP MED policies.
voice	Specifies the default voice network policy. The default value is 46.
voice-signaling	Specifies the default voice signalling network policy.

Setting the LLDP Management TLVs to default values

About this task

Use this procedure to set the LLDP Management TLVs to their default values.

Procedure

1. Enter Ethernet Interface Configuration mode:

```
enable
configure terminal
interface Ethernet <port>
```

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

```
default lldp tx-tlv port <portlist> local-mgmt-addr port-desc sys-
cap sys-desc sys-name
```

3. Press Enter.

Variable definitions

The following table describes the variables for the `default lldp tx-tlv` command.

Variables	Description
port <portlist>	The ports affected by the command.
port-desc	The port description TLV. This TLV is enabled by default.
sys-name	The system name TLV. This TLV is enabled by default.
sys-desc	The system description TLV. This TLV is enabled by default.
sys-cap	The system capabilities TLV. This TLV is enabled by default.
local-mgmt-addr	The local management address TLV. This TLV is enabled by default.

Setting the optional IEEE 802.1 organizationally specific TLVs to default values

About this task

Use this procedure to set the optional IEEE 802.1 organizationally specific TLVs to their default values.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable

   configure terminal

   interface Ethernet <port>
   ```

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

   ```
   default lldp tx-tlv port <portlist> dot1 [port-protocol-vlan-id]
   [port-vlan-id] [protocol-identity [EAP] [LLDP] [STP]] [vlan-name]
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `default lldp tx-tlv dot1` command.

Variables	Description
port <portlist>	The ports affected by the command.
port-vlan-id	The port VLAN ID TLV (default value is false: not included).
vlan-name	The VLAN Name TLV (default value is none).
port-protocol-vlan-id	The port and protocol VLAN ID TLV (default value is none).
protocol-identity [EAP] [LLDP] [STP]	The protocol identity TLV (default value is none).

Setting the optional IEEE 802.3 organizationally specifc TLVs to default values

About this task

Use this procedure to set the optional IEEE 802.3 organizationally specifc TLVs to their default values.

Note:

Transmission of MDI TLVs can be enabled only on POE switch ports.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   default lldp tx-tlv port <portlist> dot3 link-aggregation mac-phy-config-status maximum-frame-size mdi-power-support
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `default lldp tx-tlv dot3` command.

Variables	Description
port <portlist>	The ports affected by the command.
mac-phy-config-status	The MAC/Phy Configuration/Status TLV (default value is false: not included).
mdi-power-support	The power via MDI TLV. This TLV is enabled by default.
link-aggregation	The link aggregation TLV (default value is false: not included).
maximum-frame-size	The maximum frame size TLV (default value is false: not included).

Setting the default values for the optional TLVs for MED devices

About this task

Use this procedure to set default values for the optional organizationally specific TLVs for use by MED devices to be included in the transmitted LLDPDUs.

Note:

Transmission of ExtendedPSE TLVs can be enabled only on POE switch ports.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   default lldp tx-tlv port <portlist> med extendedPSE inventory
   inventory location med-capabilities network-policy
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `default lldp tx-tlv med` command.

Variables	Description
port <portlist>	specifies the ports affected by the command
med-capabilities	MED Capabilities TLV (MED TLVs are transmitted only if MED Capabilities TLVs are transmitted). This TLV is enabled by default.
extendedPSE	Extended PSE TLV This TLV is enabled by default.
inventory	Inventory TLVs This TLV is enabled by default.
location	Location Identification TLV This TLV is enabled by default.
network-policy	Network Policy TLV This TLV is enabled by default.

Disabling LLDP features on the port

About this task

Use this procedure to disable LLDP features on the port.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

```
no lldp [port <portlist>] [status] [config-notification]
```

3. Press Enter.

Disabling LLDP MED policies for switch ports

About this task

Use this procedure to disable LLDP MED policies for switch ports.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   no lldp med-network-policies [port <portList>] {voice|voice-signaling}
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `no lldp med-network-policies` command.

Variable	Description
port <portlist>	Specifies the port or ports on which to disable LLDP MED policies.
voice	Specifies the voice network policy to disable.
voice-signaling	Specifies the voice signalling network policy to disable.

Disabling the optional Management TLVs

About this task

Use this procedure to disable the optional Management TLVs so that these TLVs are not included in the transmitted LLDPDUs.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   ```

```
interface Ethernet <port>
```

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

```
no lldp tx-tlv port <portlist> local-mgmt-addr port-desc sys-cap
sys-desc sys-name
```

3. Press Enter.

Variable definitions

The following table describes the variables for the `no lldp tx-tlv` command.

Variables	Description
port <portlist>	The ports affected by the command.
port-desc	The port description TLV. This TLV is enabled by default.
sys-name	The system name TLV. This TLV is enabled by default.
sys-desc	The system description TLV. This TLV is enabled by default.
sys-cap	The system capabilities TLV (default value is false: not included).
local-mgmt-addr	The local management address TLV. This TLV is enabled by default.

Disabling the optional IEEE 802.1 TLVs

About this task

Use this procedure to disable the optional IEEE 802.1 TLVs so that theseTLVs are not included in the transmitted LLDPDUs.

Procedure

1. Enter Ethernet Interface Configuration mode:

```
enable

configure terminal

interface Ethernet <port>
```

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

```
no lldp tx-tlv [port <portlist>] dot1 [port-vlan-id] [vlan-name]
[port-protocol-vlan-id] [protocol-identity [EAP] [LLDP] [STP] ]
```

3. Press Enter.

Disabling the optional IEEE 802.3 TLVs

About this task

Use this procedure to disable the optional IEEE 802.3 TLVs so that these TLVs are not included in the transmitted LLDPDUs.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable

   configure terminal

   interface Ethernet <port>
   ```

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

   ```
   no lldp tx-tlv port <portlist> dot3 link-aggregation mac-phy-config-
   status maximum-frame-size mdi-power-support
   ```

3. Press Enter.

Disabling the optional LLDP MED TLVs

About this task

Use this procedure to disable the optional LLDP MED TLVs so that these TLVs are not included in the transmitted LLDPDUs.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable

   configure terminal

   interface Ethernet <port>
   ```

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

   ```
   no lldp tx-tlv port <portlist> med extendedPSE inventory location
   med-capabilities network-policy
   ```

3. Press Enter.

Viewing the LLDP parameters

About this task

Use this procedure to display the LLDP parameters.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show lldp [local-sys-data {dot1 | dot3 | med}][med-network-policies
   [voice | voice-signaling] [neighbor {dot1 [vlan-names | protocol-
   id]} | [dot3] [detail] | med [capabilities | extended-power |
   inventory | location | network-policy] vendor-specific avaya [call-
   server [dot1q-framing | fabric-attach | file-server | phone-ip |
   poe-conservation][neighbor-mgmt-addr] [pdu-tlv-size][rx-stats ]
   [stats][tx-stats ][tx-tlv [dot1 | dot3 | med | vendor-specific
   avaya] [vendor-specific avaya {call-server | dot1q-framing | file-
   server | poe-conservation-request-level}]
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `show lldp` command.

Variables	Description
local-sys-data {dot1 | dot3 | med}	The organizationally-specific TLV properties on the local switch: • dot1: displays the 802.1 TLV properties • dot3: displays the 802.3 TLV properties • med: displays all med specific TLV properties To display the properties of the optional management TLVs, include only the local-sys-data parameter in the command.
med-network-policies [voice | voice-signaling]	Displays Media Endpoint Devices (MED) network policies: • voice: Displays Voice Network Policies • voice-signaling: Displays Voice Signaling Network Policies
mgmt-sys-data	The local management system data.
neighbor { dot1 [vlan-names | protocol-id] } | [dot3] [detail] | med [capabilities | extended-power | inventory | location | network-policy] vendor-specific avaya [call-server | dot1q-framing | fabric-attach | file-server | phone-ip | poe-conservation]	The neighbor TLVs: • dot1: displays 802.1 TLVs: - vlan-names: VLAN Name TLV - protocol-id: Protocol Identity TLV • dot3: displays 802.3 TLVs • detail: displays all TLVs • med: displays MED TLVs • capabilities: Displays Capabilities TLVs • extended-power: Displays extended power TLV

Table continues…

Variables	Description
	• inventory: Displays Inventory TLVs • location: Displays Location TLV • network-policy: Displays Network Policy TLV • vendor-specific avaya: Displays Avaya-specific TLVs - call-server: Displays neighbors call-server information - dot1q-framing: Displays neighbors dot1q-framing information - fabric-attach: Displays neighbors Fabric Attach information - file-server: Display neighbors file-server information - phone-ip: Displays neighbors phone-ip information - poe-conservation: Displays neighbors poe-conservation information
neighbor-mgmt-addr	Display 802.1ab neighbors management addresses.
pdu-tlv-size	The different TLV sizes and the number of TLVs in an LLDPDU.
port	Port list.
rx-stats	The LLDP receive statistics for the local system.
stats	The LLDP table statistics for the remote system.
tx-stats	The LLDP transmit statistics for the local system.
tx-tlv {dot1 | dot3 | med}	Displays which TLVs are transmitted from the local switch in LLDPDUs: • dot1: displays status for 802.1 TLVs • dot3: displays status for 802.3 TLVs • med: displays status for med TLVs To display the transmission status of the optional management TLVs, include only the tx-tlv parameter in the command.
vendor-specific avaya {call-server | dot1q-framing | file-server | poe-conservation-request-level}	Displays 802.1ab vendor-specific settings: • call-server: Displays call-server addresses • dot1q-framing: Displays 802.1Q framing tragging-mode • file-server: Displays file-server addresses • poe-conservation-request-level: Displays PoE conservation request level

Job aid: show lldp mgmt-sys-data command

Following is the sample output for the **`show lldp`** command with the *mgmt-sys-data* variable.

```
Switch#show lldp mgmt-sys-data
-------------------------------------------------------------------------------
        LLDP mgmt-sys-data
===============================================================
ManagementAddr        MgmtIfId    ManagedEntityOID
-------------------------------------------------------------------------------
```

```
IPv4 172.16.120.233    0    1.3.6.4.1.45.3.78.1
-------------------------------------------------------------------------------
Switch#
```

Viewing the LLDP port parameters

About this task

Use this procedure to display the LLDP port parameters.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show lldp [port <portlist> | all][local-sys-data {dot1 | dot3 |
   detail | med }][rx-stats] [tx-stats] [pdu-tlv-size] [tx-tlv {dot1 |
   dot3 | med | vendor-specific}] [neighbor-mgmt-addr] [neighbor {dot1
   | dot3 | detail | med}
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `show lldp port` command.

Variables	Description
local-sys-data {dot1 | dot3 | detail | med }	The organizationally-specific TLV properties on the local switch: • dot1: displays the 802.1 TLV properties • dot3: displays the 802.3 TLV properties • detail: displays all organizationally specific TLV properties • med: displays all med specific TLV properties To display the properties of the optional management TLVs, include only the local-sys-data parameter in the command.
rx-stats	The LLDP receive statistics for the local port.
tx-stats	The LLDP transmit statistics for the local port.
pdu-tlv-size	The different TLV sizes and the number of TLVs in an LLDPDU.
port <portlist> | all	Specifies an individual port, a list of specific ports, or all ports on the switch.
tx-tlv {dot1 | dot3 | med | vendor-specific}	Display which TLVs are transmitted from the local port in LLDPDUs: • dot1: displays status for 802.1 TLVs • dot3: displays status for 802.3 TLVs

Table continues…

Variables	Description
	• med: displays status for med TLVs • vendor-specific:displays vendor specific TLV information To display the transmission status of the optional management TLVs, include only the tx-tlv parameter in the command.
neighbor {dot1 | dot3 | detail | med }	The port neighbor TLVs: • dot1: displays 802.1 TLVs: • dot3: displays 802.3 TLVs • detail: displays all TLVs. • med: displays MED TLVs • vendor-specific:displays vendor specific TLV information
[neighbor-mgmt-addr]	The port neighbor LLDP management address. The switch supports IPv4 and IPv6 management addresses.

Job aid: show lldp port command output

Following is the sample output for **`show lldp port`** command with the *tx-tlv* variable.

```
Switch(config)#show lldp port 1-5 tx-tlv
--------------------------------------------------------------------------------
                            LLDP port tlvs
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
Port  PortDesc SysName  SysDesc  SysCap   MgmtAddr
--------------------------------------------------------------------------------
1      true     true     true     true     true
2      true     true     true     true     true
3      true     true     true     true     true
4      true     true     true     true     true
5      true     true     true     true     true
--------------------------------------------------------------------------------
```

Following is the sample output for **`show lldp port`** command with the *local-sys-data dot3* variable.

```
Switch(config)# show lldp port 7 local-sys-data dot3
--------------------------------------------------------------------------
                      LLDP local-sys-data chassis
--------------------------------------------------------------------------
--------------------------------------------------------------------------
        ChassisId: MAC address        00:1c:9c:af:60:00
        SysName:
        SysCap:    rB / B             (Supported/Enabled)
        SysDescr:
Ethernet Routing Switch 4826GTX-PWR+   HW:0B       FW:5.3.0.3   SW:v5.6.1.022
--------------------------------------------------------------------------
                      LLDP local-sys-data port
--------------------------------------------------------------------------
Port:  7
 Dot3-MAC/PHY Auto-neg: supported/enabled       OperMAUtype:  1000BaseTFD
 PSE MDI power:         supported/enabled       Port class:   PSE
 PSE power pair:        signal/not controllable Power class:  0
 PoE+ power type: Type 2 PSE
 PoE+ power priority: High
```

```
 PoE+ PD requested power: 26.2w
 PoE+ PSE allocated power: 26.2w
 LinkAggr: not aggregatable/not aggregated      AggrPortID:   0
                                                MaxFrameSize: 9216
 PMD auto-neg:          10Base(T, TFD), 100Base(TX, TXFD), (FdxS)Pause,
                        1000Base(TFD)
-------------------------------------------------------------------------------
Sys capability: O-Other; R-Repeater; B-Bridge; W-WLAN accesspoint; r-Router;
T-Telephone; D-DOCSIS cable device; S-Station only.
```

Following is the sample output for **`show lldp port`** command with the *neighbor dot3* variable.

```
Switch(config)# show lldp port 7 neighbor dot3
-------------------------------------------------------------------------------
                            LLDP neighbor
-------------------------------------------------------------------------------
Port: 7     Index: 3                  Time: 0 days, 03:31:38
        ChassisId: Network address    IPv4  10.100.41.101
        PortId:    MAC address        00:0a:e4:0c:05:ac
        SysCap:    TB / TB            (Supported/Enabled)
        PortDesc:  Nortel IP Phone
        SysDescr:  Nortel IP Telephone 2002, Firmware:0604DAD


 Dot3-MAC/PHY Auto-neg: supported/enabled       OperMAUtype:  100BaseTXFD
 PSE MDI power:         not supported/disabled  Port class:   PD
 PSE power pair:        signal/not controllable Power class:  1
 PoE+ Power type: Type 2 PD
 PoE+ Power priority: High
 PoE+ PD requested power: 26.2w
 PoE+ PSE allocated power: 26.2w
 LinkAggr: not aggregatable/not aggregated      AggrPortID:   0
                                                MaxFrameSize: 1522
 PMD auto-neg:          10Base(T, TFD), 100Base(TX, TXFD)
-------------------------------------------------------------------------------
Sys capability: O-Other; R-Repeater; B-Bridge; W-WLAN accesspoint; r-Router;
T-Telephone; D-DOCSIS cable device; S-Station only.
Total neighbors: 2
```

Viewing the LLDP MED policy information

About this task

Use this procedure to display the LLDP MED policy information for switch ports.

Default med-network-policy for voice have L2 priority 6, DSCP 46, tagging parameter set to untagged and vlan ID 0.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show lldp med-network-policies [port <portList>] {voice|voice-
   signaling}
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `show lldp med-network-policies` command.

Variable	Value
port <portlist>	Specifies the port or ports for which to display LLDP MED policy information.
voice	Displays the voice network policy for which to display information. The default value is 46.
voice-signaling	Specifies the voice signalling network policy to disable.
Note: The default DSCP value is 46 and the default priority value is 6.	

Configuring the PoE conservation level request TLV

About this task

Use this procedure to request a specific power conservation level for an Avaya IP phone connected to a switch port.

Important:

Only Ethernet ports on switches that support PoE can request a specific power conservation level for an Avaya IP phone.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable

   configure terminal

   interface Ethernet <port>
   ```

2. At the command prompt, enter the following command to configure PoE conservation level TLVs for connected Avaya IP phones:

   ```
   lldp [port <portlist>] vendor-specific avaya poe-conservation-request-level <0-255>
   ```

3. Set PoE conservation level TLVs for connected Avaya IP phones to the default value by using the following command:

   ```
   default lldp port <portlist> vendor-specific avaya poe-conservation-request-level
   ```

Variable definitions

The following table describes the variables for the `lldp` command.

Variable	Description
<0-255>	Specifies the power conservation level to request for a vendor specific PD. Values range from 0 to 255. With the default value of 0, the switch does not request a power conservation level for an Avaya IP phone connected to the port.
<portList>	Specifies a port or list of ports.

Viewing the switch PoE conservation level request TLV configuration

About this task

Use this procedure to display PoE conservation level request configuration for local switch ports.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. At the command prompt, enter the following command to display the PoE conservation level request configuration for one or more switch ports:

   ```
   show lldp [port <portlist>] vendor-specific avaya poe-conservation-request-level
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `show lldp` command.

Variable	Description
<portlist>	Specifies a port or list of ports.

Job aid: show lldp vendor-specific avaya poe-conservation-request-level command output

Following is the sample output for the **`show lldp vendor-specific avaya poe-conservation-request-level`** command.

```
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastethernet 1,2
Switch(config-if)#show lldp vendor-specifc avaya poe-conservation-request-level
-------------------------------------------------------------------------------
    LLDP vendor-specific Avaya POE Request Conservation Level
===============================================================
Unit/        POE Request
Port        Level
-------------------------------------------------------------------------------
1        2
```

```
2         45
Switch(config-if)#
```

Viewing PoE conservation level support TLV information

About this task

Use this procedure to display PoE conservation level information received on switch ports from an Avaya IP phone. To delete all call-server ip addresses configured on DUT, use `default lldp vendor-specific avaya call-server`.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. At the command prompt, enter the following command to view the received PoE conservation level information for one or more switch ports:

   ```
   show lldp [port <portlist>] neighbor vendor-specific avaya poe-conservation
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `show lldp` command.

Variable	Description
<portlist>	Specifies a port or list of ports.

Configuring the switch call server IP address TLV

About this task

Use this procedure to define the local call server IP addresses that switch ports advertise to Avaya IP phones. You can define IP addresses for a maximum of 8 local call servers.

Important:

The switch does not support the advertisement of IPv6 addresses to Avaya IP phones.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   ```

   ```
   configure terminal
   ```

2. At the command prompt, enter the following command to define the local call server IPv4 addresses the switch advertises to Avaya IP phones:

```
lldp vendor-specific avaya call-server [<1-8>] <A.B.C.D> [[<1-8>]
<A.B.C.D>] [[<1-8>] <A.B.C.D>]
```

3. Enter the following command to delete call server IPv4 addresses configured on the switch:

   ```
   default lldp vendor-specific avaya call-server <1-8>
   ```

Variable definitions

The following table describes the variables for the `lldp vendor-specific avaya call-server` command.

Variable	Description
<1-8>	Specifies the call server number. **Note:** When you advertise the IPv4 address of call server 1 only, you do not have to enter a call server number before you enter the IP address.
<A.B.C.D>	Specifies the call server IPv4 address.

Viewing the switch call server IP address TLV configuration

Use this procedure to display information about the defined local call server IP address that switch ports advertise to connected Avaya IP phones.

The switch supports a maximum of 8 local call servers.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. At the command prompt, enter the following command to display call server TLV configuration information for the local switch:

   ```
   show lldp vendor-specific avaya call-server
   ```

3. Press Enter.

Job aid: show lldp vendor-specific call-server command output

The following figure displays sample output for the `show lldp vendor-specific avaya call-server` command.

```
Switch(config)#show lldp vendor-specific avaya call-server
-------------------------------------------------------------------------------
    LLDP Avaya Call Servers IP addresses
===============================================================
Avaya Configured Call Server 1: 10.10.10.4
Avaya Configured Call Server 2: 10.10.10.1
Avaya Configured Call Server 3: 10.10.10.2
-------------------------------------------------------------------------------
Switch(config)#
```

Viewing Avaya IP phone call server IP address TLV information

About this task

Use this procedure to display call server IP address information received on switch ports from an Avaya IP phone.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. At the command prompt, enter the following command to display call server TLV configuration information received on specific switch ports from connected Avaya IP phones:

   ```
   show lldp [port <portlist>] neighbor vendor-specific avaya call-server
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `show lldp` command.

Variable	Description
<portlist>	Specifies a port or list of ports.

Configuring the switch file server IP address TLV

About this task

Use this procedure to define the local file server IP addresses that switch ports advertise to Avaya IP phones. You can define IP addresses for a maximum of 4 local file servers.

Note:

If your Avaya IP Handset uses SIP, 802.1AB (LLDP) TLVs do not provide all information for the IP Phone. You must specify a file server IP address TLV so the IP phone can download the SIP configuration information, because the IP Phone retrieves information related to the SIP domain, port number and transport protocol from the file server.

Important:

The switch does not support the advertisement of IPv6 addresses to Avaya IP phones.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

2. At the command prompt, enter the following command to enable file server IPv4 address advertisement to Avaya IP phones:

   ```
   lldp vendor-specific avaya file-server [<1-4>] <A.B.C.D> [[<1-4>] <A.B.C.D>] [[<1-4>] <A.B.C.D>]
   ```

3. To delete file server IPv4 addresses configured on the switch:

   ```
   default lldp vendor-specific avaya file-server <1-4>
   ```

   Note:

   To delete all file-server ip addresses configured on DUT, use `default lldp vendor-specific avaya file-server` command.

Variable definitions

The following table describes the variables for the `lldp vendor-specific avaya file-server` command.

Variable	Description
<1-4>	Specifies the file server number. **Note:** When you advertise the IPv4 address of file server 1 only, you do not have to enter a file server number before you enter the IP address.
<A.B.C.D>	Specifies the file server IPv4 address.

Viewing the switch file server IP address TLV configuration

Use this procedure to display information about the defined local file server IP address that switch ports advertise to connected Avaya IP phones.

You can define IP addresses for a maximum of 4 local file servers.

Important:

The switch does not support the advertisement of IPv6 addresses to Avaya IP phones.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. At the command prompt, enter the following command to display file server TLV configuration information for the switch:

   ```
   show lldp vendor-specific avaya file-server
   ```

3. Press Enter.

Job aid: show lldp vendor-specific file-server command output

The following figure displays sample output for the `show lldp vendor-specific avaya file-server` command.

```
Switch>show lldp vendor-specific avaya file-server
-------------------------------------------------------------------------------------------
------
    LLDP Avaya File Servers IP addresses
=============================================================================
Avaya Configured File Server 1:10.10.1.2
Avaya Configured File Server 2: 10.10.10.3
Avaya Configured File Server 3: 10.10.10.5
-------------------------------------------------------------------------------------------
------
Switch>
```

Viewing Avaya IP phone file server IP address TLV information

About this task

Use this procedure to display information about file server IP address received on switch ports from Avaya IP phones.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. At the command prompt, enter the following command to display file server advertisement configuration information received on specific switch ports from connected Avaya IP phones:

   ```
   show lldp [port <portlist>] neighbor vendor-specific avaya file-
   server
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `show lldp` command.

Variable	Description
<portlist>	Specifies a port or list of ports.

Configuring the 802.1Q framing TLV

Before you begin

- Enable LLDP MED capabilities.
- Enable LLDP MED network policies.

About this task

Use this procedure to configure the frame tagging mode for exchanging Layer 2 priority tagging information between the switch and an Avaya IP phone.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable

   configure terminal

   interface Ethernet <port>
   ```

2. At the command prompt, enter the following command to configure the Layer 2 frame tagging mode:

   ```
   lldp [port <portlist>] vendor-specific avaya dot1q-framing [tagged | non-tagged | auto]
   ```

3. Enter the following command to set the Layer 2 frame tagging mode to default:

   ```
   default lldp [port <portlist>] vendor-specific avaya dot1q-framing
   ```

Variable definitions

The following table describes the variables for the `lldp` command.

Variable	Description
<portlist>	Specifies a port or list of ports.
[tagged | non-tagged | auto]	Specifies the frame tagging mode. Values include: • tagged—frames are tagged based on the tagging value the Avaya IP phone receives with the LLDP-MED Network Policy TLV. • non-tagged—frames are not tagged with 802.1Q priority. • auto—an attempt is made to tag frames based on the tagging value the Avaya IP phone receives with the LLDP-MED Network Policy TLV. If there is no LLDP-MED Network Policy information available, an attempt is made to tag frames based on server configuration. If that fails, traffic is transmitted untagged. The default tagging mode is auto.

Viewing the switch 802.1Q Framing TLV configuration

About this task

Use this procedure to display the configured Layer 2 frame tagging mode for switch ports.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

2. At the command prompt, enter the following command to display the configured Layer 2 frame tagging mode for one or more switch ports:

   ```
   show lldp [port <portlist>] vendor-specific avaya dot1q-framing
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `show lldp` command.

Variable	Description
<portlist>	Specifies a port or list of ports.

Job aid: show lldp vendor-specific avaya dot1q-framing command output

Following is the sample output for the `show lldp vendor-specific avaya dot1q-framing` command.

```
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastethernet 1-10
Switch(config-if)#show lldp vendor-specific avaya dot1q-framing
--------------------------------------------------------------------------------
    LLDP vendor-specific Avaya 802.1Q Framing
================================================
Unit/        Framing
Port        Tagging Mode
--------------------------------------------------------------------------------
1        tagged
2        tagged
3        tagged
4        tagged
5        tagged
6        non-tagged
7        auto
8        non-tagged
9        auto
10        auto
Switch(config-if)#
```

Viewing Avaya IP phone 802.1Q Framing TLV information

About this task

Use this procedure to display Layer 2 frame tagging mode information received on switch ports from connected Avaya IP phones.

Procedure

1. Enter Privileged EXEC mode:

```
enable
```

2. At the command prompt, enter the following command to display the received Layer 2 frame tagging mode information for one or more switch ports:

```
show lldp [port <portlist>] neighbor vendor-specific avaya dot1q-framing
```

3. Press Enter.

Variable definitions

The following table describes the variables for the `show lldp` command.

Variable	Description
<portlist>	Specifies a port or list of ports.

Configuring Avaya TLV transmission flags

About this task

Use this procedure to configure the transmission of optional proprietary Avaya TLVs from switch ports to Avaya IP phones.

Note:

The switch transmits configured Avaya TLVs only on ports with the TLV transmit flag enabled.

Procedure

1. Enter Ethernet Interface Configuration mode:

```
enable

configure terminal

interface Ethernet <port>
```

2. To select the Avaya TLVs that the switch transmits, enter the following command:

```
lldp tx-tlv [port <portList>] vendor-specific avaya {[call-server] [dot1q-framing] [file-server] [poe-conservation]}
```

3. To disable the transmission of optional proprietary Avaya TLVs, enter the following command:

```
no lldp tx-tlv [port <portList>] vendor-specific avaya {[call-server] [dot1q-framing] [file-server] [poe-conservation] }
```

4. To restore Avaya TLVs transmission to default, enter the following command:

```
default lldp tx-tlv [port <portList>] vendor-specific avaya {[call-server] [dot1q-framing] [file-server] [poe-conservation]}
```

Variable Definitions

The following table describes the parameters for the `lldp tx-tlv` command.

Variable	Value
call-server	Sets the call server TLV transmit flag state. The default state is enabled
dot1q-framing	Sets the Layer 2 priority tagging TLV transmit flag state. The default state is enabled.
file-server	Sets the file server TLV transmit flag state. The default state is enabled.
poe-conservation	Sets the PoE conservation request TLV transmit flag state. The default state is enabled.
<portList>	Specifies a port or list of ports.

Displaying the Avaya TLV transmit flag status

About this task

Use this procedure to display the status of transmit flags for switch ports on which Avaya IP phone support TLVs are configured.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   show lldp [port <portlist>] tx-tlv vendor-specific avaya
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `show lldp` command.

Variable	Definition
<portlist>	Specifies a port or list of ports.

Displaying Avaya IP phone IP TLV configuration

About this task

Use this procedure to display IP address configuration information received on switch ports from connected Avaya IP phones.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   show lldp [port <portlist>] neighbor vendor-specific avaya phone-ip
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `show lldp` command.

Variable	Definition
<portlist>	Specifies a port or list of ports.

LLDP configuration example

By default, LLDP is enabled for Tx and Rx on all switch ports. The default value for the LLDP Tx interval is 30 seconds (LLDPDUs are sent at 30 seconds). With the default settings, only the default enabled for transmission TLVs are sent, but the switch can receive any LLDP Core, DOT1, DOT3 TLV, or Med-capabilities TLV from its peers.

The following figure shows an example of LLDP configuration. For this example, the router is connected to the switch port 1 and the IP Phone uses port 13.

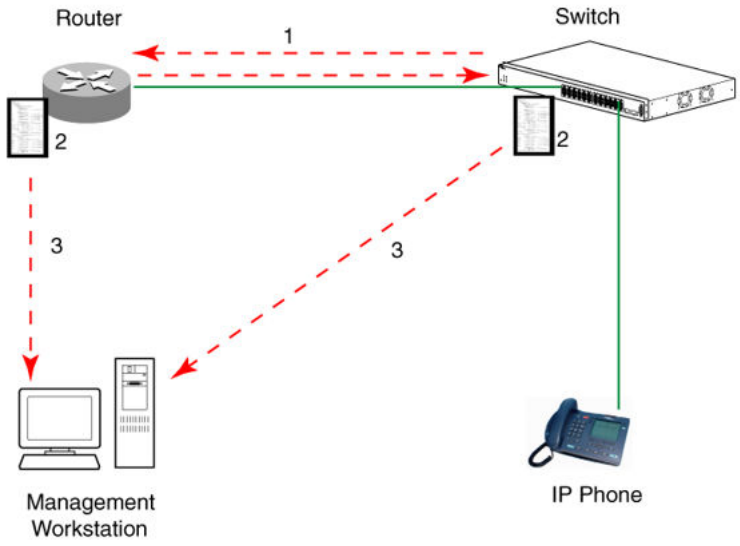


Figure 14: LLDP configuration example

To configure the example shown in the preceding figure, you must perform the following tasks:

1. Modify the default LLDP Tx interval from (the default 30 second value) to 60 seconds.

   Note that if any modification is detected in the LLDP local-sys-data before the Tx interval expires, an LLDPDU is immediately sent on all active links to update the peers neighbor tables.
2. Enable the Port Description TLV for transmission. (contains the description of the LLDP sending port)
3. Enable the System Name TLV for transmission. (contains the name of the LLDP device)
4. Enable the System Description TLV for transmission. (contains the description of the LLDP device)
5. Enable the System Capabilities TLV for transmission. (contains the capabilities of the LLDP device)
6. Enable the Management Address TLV for transmission. (contains the management address of the LLDP device)
7. Enable the Port VLAN ID TLV for transmission. (contains the PVID of the LLDP sending port)
8. Enable the Port And Protocol VLAN ID TLV for transmission. (indicates the Port and Protocol VLANs to which the LLDP sending port belongs to).
9. Enable the VLAN Name TLV for transmission. (indicates the names of the VLANs to which the LLDP sending port belongs to)
10. Enable the Protocol Identity TLV for transmission. (indicates the supported protocols by the LLDP sending port)
11. Enable the MAC/PHY Configuration/Status TLV for transmission. (indicates the IEEE 802.3 duplex and bitrate capabilities and settings of the LLDP sending port)

12. Enable the Power Via MDI TLV for transmission. (indicates the MDI power support capabilities of the LLDP sending port)
13. Enable the Link Aggregation TLV for transmission. (indicates the link aggregation capability and status of the LLDP sending port)
14. Enable the Maximum Frame Size TLV for transmission. (indicates the maximum frame size that can be handled by the LLDP sending port)
15. Enable the Location Identification TLV for transmission. (indicates the physical location of the LLDP sending port; three coordinate sets are available to configure and send)
16. Enable the Extended Power-via-MDI TLV for transmission. (provides detailed informations regarding the PoE parameters of the LLDP sending device)
17. Enable the Inventory – Hardware Revision TLV for transmission. (indicates the hardware revision of the LLDP sending device)
18. Enable the Inventory – Firmware Revision TLV for transmission. (indicates the firmware revision of the LLDP sending device)
19. Enable the Inventory – Software Revision TLV for transmission. (indicates the software revision of the LLDP sending device)
20. Enable the Inventory – Serial Number TLV for transmission. (indicates the serial number of the LLDP sending device)
21. Enable the Inventory – Manufacturer Name TLV for transmission. (indicates the manufacturer name of the LLDP sending device)
22. Enable the Inventory – Model Name TLV for transmission. (indicates the model name of the LLDP sending device)
23. Configure the location information for the LLDP-MED Location Identification TLV. (There are three coordinate sets available for location advertisement.)
24. Enable the LLDP-MED Capabilities TLV for transmission (indicates the supported LLDP-MED TLVs and the LLDP-MED device type of the LLDP sending device)

Detailed configuration commands

The following section describes the detailed ACLI commands required to carry out the configuration depicted by Figure 14: LLDP configuration example on page 252.

Modify the default LLDP Tx interval:

```
Switch>enable
Switch#configure terminal
Switch(config)#lldp tx-interval 60
```

Check the new LLDP global settings:

```
Switch(config)# show lldp

802.1ab configuration:
----------------------------------------
TxInterval:60
```

```
TxHoldMultiplier:4
RxInitDelay:2
TxDelay:2
NotificationInterval:5
MedFastStartRepeatCount:4
```

Enable all LLDP Core TLVs for transmission on the router and IP Phone ports:

```
Switch(config)#interface Ethernet 1/13
Switch(config-if)#lldp tx-tlv port 1/13 port-desc
Switch(config-if)#lldp tx-tlv port 1/13 sys-name
Switch(config-if)#lldp tx-tlv port 1/13 sys-desc
Switch(config-if)#lldp tx-tlv port 1/13 sys-cap
Switch(config-if)#lldp tx-tlv port 1/13 local-mgmt-addr
```

Check the LLDP settings of the router and IP Phone ports:

```
Switch(config-if)# show lldp port 1/13 tx-tlv
--------------------------------------------------------------------------------
                            LLDP port tlvs
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
Port  PortDesc SysName  SysDesc  SysCap   MgmtAddr
--------------------------------------------------------------------------------
1      true     true     true     true     true
13     true     true     true     true     true
--------------------------------------------------------------------------------
```

Enable all LLDP DOT1 TLVs for transmission on the router and IP Phone ports:

```
Switch(config-if)#lldp tx-tlv port 1/13 dot1 port-vlan-id
Switch(config-if)#lldp tx-tlv port 1/13 dot1 port-protocol-vlan-id
Switch(config-if)#lldp tx-tlv port 1/13 dot1 vlan-name
Switch(config-if)#lldp tx-tlv port 1/13 dot1 protocol-identity EAP LLDP STP
```

Check the LLDP settings of the router and IP Phone ports:

```
Switch(config-if)# show lldp port 1/13 tx-tlv dot1
--------------------------------------------------------------------------------
                            LLDP port dot1 tlvs
--------------------------------------------------------------------------------
Dot1 protocols: STP,EAP,LLDP
--------------------------------------------------------------------------------
Port PortVlanId VlanNameList         PortProtocolVlanId   ProtocolIdentity
--------------------------------------------------------------------------------
13   true       1,3,5,7,9,117-118    1,3,5,7,9,117-118    EAP,LLDP
--------------------------------------------------------------------------------
```

Enable all LLDP DOT3 TLVs for transmission on the router and IP Phone ports:

```
Switch(config-if)#lldp tx-tlv port 1/13 dot3 mac-phy-config-status
Switch(config-if)#lldp tx-tlv port 1/13 dot3 mdi-power-support
Switch(config-if)#lldp tx-tlv port 1/13 dot3 link-aggregation
Switch(config-if)#lldp tx-tlv port 1/13 dot3 maximum-frame-size
```

Check the LLDP settings of the router and IP Phone ports:

```
Switch(config-if)#show lldp port 1/13 tx-tlv dot3
--------------------------------------------------------------------------------
                            LLDP port dot3 tlvs
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
Port    MacPhy         MdiPower      Link         MaxFrameSize
      ConfigStatus     Support      Aggregation
--------------------------------------------------------------------------------
1       true           true          true          true
```

```
13      true          true          true          true
-------------------------------------------------------------------------------
```

Enable all LLDP MED TLVs for transmission on the router and IP Phone ports:

The first three commands are required to configure the location identification for the LLDP-MED Location Identification TLV.

```
Switch(config-if)#lldp location-identification civic-address country-code US city Boston
street Orlando
Switch(config-if)#lldp location-identification coordinate-base altitude 234 meters datum
WGS84
Switch(config-if)#lldp location-identification ecs-elin 1234567890
Switch(config-if)#lldp tx-tlv port  1/12-13 med med-capabilities
Switch(config-if)#lldp tx-tlv port  1/12-13 med network-policy
Switch(config-if)#lldp tx-tlv port  1/12-13 med location
Switch(config-if)#lldp tx-tlv port  1/12-13 med extendedPSE
Switch(config-if)#lldp tx-tlv port  1/12-13 med inventory
```

Check the new LLDP settings of the router and IP Phone ports:

```
Switch(config-if)#show lldp tx-tlv med

-------------------------------------------------------------------------------
                           LLDP port med tlvs
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
Port  Med       Network  Location  Extended Inventory
   Capabilities Policy             PSE
-------------------------------------------------------------------------------
12      true     true     true     true     true
13      true     true     true     true     true
-------------------------------------------------------------------------------
MED TLVs are transmitted only if Med-Capabilities TLV is transmitted
```

Enable all the LLDP Vendor Specific Avaya TLVs for transmission on the IP Phone ports:

```
Switch(config-if)#lldp tx-tlv port 1/13 vendor-specific avaya call-server
Switch(config-if)#lldp tx-tlv  port 1/13 vendor-specific avaya dot1q-framing
Switch(config-if)#lldp tx-tlv  port 1/13 vendor-specific avaya file-server
Switch(config-if)#lldp tx-tlv  port 1/13 vendor-specific avaya poe-conservation
```

Check the LLDP settings of the IP Phone port:

```
Switch(config-if)#show lldp port 1/13 tx-tlv vendor-specific avaya
-------------------------------------------------------------------------------
              LLDP port Avaya Vendor-Specific TLVs
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
 Unit/ POE Conservation  Call   File   Dot1Q  FA Element FA I-SID/  FA Zero
 Port     Request       Server Server Framing   Type     VLAN Asgns  Touch
-------------------------------------------------------------------------------
  13          false         true   true   true     true      true       false
```

Asset ID string configuration

Use the information in this section to configure an asset ID for the switch or stack.

Configuring the Asset ID string

About this task

Use this procedure to configure the Asset ID of a switch or stack.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   asset-id [stack|unit <1-8>] <WORD>
   ```

3. Press Enter.

Next steps

Use the following commands to view the configured Asset ID:

- `show system`
- `show sys-info`
- `show tech`
- `show system verbose`

Variable definitions

Use the data in the following table to use the `asset-id` command.

Variable	Definition
stack	Sets the Asset ID of the stack.
unit <1-8>	Sets the Asset ID of a specific unit.
<WORD>	Sets the Asset ID of the unit on which it is the console.

Disabling the Asset ID string

About this task

Use this procedure to disable the asset ID string.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

```
no asset-id [stack | unit <1-8>]
```

3. Press Enter.

Next steps

Use the `show system` command to verify the Asset ID sting settings.

Variable definitions

Use the data in the following table to use the `no asset-id` command.

Variable	Definition
stack	Sets the Asset ID of the stack.
unit <1-8>	Specifies the Asset ID for specified unit in the stack.

Restoring the default Asset ID string

About this task

Use this procedure to set the asset ID string to default mode.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   default asset-id [stack | unit <1-8>]
   ```

3. Press Enter.

Next steps

Use the `show system` command to verify the Asset ID string settings.

Variable definitions

Use the data in the following table to use the `default asset-id` command.

Variable	Definition
stack	Sets the default Asset ID of the stack.
unit <1-8>	Specifies the default Asset ID for specified unit.

AES configuration

With Avaya Energy Saver (AES), you can configure the switch to utilize energy more efficiently.

Use the information in this section to configure AES.

Configuring global AES

About this task

Use this procedure to enable or disable the energy saving feature for the switch.

Procedure

1. Enter Global Configuration mode:

   ```
   enable

   configure terminal
   ```

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

   ```
   [no] [default] energy-saver [enable] [efficiency-mode] [poe-power-saving]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `energy-saver` command.

Variable	Definition
[default]	Configures AES efficiency mode, POE power saving, or global AES to default values (disabled).
efficiency-mode	Enables AES efficiency mode. **Note:** You must ensure that SNTP is enabled before you can enable AES efficiency mode. **Note:** You must disable AES globally before you can modify AES efficiency mode. **Note:** When enabled, AES efficiency mode overrides custom AES scheduling and PoE power saving mode. You will be prompted to confirm that you want to enable AES efficiency mode before proceeding.

Table continues…

Variable	Definition
enable	Enables AES globally.
[no]	Disables AES efficiency mode, POE power saving, or AES globally.
poe-power-saving	Enables POE power saving. **Note:** You must disable AES globally before you can modify POE power saving.

Configuring port-based AES

Before you begin

Disable AES globally.

About this task

Use this procedure to enable or disable energy saving for the accessed port, an alternate individual port, or a range of ports.

Procedure

1. Enter Ethernet Interface Configuration mode:

   ```
   enable
   configure terminal
   interface Ethernet <port>
   ```

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

   ```
   [default] [no] energy-saver [enable] [port <portlist> enable]
   ```

3. Press Enter.

Variable definitions

Use the data in the following table to use the `[default] [no] energy-saver` command.

Variable	Definition
<enable>	Enables AES for the accessed port.
[no]	Disables AES for the accessed port, an alternate port, or list of ports.
port <portlist> enable	Enables AES for a port or list of ports.

Activating or deactivating AES manually

Before you begin

Disable AES globally.

About this task

Use this procedure to have AES enabled, but not activated. Activate AES to ensure that AES is enabled and activated.

Procedure

1. Enter Privileged EXEC mode:

   ```
   enable
   ```

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

   ```
   energy-saver {activate | deactivate}
   ```

3. Press Enter.

Configuring AES scheduling

Before you begin

Disable AES globally.

About this task

Use the following procedure to configure an on and off time interval for the switch to enter lower power states. The time interval can be a complete week, complete weekend, or individual days.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   energy-saver schedule {weekday|weekend|monday|tuesday|wednesday|
   thursday|friday|saturday|sunday} <hh:mm> {activate|deactivate}
   ```

3. Press Enter.

Variable definitions

The following table describes the variables for the `energy-saver schedule {weekday|weekend|monday|tuesday |wednesday|thursday|friday|saturday|sunday} <hh:mm> {activate|deactivate}` command.

Variable	Description
`<activate>`	Specifies the AES on time.
`<deactivate>`	Specifies the AES off time.

Table continues…

Variable	Description
`monday|tuesday|wednesday |thursday| friday|saturday| sunday`	Configures AES scheduling for a specific day.
`<hh:mm>`	Specifies the scheduled AES start time (hour and minutes).
`weekday`	Configures AES scheduling for all weekdays.
`weekend`	Configures AES scheduling for Saturday and Sunday.

Disabling AES scheduling

Before you begin

Disable AES globally.

About this task

Use the following procedure to discontinue using an on and off time interval for the switch to enter lower power states.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   no energy-saver schedule
   ```

3. Press Enter.

Variable definitions

The following table defines optional parameters that you can enter after the `no energy-saver schedule` command.

Variable	Description
`friday|monday|saturday|sunday| thursday|tuesday|wednesday`	Disables AES scheduling for a specific day.
`weekday`	Disables AES scheduling for all weekdays.
`weekend`	Disables AES scheduling for Saturday and Sunday.
`<hh:mm>`	Specifies the scheduled AES start time (hour and minutes).

Configuring AES scheduling to default

Before you begin

Disable AES globally.

About this task

Use the following procedure to completely disable scheduling for the switch or to disable specific energy saver schedules.

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   default energy-saver schedule
   ```

3. Press Enter.

Variable definitions

The following table defines optional parameters that you can enter after the `default energy-saver schedule` command.

Variable	Description
`friday|monday|saturday|sunday|thursday|tuesday|wednesday`	Configures AES scheduling for a specific day to default (disabled).
`weekday`	Configures AES scheduling for all weekdays to default (disabled).
`weekend`	Configures AES scheduling for Saturday and Sunday to default (disabled).
`<hh:mm>`	Specifies the scheduled AES start time (hour and minutes).

Viewing AES scheduling

About this task

Use the following procedure to review configured energy saving schedule information.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

```
show energy-saver schedule
```

3. Press Enter.

Job aid: show energy-saver schedule command output

Following is the sample output for the `show energy-saver schedule` command.

```
Switch(config)#show energy-saver schedule
Day         Time     Action
-----        -------     ---------
Monday         08:00     Activate
Wednesday     11:00     Activate
Friday         14:00     Activate
Switch(config)#
```

Viewing AES savings

About this task

Use the following procedure to review the switch capacity energy saving (Watts) and the PoE energy saving (Watts).

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   show energy-saver savings
   ```

3. Press Enter.

   Important:

   If a switch is reset while energy-saver is activated, the PoE power saving calculation may not accurately reflect the power saving, and in some cases may display zero savings. This is because the switch did not have sufficient time to record PoE usage between the reset of the switch and energy-saver being reactivated. When energy saver is next activated, the PoE power saving calculation will be correctly updated.

Job aid: show energy-saver savings command output

Following is the sample output for the `show energy-saver savings` command.

```
Switch> show energy-saver savings
Unit#     Mode1         Switch Capacity Saving     PoE Saving
-----      --------         ------------------------------     ----------------
1     4856PWR+     0.0 watts             0.0 watts
-------------------------------------------------------------------------------------------
TOTAL              0.0 watts             0.0 watts
=========================================================
Switch>
```

Viewing the global AES configuration

About this task

Use the following procedure to review the AES configuration for the switch.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   show energy-saver
   ```

3. Press Enter.

Job aid: show energy-saver command output

Following is the sample output for the `show energy-saver` command.

```
Switch>show energy-saver
Nortel Energy Saver (NES):     Enabled
NES PoE Power Saving Mode:    Enabled
NES Efficiency-Mode Mode:     Disabled
Day/Time:          Thursday 13:33:53
Current NES state:         NES is Inactive
Switch>
```

Viewing port-based AES configuration

About this task

Use the following procedure to review AES configuration for all ports on the switch, an individual port, or range of ports.

Procedure

1. Log on to ACLI to enter User EXEC mode.
2. At the command prompt, enter the following command:

   ```
   show energy-saver interface <portlist>
   ```

3. Press Enter.

Variable definitions

The following table defines optional parameters that you can enter after the `show energy-saver interface` command.

Variable	Description
`<portlist>`	Specifies a port or range of ports.

Job aid: show energy-saver interface command output

Following is the sample output for the `show energy-saver interface` command using the *<portlist>* variable.

```
Switch(config-if)#show energy-saver interface 1-6
Port    NES State    PoE Savings    PoE Priority
-----    ---------------    ------------        -------------
1    Enabled         N/A        N/A
2    Enabled        N/A        N/A
3    Disabled        N/A        N/A
4    Enabled        N/A        N/A
5    Enabled         N/A        N/A
6    Disabled        N/A        N/A
Switch(config-if)#
```

Enabling the Web server for EDM

You must enable the Web server before you can start Enterprise Device Manager. For information about enabling the Web server using ACLI, see *Using ACLI and EDM on Avaya Ethernet Routing Switch 4800 Series*, NN47205-102.

Configuring the EDM inactivity time out using ACLI

By default, a session becomes inactive if there is no interaction with the EDM interface for more than 15 minutes. You can configure the time period for which an EDM session remains active.

edm inactivity-timeout

The edm inactivity-timeout command enables the EDM inactivity time out period.

Following is the syntax for this command:

`edm inactivity-timeout <30-65535>`

Run `edm inactivity-timeout` command in Global Configuration mode.

default edm inactivity-timeout

The `edm inactivity-timeout` command sets the EDM inactivity time out period to factory default. The default time out period is 15 minutes.

Following is the syntax for this command:

`default edm inactivity-timeout`

Run `default edm inactivity-timeout` command in Global Configuration mode.

show edm inactivity-timeout

The `show edm inactivity-timeout` command displays the EDM inactivity time out period settings.

Following is the syntax for this command:

```
show edm inactivity-timeout
```

Run `show edm inactivity-timeout` command in Global Configuration mode.

no edm inactivity-timeout

The `no edm inactivity-timeout` command disables the EDM inactivity time out period settings.

Following is the syntax for this command:

```
no edm inactivity-timeout
```

Run `no edm inactivity-timeout` command in Global Configuration mode.

Configuring jumbo frames

This section describes the procedures you can perform to configure jumbo frames on a switch or stack using ACLI commands.

Enabling jumbo frames

About this task

Use the following procedure to enable jumbo frames on a switch or stack:

Procedure

1. Enter Global Configuration mode:

   ```
   enable
   configure terminal
   ```

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

   ```
   jumbo-frames [enable]
   ```

3. Press Enter.

Disabling jumbo frames

About this task

Use the following procedure to disable jumbo frames on a switch or stack.

Procedure

1. Enter Global Configuration mode:

```
enable
configure terminal
```

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

```
no jumbo-frames [enable]
```

3. Press Enter.

Resetting the state of jumbo frames

About this task

Use the following procedure to reset the jumbo frames state to default on a switch or stack.

Procedure

1. Enter Global Configuration mode:

```
enable
configure terminal
```

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

```
default jumbo-frames
```

3. Press Enter.

Displaying the state of jumbo frames

About this task

Use the following procedure to display the state of jumbo frames and MTU size.

Procedure

1. Enter Privileged EXEC mode:

```
enable
```

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

```
show jumbo-frames
```

3. Press Enter.

Chapter 7: System configuration using Enterprise Device Manager

This chapter provides procedures you can use to configure the switch or stack with Enterprise Device Manager (EDM).

Configuring Quick Start using EDM

Perform this procedure to configure Quick Start to enter the setup mode through a single screen.

Procedure steps

1. From the navigation tree, double-click **Administration**.
2. In the Administration tree, double-click **Quick Start**.
3. In the IP/Community/Vlan work area, type a switch or stack IP address in the **In-Band Stack IP Address** dialog box.
4. In the **In-Band Stack Subnet Mask** dialog box, type a subnet mask.
5. In the **Default Gateway** dialog box, type an IP address.
6. In the **Read-Only Community String** box, type a character string.
7. In the **Re-enter to verify** dialog box immediately following the Read-Only Community String box, retype the character string from Step 6.
8. In the **Read-Write Community String** dialog box, type a character string.
9. In the **Re-enter to verify** dialog box immediately following the Read-Write Community String box, retype the character string from Step 8.
10. In the **Quick Start VLAN** dialog box, type a VLAN ID ranging from 1 to 4094.
11. Click **Apply** .

Configuring remote access using EDM

Use this procedure to configure remote access for a switch.

Procedure steps

1. From the navigation tree, double-click **Administration**.
2. In the Administration tree, double-click **Remote Access**.
3. In the work area, click the **Setting** tab.
4. In the Telnet Remote Access Setting section, select a value from the **Access** list.
5. In the Telnet Remote Access Setting section, select a value from the **Use List** list.
6. In the SNMP Remote Access Setting section, select a value from the **Access** list.
7. In the SNMP Remote Access Setting section, select a value from the **Use List** list.
8. In the Web Page Remote Access Setting section, select a value from the **Use List** list.
9. In the SSH Remote Access Setting section, select a value from the **Access** list.
10. In the SSH Remote Access Setting section, select a value from the **Use List** list.
11. Click **Apply** .

Variable definitions

Use the data in this table to configure remote access for a switch.

Variable	Value
Telnet Remote Access Setting	Specifies the remote access settings for telnet sessions. • Access—allows or disallows telnet access to the switch. • Use List—enables (Yes) or disables (No) the use of listed remote Telnet information.
SNMP Remote Access Setting	Specifies SNMP remote access settings. • Access—allows or disallows SNMP access to the switch. • Use List—enables (Yes) or disables (No) the use of listed remote SNMP information.

Table continues…

Variable	Value
Web Page Remote Access Setting	Specifies web page remote access settings. • Use List—enables (Yes) or disables (No) the use of listed remote web page information.
SSH Remote Access Setting	Specifies SSH remote access settings. • Access—allows or disallows SSH access to the switch. • Use List—enables (Yes) or disables (No) the use of listed remote SSH information.

Configuring the IPv4 remote access list using EDM

Use this procedure to configure a list of IPv4 source addresses for which to permit remote access to a switch.

Procedure steps

1. From the navigation tree, double-click **Administration**.
2. In the Administration tree, double-click **Remote Access**.
3. In the work area, click the **Allowed List(IPv4)** tab.
4. To select a source to edit, click the source row.
5. In the source row, double-click the cell in the **Allowed Source IP Address** column.
6. In the dialog box, type a value.
7. In the source row, double-click the cell in the **Allowed Source Mask** column.
8. In the dialog box, type a value.
9. Click **Apply** .

Variable definitions

Use the data in this table to configure a list of IPv4 source addresses to permit access to the switch.

Variable	Value
Allowed Source IP Address	Specifies the source IPv4 address to permit remote access to the switch.
Allowed Source Mask	Specifies subnet mask associated with the source IPv4 address to permit remote access to the switch.

Configuring the IPv6 remote access list using EDM

Use this procedure to configure a list of IPv6 source addresses for which to permit remote access to a switch.

Procedure steps

1. From the navigation tree, double-click **Administration**.
2. In the Administration tree, double-click **Remote Access**.
3. In the work area, click the **Allowed List(IPv6)** tab.
4. To select a source to edit, click the source row.
5. In the source row, double-click the cell in the **Allowed Source IPv6 Address** column.
6. In the dialog box, type a value.
7. In the source row, double-click the cell in the **Allowed Prefix Length** column.
8. In the dialog box, type a value.
9. Click **Apply** .

Variable definitions

Use the data in this table to configure a list of IPv6 source addresses for which to permit access to the switch .

Variable	Value
Allowed Source IPv6 Address	Specifies the source IPv6 address to permit remote access to the switch.
Allowed Prefix Length	Specifies prefix length for the source IPv6 address to permit remote access to the switch. Values range from 0 to 128.

Run script configuration using EDM

According to Avaya best practices for converged solutions, you can use the scripts to configure the parameters for the switch. The scripts can be executed in a default or verbose mode. In this release, run scripts are available in non-verbose and verbose mode for IP Office, and verbose mode for Link Layer Discovery Protocol (LLDP) and Auto Detect Auto Configuration (ADAC).

Use the procedures in this section to configure using IP Office, LLDP, and ADAC scripts.

Configuring IP Office script using EDM

Use the following procedure to configure IP Office in default or verbose mode using run scripts.

Note:

When executing the script using EDM, do not run other commands while the script is in progress, because this slows down the execution. EDM can time-out while waiting for a response; even when a time-out occurs, the script execution continues on the switch.

Procedure

1. From the navigation tree, double-click **Administration**.
2. In the Administration tree, double-click **Run Scripts**.
3. In the work area, click the **IP Office Script** tab.
4. In the Mode work area, from the **Run Script Mode** dialog box, select **default** to execute the script in the default mode or select **verbose** to modify the predefined values.

   If you select **default**, the parameters are automatically configured. If you select **verbose**, proceed with the following steps to modify the parameters in verbose mode.
5. In the Verbose work area, type the Voice VLAN ID in the **Voice VLAN Id** dialog box.
6. In the **Voice VLAN Gateway** dialog box, type the VLAN IP address.
7. In the **Voice VLAN Gateway Mask** dialog box, enter the VLAN IP mask address.
8. In the **Data VLAN Id** dialog box, type the data VLAN ID.
9. In the **Data VLAN Gateway** dialog box, type the data VLAN Gateway IP address.
10. In the **Data VLAN Gateway Mask** dialog box, type the data VLAN Gateway IP mask address.
11. In the **IP Route to Gateway Modem-Router** dialog box, type the IP route address of the Gateway Modem-Router.
12. In the **IP Office Call-Server** dialog box, type the call server IP address.
13. In the **IP Office File-Server** dialog box, type the file server IP address.
14. Click **Apply**.

Variable definitions

Variable	Value
Run Script Mode	Specifies to run the script either in default or verbose mode.
Voice VLAN ID	Specifies the voice VLAN ID. By default, the voice VLAN ID is 42.

Table continues…

Variable	Value
Voice VLAN Gateway	Specifies the Voice VLAN Gateway IP Address. By default, the voice VLAN gateway IP address is 192.168.42.254.
Voice VLAN Gateway Mask	Specifies the voice VLAN gateway IP mask address. By default, the voice VLAN gateway IP mask address is 255.255.255.0. The default subnet mask created by the run IP Office script supports a maximum of 250 hosts. You can change the subnet mask to 255.255.254.0 to allow 510 hosts for each subnet using the verbose mode.
Data VLAN ID	Specifies the data VLAN ID. By default, the data VLAN ID is 44.
Data VLAN Gateway	Specifies the data VLAN Gateway. By default, the data VLAN Gateway is 192.168.44.254.
Data VLAN Gateway Mask	Specifies the data VLAN Gateway Mask. By default, the data VLAN Gateway Mask is 255.255.255.0.
IP Route to Gateway Modem-Router	Specifies the IP Route to gateway modem and router. By default, the IP address is 192.168.44.2.
IP Office Call-Server	Specifies the IP Office call server IP address. By default, the call server IP address is 192.168.42.1.
IP Office File-Server	Specifies the IP Office file server IP address. By default, the file server IP address is 192.168.42.1.
Status	Displays the status of the last action that occurred since the switch last booted. Values include: • other—no action occurred since the last boot. • inProgress—the selected operation is in progress. • passed—the selected operation succeeded. • failed—the selected operation failed.

Configuring ADAC Script using EDM

Use the following procedure to configure ADAC in verbose mode using Run Scripts.

Note:

When executing the script using EDM, do not run other commands while the script is in progress, because this slows down the execution. EDM can time-out while waiting for a response; even when a time-out occurs, the script execution continues on the switch.

Procedure

1. From the navigation tree, double-click **Administration**.
2. In the Administration tree, double-click **Run Scripts**.
3. In the work area, click the **ADAC Script** tab.

4. In the Mode work area, by default, **verbose** is selected in the **Run Script Mode** dialog box.
5. (Optional) In the Verbose work area, type the data VLAN ID in the **Data VLAN Id** dialog box.
6. Select **Management VLAN flag** if you want the data VLAN as the management VLAN.
7. (Optional) In the **Data VLAN Gateway** dialog box, type the data VLAN Gateway IP address. In the **Data VLAN Gateway Mask** dialog box, type the data VLAN Gateway mask address.
8. (Optional) In the **Management IP address** dialog box, type the management IP address. In the **Management IP Mask** dialog box, type the management IP mask.
9. In the **Default IP Route** dialog box, type the default IP route address.
10. In the **Voice VLAN Id** dialog box, type the voice VLAN ID.
11. (Optional) In the **Voice VLAN Gateway** dialog box, type the IP address. In the **Voice VLAN Gateway Mask** dialog box, type the IP mask address.
12. In the **LLDP Call-Server** dialog box, type the LLDP call server IP address.
13. In the **LLDP File-Server** dialog box, LLDP file server IP address.
14. (Optional) Select the **Uplink trunk flag** to link ADAC uplink port as a member of MLT trunk.
15. Click the **ADAC Uplink Ports** ellipsis (...).
16. From the ADAC Uplink Ports, select the uplink ports and then, click Ok.
17. Click the **ADAC Call Server Ports** ellipsis (...).
18. From the ADAC Call Server ports, select the call serevr ports and then, click Ok.
19. Click the **ADAC Telephony Ports** ellipsis (...).
20. From the ADAC Telephony Ports, select the telephony ports and then, click Ok.
21. Click **Apply**.

Variable definitions

Variable	Value
Run Script Mode	Specifies to run the script in verbose mode and it is selected by default.
Data VLAN Id	Specifies the data VLAN ID. The value ranges from 1 to 4096.
Management VLAN flag	Specifies data VLAN ID as Management VLAN. This is optional.
Data VLAN Gateway	Specifies the data VLAN gateway IP address.
Data VLAN Gateway Mask	Specifies the data VLAN gateway mask IP address.
Management IP address	Specifies the management IP address.
Management IP Mask	Specifies the management IP mask address.
Default IP Route	Specifies the default IP route.
Voice VLAN Id	Specifies the voice VLAN ID. By default, the voice VLAN ID is 42.

Table continues…

Variable	Value
Voice VLAN Gateway	Specifies the Voice VLAN Gateway IP Address. By default, the voice VLAN gateway IP address is 192.168.42.254.
Voice VLAN Gateway Mask	Specifies the voice VLAN gateway IP mask address. By default, the voice VLAN gateway IP mask address is 255.255.255.0.
LLDP Call-Server	Specifies the LLDP call server IP address.
LLDP File-Server	Specifies the LLDP file server IP address.
Uplink trunk flag	Links the ADAC uplink port to the MLT trunk.
ADAC Uplink Ports	Specifies the ADAC uplink ports. A maximum of 50 ports are supported.
ADAC Call Server Ports	Specifies the ADAC call server ports. A maximum of 50 ports are supported.
ADAC Telephony Ports	Specifies the ADAC telephony ports. A maximum of 50 ports are supported.
Status	Displays the status of the last action that occurred since the switch last booted. Values include: • other—no action occurred since the last boot. • inProgress—the selected operation is in progress. • passed—the selected operation succeeded. • failed—the selected operation failed.

Configuring LLDP Script using EDM

Use the following procedure to configure LLDP in verbose mode using Run Scripts.

Note:

When executing the script using EDM, do not run other commands while the script is in progress, because this slows down the execution. EDM can time-out while waiting for a response; even when a time-out occurs, the script execution continues on the switch.

Procedure

1. From the navigation tree, double-click **Administration**.
2. In the Administration tree, double-click **Run Scripts**.
3. In the work area, click the **LLDP Script** tab.
4. In the Mode work area, by default, verbose is selected in the **Run Script Mode** dialog box.
5. (Optional) In the Verbose work area, type the data VLAN ID in the **Data VLAN Id** dialog box.
6. Select **Management VLAN flag** if you want the data VLAN as the management VLAN.
7. (Optional) In the **Data VLAN Gateway** dialog box, type the data VLAN Gateway IP address. In the **Data VLAN Gateway Mask** dialog box, type the data VLAN Gateway mask address.

8. Click the **Data VLAN Uplink Ports** ellipsis (...).
9. From the Data VLAN Uplink Ports, select the uplink ports and click Ok.
10. (Optional) In the **Management IP address** dialog box, type the management IP address. In the **Management IP Mask** dialog box, type the management IP mask.
11. In the **Default IP Route** dialog box, type the default IP route address.
12. In the **Voice VLAN Id** dialog box, type the voice VLAN ID.
13. (Optional) In the **Voice VLAN Gateway** dialog box, type the IP address. In the **Voice VLAN Gateway Mask** dialog box, type the IP mask address.
14. In the **LLDP Call-Server** dialog box, type the LLDP call server IP address.
15. In the **LLDP File-Server** dialog box, LLDP file server IP address.
16. Click **Apply**.

Variable definitions

Variable	Value
Run Script Mode	Specifies to run the script in verbose mode and it is selected by default.
Data VLAN Id	Specifies the data VLAN ID. The value ranges from 1 to 4096.
Management VLAN flag	Specifies data VLAN ID as Management VLAN. This is optional.
Data VLAN Gateway	Specifies the data VLAN gateway IP address.
Data VLAN Gateway Mask	Specifies the data VLAN gateway mask IP address.
Data VLAN Uplink Ports	Specifies the data VLAN uplink ports.
Management IP address	Specifies the management IP address.
Management IP Mask	Specifies the management IP mask address.
Default IP Route	Specifies the default IP route.
Voice VLAN Id	Specifies the voice VLAN ID. By default, the voice VLAN ID is 42.
Voice VLAN Gateway	Specifies the Voice VLAN Gateway IP Address. By default, the voice VLAN gateway IP address is 192.168.42.254.
Voice VLAN Gateway Mask	Specifies the voice VLAN gateway IP mask address. By default, the voice VLAN gateway IP mask address is 255.255.255.0.
LLDP Call-Server	Specifies the LLDP call server IP address.
LLDP File-Server	Specifies the LLDP file server IP address.
Status	Displays the status of the last action that occurred since the switch last booted. Values include: • other—no action occurred since the last boot. • inProgress—the selected operation is in progress. • passed—the selected operation succeeded. • failed—the selected operation failed.

Viewing switch unit information using EDM

Use this procedure to display switch specific information.

Procedure steps

1. From the Device Physical View, click a switch.
2. From the navigation tree, double-click **Edit**.
3. In the Edit tree, double-click **Unit**.

Variable definitions

Use the data in this table to help you understand the switch unit display.

Variable	Value
Type	Indicates the type number.
Descr	Indicates the type of switch.
Ver	Indicates the version number of the switch.
SerNum	Indicates the number of the switch.
BaseNumPorts	Indicates the base number of ports.
TotalNumPorts	Indicates the total number of ports.

Managing PoE for a switch unit using EDM

Use this procedure to display and manage PoE for a single switch unit.

Procedure steps

1. From the Device Physical View, click a switch unit with PoE ports.
2. From the navigation tree, choose **Edit**.
3. In the Edit tree, double-click **Unit**.
4. In the work area, click the **PoE** tab.
5. In the **UsageThreshold%**, type a value.
6. In the **PowerDeviceDetectType** section, click a radio button.
7. Click **Apply** .

Variable definitions

Use the data in the following table to display and manage PoE for a switch unit.

Variable	Value
Power(watts)	Displays the total power (in watts) available to the switch.
OperStatus	Displays the power state of the switch: • on • off • faulty
Consumption Power(watts)	Displays the power (in watts) being used by the switch.
UsageThreshold%	Lets you set a percentage of the total PoE power usage at which the switch sends a warning trap message. If the PoE power usage exceeds the threshold and SNMP traps are appropriately configured, the switch sends the **pethMainPowerUsageOnNotification** trap. If the power consumption exceeds and then falls below the threshold, the switch sends the **pethMainPowerUsageOffNotification** trap.
PowerDevice DetectType	Lets you set the power detection type that the switch uses to detect a request for power from a device connected to all ports on the switch: • 802.3at • 802.3atAndLegacySupport **Important:** The default setting is 802.3at. Ensure that this setting matches the setting for the detection type used by the powered devices on this switch. The 802.3at and 802.3atAndLegacySupport options are available only on PWR+ units.
PowerPresent	Specifies the currently used power source. Available power sources are AC and DC. • A value of **acOnly** indicates that the only power supply is AC. • A value of **dcOnly** indicates that the only power supply is DC. • A value of **acDc** indicates that there are two power supplies; both AC and DC are supplying power

Power management using EDM

Use the information in this section to display and manage Power over Ethernet (PoE) for a standalone switch or switches in a stack.

Viewing PoE for multiple switch units using EDM

Use this procedure to display the PoE configuration for one or more switches in a stack.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, click **PoE**.
3. In the work area, click the **PoE Units** tab.

Variable definitions

Use the data in the following table to help you understand the global PoE display.

Variable	Value
Power(watts)	Indicates the total power (in watts) available to the switch.
OperStatus	Indicates the power state of the switch: • on • off • faulty This is a read-only cell.
Consumption Power(watts)	Indicates the power (in watts) being used by the switch. This is a read-only cell.
UsageThreshold%	Indicates the percentage of the total power usage of the preceding switch, to which the system sends a trap. **Important:** You must enable the traps (NotificationControlEnable) to receive a power usage trap.
PowerDevice DetectType	Indicates the power detection type that the switch uses to detect a request for power from a device connected to all ports on the switch. Values include: • 802.3at • 802.3atAndLegacySupport **Important:** The default setting is 802.3at. Ensure that this setting matches the setting for the detection type used by the powered devices on this switch. The 802.3at and 802.3atAndLegacySupport options are available only on PWR+ units.
PowerPresent	Indicates the currently used power source. Available power sources are AC and DC. • acOnly—indicates that the only power supply is AC • dcOnly—indicates that the only power supply is DC

Table continues…

Variable	Value
	• acDc—indicates that there are two power supplies; both AC and DC are supplying power This is a read-only cell.

Configuring PoE for multiple switch units using EDM

Use this procedure to configure PoE for one or more switches in a stack.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, click **PoE**.
3. In the work area, click the **PoE Units** tab.
4. To select a switch to edit, click the Unit.
5. In the Unit row, double-click the cell in the **UsageThreshold%** column.
6. Type a value.
7. In the Unit row, double-click the cell in the **PowerDeviceDetectType** column.
8. Select a value from the list.
9. To manage PoE for additional switch units in a stack, repeat steps **4** through **8**.
10. Click **Apply** .

Variable definitions

Use the data in the following table to configure PoE for one or more switches in a stack.

Variable	Value
Power(watts)	Indicates the total power (in watts) available to the switch. This is a read-only cell.
OperStatus	Indicates the power state of the switch: • on • off • faulty This is a read-only cell.
Consumption Power(watts)	Indicates the power (in watts) being used by the switch. This is a read-only cell.
UsageThreshold%	Specifies the percentage of the total power usage of the preceding switch, to which the system sends a trap.

Table continues…

Variable	Value
	Important: You must enable the traps (NotificationControlEnable) to receive a power usage trap.
PowerDevice DetectType	Specifies the power detection type that the switch uses to detect a request for power from a device connected to all ports on the switch. Values include: • 802.3at • 802.3atAndLegacySupport **Important:** The default setting is 802.3at. Ensure that this setting matches the setting for the detection type used by the powered devices on this switch. The 802.3at and 802.3atAndLegacySupport options are available only on PWR+ units.
PowerPresent	Indicates the currently used power source. Available power sources are AC and DC. • acOnly—indicates that the only power supply is AC • dcOnly—indicates that the only power supply is DC • acDc—indicates that there are two power supplies; both AC and DC are supplying power This is a read-only cell.

Configuring PoE priority for IP Phone using EDM

Use this procedure to set the power priority and power limit for the IP Phone.

Procedure steps

1. From the navigation tree, click **Power Management**.
2. In the Power Management tree, click **PoE**.
3. In the work area, click the **Globals** tab
4. Double-click the **PowerLimit** box.
5. Type a value.
6. Click a radio button in the **PowerPriority** section.
7. On the toolbar, click **Apply**.

Variable definitions

Variable	Value
PowerLimit	Specifies the global power limit for IP Phones. Valid range is 0 or 3–32W. Default value: 0 **Note:** A value of 0 implies that the Port PowerLimit is used for the IP Phone.
PowerPriority	Specifies the global power priority for IP Phones. Valid priorities are **critical**, **high**, **low**, and **notApplicable**. Default value: **notApplicable** **Note:** If you choose the value as notApplicable, it implies that the Port PowerPriority is used by the IP Phone.

Configuring system parameters using EDM

Use this procedure to view and modify the system level configuration.

Procedure steps

1. From the Configuration navigation tree, click the **Edit** arrowhead to open the Edit navigation tree.
2. Double-click **Chassis** .
3. In the Chassis tree, double-click **Chassis**.
4. In the work area, click the **System** tab.
5. In the **sysContact** field, type system contact information.
6. In the **sysName** field, type a system name.
7. In the **sysLocation** field, type a system location.
8. To enable authentication traps, select the **Authentication Traps** check box.

   OR

   To disable authentication traps, clear the **Authentication Traps** checkbox.
9. In the **ReBoot** section, click a radio button.

10. In the **AutoPvid** section, click a radio button.
11. In the **StackInsertionUnitNumber** field, type a value.
12. To enable jumbo frames, select the **JumboFramesEnabled** check box.

    OR

    To disable jumbo frames, clear the **JumboFramesEnabled** checkbox.
13. To enable forced stack mode, select the **ForcedStackModeEnabled** check box.
14. In the **bsEdmInactivityTimeout** field, type the time-out period.
15. In the **BootMode** section, click a radio button.
16. Click **Apply** .

Variable definitions

Use the data in this table to view and modify the system level configuration.

Variable	Value
sysDescr	Provides device specific information. This is a read-only item.
sysUpTime	Indicates the amount of time since the system was last booted.
sysObjectID	Indicates the system object identification number. This is a read-only item.
sysContact	Specifies contact information for the system administrator, which can include a contact name or email address.
sysName	Specifies a unique name to describe this switch.
sysLocation	Specifies the physical location of this device.
SerNum	Indicates the serial number of this switch.
AuthenticationTraps	Enables or disables authentication traps. • When enabled, SNMP traps are sent to trap receivers for all SNMP access authentication. • When disabled, no SNMP traps are received.
Reboot	Provides the action to reboot the switch. • running—the switch remains in the running mode • reboot—starts the reboot sequence
AutoPvid	When enabled, a VLAN ID can be automatically assigned to any port.

Table continues…

Variable	Value
StackInsertionUnitNumber	Specifies the unit number to assign to the next unit added to the stack. Values range from 0–8. You cannot set the value to the unit number of an existing stack member. When a new unit joins the stack, and the value of this object is used as its unit number, the value reverts to 0. If the value of this object is 0, it is not used to determine the unit number of new units.
JumboFramesEnabled	Enables or disables the jumbo frames. When the jumbo frame is enabled, the jumbo frame size configuration for each unit or stack is applied.
JumboFrameSize	Indicates the jumbo frame size. If the **JumboFramesEnabled** check box is selected, the jumbo frame size is displayed. By default, the jumbo frame size is 9216 bytes. This is a read-only item.
ForcedStackModeEnabled	Enables or disables the forced stack mode.
bsEdmInactivityTimeout	Indicates the EDM inactivity time-out period. The value ranges from 30 to 65535 seconds. By default, the inactivity time-out period is 900 seconds.
NextBootMgmtProtocol	Indicates the transport protocols to use after the next switch restart. This is a read-only item.
CurrentMgmtProtocol	Indicates the current transport protocols that the switch supports. This is a read-only item.
BootMode	Specifies whether to use the BootP or DHCP server to assign an IPv4 address for the management VLAN at the next switch reboot. Values include: • other—read only • bootpDisabled—use configured server IP address • bootpAlways—always use the BootP server • bootpWhenNeeded—use the BootP server by default • bootpOrLastAddress—use the BootP server last used • dhcpAlways—use the DHCP server • dhcpWhenNeeded—use the DHCP server when needed • dhcpOrLastAddress—use the DHCP server last used

Table continues…

Variable	Value
ImageLoadMode	Indicates the source from which to load the agent image at the next boot. This is a read-only item.
CurrentImageVersion	Indicates the version number of the agent image that is currently used on the switch. This is a read-only item.
LocalStorageImage Version	Indicates the version number of the agent image that is stored in flash memory on the switch. This is a read-only item.
NextBootDefaultGateway	Indicates the IP address of the default gateway for the agent to use after the next time you boot the switch. This is a read-only item.
CurrentDefaultGateway	Indicates the address of the default gateway that is currently in use. This is a read-only item.
NextBootLoadProtocol	Indicates the transport protocol that the agent uses to load the configuration information and the image at the next boot. This is a read-only item.
LastLoadProtocol	Indicates the transport protocol last used to load the image and configuration information about the switch. This is a read-only item.

Configuring asset ID using EDM

Use the following procedure to configure the asset ID of a switch or stack.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Chassis**.
3. In the Chassis tree, double-click **Chassis**.
4. On the work area, click the **Asset ID** tab.
5. In the table, double-click the cell under the **Asset ID** column heading.
6. Type the desired value in the **Asset ID** field.
7. On the toolbar, click **Apply**.

Variable definitions

The following table is an example for a stack of 2 units and you can extend this up to 8 units. Use the data in the following table to complete this procedure.

Variable	Value
Stack	Sets the Asset ID of the stack
Unit 1	Sets the Asset ID of unit 1 in the stack
Unit 2	Sets the Asset ID of unit 2 in the stack

Selecting the ACLI banner type using EDM

Use this procedure to select the type of banner that is displayed in the Avaya Command Line (ACLI) Telnet screen.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Chassis**.
3. In the Chassis tree, double-click **Chassis**.
4. On the work area, click the **Banner** tab.
5. In the **BannerControl** section, click a radio button.
6. Click **Apply**.

Variable definitions

Use the information in the following table to select the ACLI banner type.

Variable	Value
BannerControl	Specifies the banner to be displayed as soon as you connect to a switch using Telnet. Values include: • static—uses the predefined static banner. • custom—uses the previously set custom banner. • disabled—prevents the display of any banner.

Customizing ACLI banner using EDM

Use this procedure to customize banner that is displayed on the Avaya Command Line (ACLI) Telnet screen.

Prerequisites

- Select **custom** for the ACLI banner type.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Chassis**.
3. In the Chassis tree, double-click **Chassis**.
4. In the work area, click the **Custom Banner** tab.
5. To select a switch for which to customize the banner, click a row.
6. In the row, double-click the cell in the **Line** column.
7. Type a character string for the banner.
8. Click **Apply**.

Variable definitions

Use the data in this table to customize the ACLI banner.

Variable	Value
Type	Indicates whether the banner type is for a standalone (switch) or a stack (stack).
Id	Indicates the line of text within a custom banner.
Line	Specifies the banner character string. The custom banner is 19 lines high and can be up to 80 characters long.

Configuring AUR using EDM

Use this procedure to configure automatic unit replacement (AUR).

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Chassis**.
3. In the Chassis tree, double-click **Chassis**.

4. In the work area, select the **AUR** tab.
5. To enable automatic unit replacement, select the **AutoUnitReplacementEnabled** check box.

   OR

   To disable automatic unit replacement, clear the **AutoUnitReplacementEnabled** check box.
6. To enable automatic unit replacement save, select the **AutoUnitReplacementSaveEnabled** check box.

   OR

   To disable automatic unit replacement save, clear the **AutoUnitReplacementSaveEnabled** check box.
7. In the AutoUnitReplacementForceSave dialog box, type a value.
8. In the AutoUnitReplacementRestore dialog box, type a value.
9. Click **Apply** .

Variable definitions

Use the data in this table to configure AUR.

Variable	Value
AutoUnitReplacementEnabled	Enables or disables the auto-unit-replacement feature.
AutoUnitReplacementSaveEnabled	Enables or disables the auto-unit-replacement automatic saving of unit images to the base unit.
AutoUnitReplacementForceSave	Forcefully saves the configuration of a particular non base unit configuration to the base unit.
AutoUnitReplacementRestore	Forcefully restores the configuration of a particular unit from the saved configuration on the base unit.

Configuring a switch stack base unit using EDM

Use this procedure to configure a stack base unit status and to display base unit information.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Chassis** .
3. In the Chassis tree, double-click **Switch/Stack**.

4. In the work area, click the **Base Unit Info** tab.
5. In the **AdminStat** section, click a radio button.
6. In the **Location** section, type a character string.
7. Click **Apply** .

Variable definitions

Use the information in the following table to help you understand the base unit information display.

Variable	Value
Type	Indicates the switch type.
Descr	Describes the switch hardware, including number of ports and transmission speed.
Ver	Indicates the switch hardware version number.
SerNum	Indicates the switch serial number.
LstChng	Indicates the value of sysUpTime at the time the interface entered its current operational state. If you entered the current state prior to the last reinitialization of the local network management subsystem, the value is zero.
AdminState	Specifies the administrative state of the base unit switch. Values include enable or reset. **Important:** In a stack configuration, the **reset** command resets only the base unit.
OperState	Indicates the operational state of the switch.
Location	Specifies the physical location of the switch.
RelPos	Indicates the relative position of the switch.
BaseNumPorts	Indicates the number of base ports of the switch.
TotalNumPorts	Indicates the number of ports of the switch.
IpAddress	Indicates the base unit IP address.
RunningSoftwareVer	Indicates the version of the running software.

Renumbering stack switch units using EDM

Use this procedure to change the unit numbers of switches in a stack.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Chassis** .
3. In the Chassis tree, double-click **Switch/Stack**.
4. In the work area, click the **Stack Numbering** tab.
5. To select a switch unit, click a unit row.
6. In the unit row, double-click the cell in the **New Unit Number** column.
7. Select a value from the list.
8. Click **Apply** .

   A warning message appears indicating that initiating the renumbering of switch units in a stack results in an automatic reset of the entire stack.

Variable definitions

Use the information in the following table to change the unit numbers of switches in a stack.

Variable	Value
Current Unit Number	Indicates the current switch numbering sequence.
New Unit Number	Specifies the updated switch numbering sequence.

Interface port management using EDM

Use the information in this section to display and manage switch interface port configurations.

Viewing switch interface port information using EDM

Use this procedure to display switch interface port configuration information.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Chassis**.
3. Double-click **Ports**.
4. In the work area, click the **Interface** tab.

Variable definitions

Use the data in this table to help you understand the interface port display.

Variable	Value
Index	A unique value assigned to each interface.
Name	Specifies a name for the port.
Descr	The description of the selected port.
Type	The media type of this interface.
Mtu	The size of the largest packet, in octets, that can be sent or received on the interface.
PhysAddress	The MAC address assigned to a particular interface.
AdminStatus	The current administrative state of the device, which can be one of the following: • up • down When a managed system is initialized, all interfaces start with AdminStatus in the up state. AdminStatus changes to the down state (or remains in the up state) because either management action or the configuration information available to the managed system.
OperStatus	The current operational state of the interface, which can be one of the following: • up • down • testing If AdminStatus is up then OperStatus should be up if the interface is ready to transmit and receive network traffic. If AdminStatus is down then OperStatus should be down. It should remain in the down state if and only if there is a fault that prevents it from going to the up state. The testing state indicates that no operational packets can be passed.
LastChange	The value of sysUpTime at the time the interface entered its current operational state. If the current state was entered prior to the last reinitialization of the local network management subsystem, the value is zero.
LinkTrap	Specifies whether linkUp/linkDown traps should be generated for this interface.
AutoNegotiate	Indicates whether this port is enabled for autonegotiation or not. **Important:** 10/100/1000BASE-TX ports cannot autonegotiate correctly with older 10/100BASE-TX equipment. In some cases, the older devices can be upgraded with new firmware or driver revisions. If an upgrade does

Table continues…

Variable	Value
	not allow autonegotiation to correctly identify the link speed and duplex settings, you can manually configure the settings for the link in question.
AdminDuplex	The current administrative duplex mode of the port (half or full).
OperDuplex	The current mode of the port (half duplex or full duplex).
AdminSpeed	Set the port's speed.
OperSpeed	The current operating speed of the port.
FlowControlAdminMode	Specifies the flow control mode of the port. Values include: • disabled — flow control disabled • enabledRcv — receive enabled • enabledXmitAndRcv — transmit and receive enabled
FlowControlOperMode	Indicates the current flow control mode of the port.
AutoNegotiationCapability	Specifies the port speed and duplex capabilities that a switch can support on a port, and that can be advertised by the port using auto-negotiation.
AutoNegotiationAdvertisements	Specifies the port speed and duplex abilities to be advertised during link negotiation. Values include: • 10Half • 10Full • 100Half • 100Full • 1000Full • AsymmPauseFrame
MltId	The MultiLink Trunk to which the port is assigned (if any).
IsPortShared	Specifies whether a port is shared. Multiple ports that are logically represented as a single port are shared. Only one shared port can be active at a time.
PortActiveComponent	Specifies the physical port components that are active for a shared port.

Changing the configuration for specific interface ports using EDM

Use this procedure to modify configuration parameters for one or more interface ports.

Procedure steps

1. From the Device Physical View, click one or more ports.
2. From the navigation tree, double-click **Edit**.
3. In the Edit tree, double-click **Chassis**.

4. Double-click **Ports**.
5. In the work area, click the **Interface** tab.
6. To select an interface port to edit, click the **Index**.
7. In the port row, double-click the cell in the **Name** column.
8. Type a character string.
9. In the port row, double-click the cell in the **AdminStatus** column.
10. Select a value from the list.
11. In the port row, double-click the cell in the **LinkTrap** column.
12. From the list, enable or disable link traps for the port.
13. In the port row, double-click the cell in the **AutoNegotiate** column.
14. Select a value from the list—**true** to enable autonegotiation for the port, or **false** to disable autonegotiation for the port.
15. In the port row, double-click the cell in the **AdminDuplex** column.
16. Select a value from the list.
17. In the port row, double-click the cell in the **AdminSpeed** column.
18. Select a value from the list.
19. In the port row, double-click the cell in the **AutoNegotiationAdvertisments** column.
20. Select or clear autonegotiation advertisement check boxes.
21. Repeat steps **6** through **20** to change the configuration for additional interface ports.
22. Click **Ok** .
23. Click **Apply** .

Variable definitions

Use the data in this table to modify configuration parameters for one or more interface ports.

Variable	Value
Index	A unique value assigned to each interface. The value ranges between 1 and 512.
Name	Specifies a name for the port.
Descr	The description of the selected port.
Type	The media type of this interface.
Mtu	The size of the largest packet, in octets, that can be sent or received on the interface.
PhysAddress	The MAC address assigned to a particular interface.

Table continues…

Variable	Value
AdminStatus	The current administrative state of the device, which can be one of the following: • up • down When a managed system is initialized, all interfaces start with AdminStatus in the up state. AdminStatus changes to the down state (or remains in the up state) because either management action or the configuration information available to the managed system.
OperStatus	The current operational state of the interface, which can be one of the following: • up • down • testing If AdminStatus is up then OperStatus should be up if the interface is ready to transmit and receive network traffic. If AdminStatus is down then OperStatus should be down. It should remain in the down state if and only if there is a fault that prevents it from going to the up state. The testing state indicates that no operational packets can be passed.
LastChange	The value of sysUpTime at the time the interface entered its current operational state. If the current state was entered prior to the last reinitialization of the local network management subsystem, the value is zero.
LinkTrap	Specifies whether linkUp/linkDown traps should be generated for this interface.
AutoNegotiate	Indicates whether this port is enabled for autonegotiation or not. **Important:** 10/100/1000BASE-TX ports cannot autonegotiate correctly with older 10/100BASE-TX equipment. In some cases, the older devices can be upgraded with new firmware or driver revisions. If an upgrade does not allow autonegotiation to correctly identify the link speed and duplex settings, you can manually configure the settings for the link in question.
AdminDuplex	The current administrative duplex mode of the port (half or full).
OperDuplex	The current mode of the port (half duplex or full duplex).
AdminSpeed	Set the port speed.
OperSpeed	The current operating speed of the port.
FlowControlAdminMode	Specifies the flow control mode of the port. Values include: • disabled — flow control disabled • enabledRcv — receive enabled • enabledXmitAndRcv — transmit and receive enabled

Table continues…

Variable	Value
FlowControlOperMode	Indicates the current flow control mode of the port.
AutoNegotiationCapability	Specifies the port speed and duplex capabilities that a switch can support on a port, and that can be advertised by the port using auto-negotiation.
AutoNegotiation Advertisments	Specifies the port speed and duplex abilities to be advertised during link negotiation.
MltId	The MultiLink Trunk to which the port is assigned (if any).
IsPortShared	Specifies whether a port is shared. Multiple ports that are logically represented as a single port are shared. Only one shared port can be active at a time.
PortActiveComponent	Specifies the physical port components that are active for a shared port.

PoE configuration for switch ports using EDM

Use the information in this section to display and modify PoE configurations for switch ports.

Important:

The procedures in this section apply only to a switch with PoE ports.

Viewing PoE information for specific switch ports using EDM

Use this procedure to display the PoE configuration for specific switch ports.

Procedure steps

1. From the Device Physical View, select one or more ports.
2. From the navigation tree, double-click **Edit**.
3. In the Edit tree, double-click **Chassis**.
4. Double-click **Ports**.
5. In the work area, click the **PoE** tab.

Variable definitions

Use the data in the following table to display the PoE configuration for specific switch ports.

Variable	Value
Unit	Indicates the switch position in a stack.
Port	Indicates the switch port number.
AdminEnable	Lets you enable or disable PoE on this port. By default, PoE is enabled.

Table continues…

Variable	Value
DetectionStatus	Displays the operational status of the power-device detecting mode on the specified port: • disabled—detecting function disabled • searching—detecting function is enabled and the system is searching for a valid powered device on this port • deliveringPower—detection found a valid powered device and the port is delivering power • fault—power-specific fault detected on port • test—detecting device in test mode • otherFault **Important:** Avaya recommends against using the test operational status.
PowerClassifications	Classification is a way to tag different terminals on the Power over LAN network according to their power consumption. Devices such as IP telephones, WLAN access points, and others can be classified according to their power requirements.
PowerPriority	Lets you set the power priority for the specified port to: • critical • high • low
PowerLimit(watts)	Specifies the maximum power that the switch can supply to a port. The maximum power and system default power is 32W per port for the 802.3at-compliant PoE+ model and 16W for the 802.3af-compliant PoE model.
Voltage(volts)	Indicates the voltage measured in Volts.
Current(amps)	Indicates the current measured in amps.
Power(watts)	Indicates the power measured in watts.

Configuring PoE for specific switch unit ports using EDM

Use this procedure to modify the PoE configuration for a one or more ports on a specific switch unit.

Procedure steps

1. From the Device Physical View, select one or more ports on a switch unit.
2. From the navigation tree, double-click **Edit**.
3. In the Edit tree, double-click **Chassis**.
4. Double-click **Ports**.
5. In the work area, click the **PoE** tab.
6. In the unit port row, double-click the cell in the **AdminEnable** column.

7. Select a value from the list—**true** to enable PoE for the port, or **false** to disable PoE for the port.
8. In the unit port row, double-click the cell in the **PowerPriority** column.
9. Select a value from the list.
10. In the unit port row, double-click the cell in the **PowerLimit(watts)** column.
11. Type a value.
12. To configure PoE for other selected ports, repeat steps **6** through **11** .
13. Click **Apply** .

Variable definitions

Use the data in the following table to modify PoE for a one or more specific ports.

Variable	Value
Unit	Indicates the switch position in a stack.
Port	Indicates the switch port number.
AdminEnable	Lets you enable or disable PoE on this port. By default, PoE is enabled.
DetectionStatus	Displays the operational status of the power-device detecting mode on the specified port: • disabled—detecting function disabled • searching—detecting function is enabled and the system is searching for a valid powered device on this port • deliveringPower—detection found a valid powered device and the port is delivering power • fault—power-specific fault detected on port • test—detecting device in test mode • otherFault **Important:** Avaya recommends against using the test operational status.
PowerClassifications	Classification is a way to tag different terminals on the Power over LAN network according to their power consumption. Devices such as IP telephones, WLAN access points, and others can be classified according to their power requirements.
PowerPriority	Lets you set the power priority for the specified port to: • critical • high • low

Table continues…

Variable	Value
PowerLimit(watts)	Specifies the maximum power that the switch can supply to a port. The maximum power and system default power is 32W per port for the 802.3at-compliant PoE+ model and 16W for the 802.3af-compliant PoE model.
Voltage(volts)	Indicates the voltage measured in Volts.
Current(amps)	Indicates the current measured in amps.
Power(watts)	Indicates the power measured in watts.

Configuring PoE for switch or stack ports using EDM

Use this procedure to modify the PoE configuration for a one or more switch or stack ports.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **PoE**.
3. In the work area, click the **PoE Ports** tab.
4. To select a switch port to edit, click the unit row.
5. In the unit port row, double-click the cell in the **AdminEnable** column.
6. Select a value from the list—**true** to enable PoE for the port, or **false** to disable PoE for the port.
7. In the unit port row, double-click the cell in the **PowerPriority** column.
8. Select a value from the list.
9. In the unit port row, double-click the cell in the **PowerLimit(watts)** column.
10. Type a value.
11. To configure PoE for additional ports, repeat steps **4** through **10** .
12. Click **Apply** .

Variable definitions

Use the data in the following table to configure PoE for a one or more switch or stack ports.

Variable	Value
Unit	Indicates the switch position in a stack.
Port	Indicates the switch port number.
AdminEnable	Lets you enable or disable PoE on this port. By default, PoE is enabled.

Table continues…

Variable	Value
DetectionStatus	Displays the operational status of the power-device detecting mode on the specified port: • disabled—detecting function disabled • searching—detecting function is enabled and the system is searching for a valid powered device on this port • deliveringPower—detection found a valid powered device and the port is delivering power • fault—power-specific fault detected on port • test—detecting device in test mode • otherFault **Important:** Avaya recommends against using the test operational status.
PowerClassifications	Classification is a way to tag different terminals on the Power over LAN network according to their power consumption. Devices such as IP telephones, WLAN access points, and others can be classified according to their power requirements.
PowerPriority	Lets you set the power priority for the specified port to: • critical • high • low
PowerLimit(watts)	Specifies the maximum power that the switch can supply to a port. The maximum power and system default power is 32W per port for the 802.3at-compliant PoE+ model and 16W for the 802.3af-compliant PoE model.
Voltage(volts)	Indicates the voltage measured in Volts.
Current(amps)	Indicates the current measured in amps.
Power(watts)	Indicates the power measured in watts.

Configuring Rate Limiting using EDM

Use the following procedure to configure the Rate Limiting for a single port.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Chassis**.
3. In the Chassis tree, double-click **Ports**.

4. On the work area, click the **Rate Limit** tab.
5. To a rate limit, click a **TrafficType** row.
6. Double-click the cell in the **AllowedRate** column.
7. Select a value from the list.
8. Double-click the cell in the **Enable** column.
9. Select a value from the list—**true** to enable the traffic type, or **false** to disable the traffic type.

Variable definitions

Use the data in this table to configure rate limiting.

Variable	Value
Index	Indicates the unique identifier.
TrafficType	Specifies the two types of traffic that can be set with rate limiting: broadcast and multicast.
AllowedRate	Specifies the rate limiting percentage. The available range is from 0 percent (none) to 10 percent.
AllowedRatePps	Allowed traffic rate packets/second. Values range from 0 to 262143.
Enable	Enables and disables rate limiting on the port for the specified traffic type. Options are true (enabled) or false (disabled).

Managing switch software using EDM

Use this procedure to change the binary configuration running on the switch, upload the configuration file to a TFTP server, SFTP server, or USB storage device, or retrieve a binary configuration file from a TFTP server, SFTP server, or USB storage device.

Important:

When you use the TFTP or SFTP address parameter to perform copy or download commands, the system overwrites the TFTP or SFTP server address

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **File System**.
3. On the work area, click the **Config/Image/Diag file** tab.
4. In the **TftpServerInetAddressType** section, click a radio button.
5. In the **TftpServerInetAddress** dialog box, type the TFTP server IP address.

6. In the **BinaryConfigFileName** dialog box, type the name of the binary configuration file.
7. In the **BinaryConfigUnitNumber** dialog box, type a unit number.
8. In the **ImageFileName** dialog box, type the name of the current image file.
9. In the **FwFileName(Diagnostics)** dialog box, type the name of the current diagnostic file.
10. In the **UsbTargetUnit** dialog box, type a value.
11. In the **Action** section, click a radio button.
12. Click **Apply**.

The software download starts automatically after you click Apply. This process erases the contents of flash memory, and replaces it with the new software image. Do not interrupt the download. Depending on network conditions, this process can take up to 10 minutes. After the download is complete, the switch automatically resets, and the new software image initiates a self-test. During the download, the switch is not operational.

Variable definitions

Variable	Value
TftpServerInetAddressType	Specifies the type of IP address for the TFTP server. Values include: • IPv4 • IPv6
TftpServerInetAddress	Specifies the IP address of the TFTP server on which the new software images are stored for download.
BinaryConfigFileName	Specifies the binary configuration file currently associated with the switch. Use this dialog box when you work with configuration files; do not use this dialog box when you download a software image.
BinaryConfigUnitNumber	Specifies the binary configuration unit number. Values range from 0 to 8. The default value is 0.
ImageFileName	Specifies the name of the image file currently associated with the switch. If needed, change this field to the name of the software image to be downloaded.
FwFileName (Diagnostics)	Specifies the name of the diagnostic file currently associated with the switch. If needed, change this field to the name of the diagnostic software image to be downloaded.
UsbTargetUnit	Specifies the unit number of the USB port to be used to upload or download a file. Values range from 0 to 9. • 1 to 8—a USB port in a stack • 9—a USB port in a standalone switch

Table continues…

Variable	Value
	• 0—TFTP server
Action	Specifies the action to take during this file system operation. The available options are as follows: • other—read only • dnldConfig—downloads a configuration to the switch. • upldConfig—uploads a configuration from the switch to a designated location. • dnldConfigFromUsb—downloads a configuration to switch using the front panel USB port. • upldConfigToUsb—uploads a configuration from the switch to the server using the front panel USB port. • dnldImg—downloads a new software image to the switch. This option replaces the software image on the switch regardless of whether it is newer or older than the current image. • dnldImgIfNewer—downloads a new software image to the switch only if it is newer than the one currently in use. • dnldImgNoReset—downloads a new software image to the switch. This option replaces the software image on the switch regardless of whether it is newer or older than the current image. After the download is complete, the switch is not reset. • dnldImgFromUsb—downloads a new software image to the switch using the front panel USB port. • dnldFw—downloads a new diagnostic software image to the switch. This option replaces the image regardless of whether it is newer or older than the current image. • dnldFwNoReset—downloads a new diagnostic software image to the switch. This option replaces the image regardless of whether it is newer or older than the current image. After the download is complete, the switch is not reset. • dnldFwFromUsb—downloads a new diagnostic software image to the switch from the front panel USB port. This option replaces the image regardless of whether it is newer or older than the current image. • 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.

Table continues…

Variable	Value
	• upldConfigToSftp—uploads a configuration to the SFTP server. • dnldImgFromSftpNoReset—downloads the agent image from a SFTP server and does 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 last action that occurred since the switch last booted. Values include: • other—no action occurred since the last boot. • inProgress—the selected operation is in progress. • success—the selected operation succeeded. • fail—the selected operation failed.

ASCII configuration file management using EDM

Use the information in this section to store or retrieve an ASCII configuration file.

ASCII configuration file management prerequisites

- Read and understand the detailed information about ASCII configuration files in *Using ACLI and EDM on Avaya Ethernet Routing Switch 4800 Series*, NN47205-102.

Storing the current ASCII configuration file using EDM

Use the following procedure to store the current ASCII switch configuration file to a TFTP server or USB storage device.

Important:

When you use the TFTP or SFTP address parameter to perform copy or download commands, the system overwrites the TFTP or SFTP server address

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **File System**.
3. In the work area, click the **ASCII Config Script Files** tab.
4. To select a script file, click the script index.
5. In the script row, double-click the cell in the **ScriptBootPriority** column.

6. Type a value.
7. In the script row, double-click the cell in the **ScriptSource** column.
8. Type the IP address of the desired TFTP server and the name under which to store the configuration file in the format— tftp://<ip address>/<filename>.

   Type the IP address of the desired SFTP server and the name under which to store the configuration file in the format— sftp://<ip address>/<filename>.

   If the configuration file is saved to a USB storage device, type the name under which to store the configuration file in the following format—usb://<filename>.

   If the USB is inserted in a stand-alone unit, or if the USB device is inserted in a unit of a stack, type usb://<unit number>/<filename>.
9. Double-click the cell under the **ScriptManual** header, and select **Upload** option to transfer the file to a TFTP server or to a USB mass storage device.
10. On the toolbar, click **Apply**.
11. Check the **ScriptLastStatusChange** field for the file transfer status.

    If the status of the file upload is manualUploadInProgress, wait for up to 2 minutes, and then click **Refresh** to see any new status applied to the upload.

    The file upload is complete when the status displays either manualUploadPassed or manualUploadFailed.
12. Click **Apply** .

Variable definitions

Use the information in the following table to help you to store the current ASCII switch configuration file.

Variable	Value
ScriptIndex	Specifies the unique identifier for ASCII switch configuration file.
ScriptBootPriority	Specifies the boot priority of the ASCII switch configuration file. Value ranges from 0–127.
ScriptSource	Specifies the address where to store the configuration file.
ScriptManual	Specifies the operation that you want to perform—upload, download, or other.
Applications	Specifies the application.
ScriptOperStatus	Specifies the script operation status.
ScriptLastStatusChange	Specifies the time of the last status change as sysUpTime.

Retrieving an ASCII configuration file using EDM

Use the following procedure to retrieve an ASCII configuration file from a TFTP server or from a USB storage device, and apply it to the switch.

Important:

When you use the TFTP or SFTP address parameter to perform copy or download commands, the system overwrites the TFTP or SFTP server address.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **File System**.
3. On the work area, click the **ASCII Config Script Files** tab.
4. In the table, double-click the cell under the **ScriptSource** heading for the parameter you want to change.
5. Type the IP address of the desired TFTP server and the name under which to store the configuration file in the format— tftp://<ip address>/<filename>.

   Type the IP address of the desired SFTP server and the name under which to store the configuration file in the format— sftp://<ip address>/<filename>.

   If you retrieve the configuration file from a USB storage device, and the USB is inserted in a stand-alone unit, type the name under which to store the configuration file in the following format—usb://<filename>.

   If the USB device is inserted in a unit of a stack, type usb://<unit number>/<filename>.
6. Double-click the cell under the **ScriptManual** header, and select **Download** option to transfer the file from a TFTP server or from a USB mass storage device.
7. On the toolbar, click **Apply**.
8. Check the **ScriptLastStatusChange** field for the file transfer status.

   If the status of the file download is manualDownloadInProgress, wait for up to 2 minutes, and then click **Refresh** to see any new status applied to the upload.

   The file download is complete when the status displays either **manualDownloadPassed** or **manualDownloadFailed**.

Automatically downloading a configuration file using EDM

Use the following procedure to download a configuration file automatically.

Important:

When you use the TFTP address parameter to perform copy or download commands, the system overwrites the TFTP server address.

Procedure steps

Procedure steps

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

3. On the work area, click the **ASCII Config Script Files** tab.
4. In the table, double click the cell under the **ScriptSource** header.
   - If you retrieve the configuration file from a TFTP server, type the IP address of the desired TFTP server and the name under which the configuration file is stored in the following format—`tftp://<ip address>/<filename>`.
   - If you retrieve the configuration file from a USB storage device, and the USB device is inserted in a stand-alone unit, type the name under which the configuration file is stored in the following format—`usb://<filename>`.
   - If you retrieve the configuration file from a USB storage device, and the USB device is inserted in a unit of a stack, type the name under which the configuration file is stored in the following format— `usb://<unit number>/<filename>`.
   - If you retrieve the file from a BOOTP server, type `bootp://`.
5. Double-click the cell under the **ScriptBootPriority** header.
6. Type the priority of the script (between 1 and 127, or 0 for not using the entry at boot time).
7. On the toolbar, click **Apply**.

Managing the license file using EDM

Use this procedure to download, install, or remove a license file for the switch.

Important:

When you use the TFTP address parameter to perform copy or download commands, the system overwrites the TFTP server address.

Loading a license file from TFTP

Use this procedure to load a license file from TFTP.

1. From the navigation tree, double-click **Edit** .
2. In the Edit tree, double-click **File System**.
3. In the work area, select the **License File** tab.
4. In the **TftpServerInetAddressType** section, click a radio button.
5. In the **TftpServerInetAddress** dialog box, type the TFTP server IP address.
6. In the LicenseFileName dialog box, enter the software license filename on the TFTP server.

Important:

The LicenseFileName dialog box is case sensitive and you can use a maximum of 64 characters including the file extension. Numerals are allowed in the LicenseFileName dialog box, but special characters like @, -, #, are not allowed.

7. In the **UsbTargetUnit** dialog box, type value 0.
8. In the LicenseFileAction section, click the **dnldLicense** radio button to download license from TFTP.
9. In the **Remove License** section, select a value from the list, to remove one or all licenses.
10. Click **Apply**.

    When the file installation is complete, a warning message appears prompting you to restart the switch to activate the license.

    For information about restarting the switch, see Configuring system parameters using EDM on page 282.

Loading a license file from SFTP

Use this procedure to load a license file from SFTP.

1. From the navigation tree, double-click **Edit** .
2. In the Edit tree, double-click **File System**.
3. In the work area, select the **License File** tab.
4. In the LicenseFileName dialog box, enter the software license filename on the SFTP server.

   Important:

   The LicenseFileName dialog box is case sensitive and you can use a maximum of 64 characters including the file extension. Numerals are allowed in the LicenseFileName dialog box, but special characters like @, -, #, are not allowed.
5. In the **UsbTargetUnit** dialog box, type value 10.
6. In the LicenseFileAction section, click the **dnldLicenseFromSftp** radio button to download license from SFTP.
7. In the **Remove License** section, select a value from the list, to remove one or all licenses.
8. Click **Apply**.

   Note:

   To load a license file from an SFTP server, you must make the following configurations:

   - set the SFTP server address
   - set the SFTP user name

- set SFTP authentication to DSA, RSA, or password.
- if you select DSA or RSA authentication type, generate the DSA/RSA key and upload it to SFTP server
- if you select password authentication, configure the password

When the file installation is complete, a warning message appears prompting you to restart the switch to activate the license.

For information about restarting the switch, see Configuring system parameters using EDM on page 282.

Loading a license file from a USB drive

Use this procedure to load a license file from a USB drive.

1. From the navigation tree, double-click **Edit** .
2. In the Edit tree, double-click **File System**.
3. In the work area, select the **License File** tab.
4. In the LicenseFileName dialog box, enter the software license filename on the USB drive.

   Important:

   The LicenseFileName dialog box is case sensitive and you can use a maximum of 64 characters including the file extension. Numerals are allowed in the LicenseFileName dialog box, but special characters like @, -, #, are not allowed.
5. In the **UsbTargetUnit** dialog box, type the unit number on which the USB drive is inserted.
6. In the LicenseFileAction section, click the **dnldLicense** radio button to download license from USB.
7. In the **Remove License** section, select a value from the list, to remove one or all licenses.
8. Click **Apply**.

   When the file installation is complete, a warning message appears prompting you to restart the switch to activate the license.

   For information about restarting the switch, see Configuring system parameters using EDM on page 282.

Saving the current configuration using EDM

The configuration currently in use on a switch is regularly saved to the flash memory automatically. However, you can manually initiate this process using the **Save Configuration** tab.

Use the following procedure to save the current configuration manually.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **File System**.
3. On the work area, click the **Save Configuration** tab.
4. Select the **AutosaveToNvramEnabled** check box to enable automatically saving the configuration to the flash memory.

   OR

   Clear the **AutosaveToNvramEnabled** check box to disable automatically saving the configuration to the flash memory.
5. Choose **copyConfigToNvram** in the **Action** field.
6. On the toolbar, click **Apply**.
7. Click **Refresh**.

Variable definitions

Use the information in the following table to save the current configuration.

Variable	Value
AutosaveToNvramEnabled	If selected, automatically saves the configuration to the flash memory.
Action	Indicates the action that you want to perform. Available options are: • other • copyConfigToNvram
Status	Indicates the current status.

Viewing flash information using EDM

Use the following procedure to display the currently loaded and operational agent, image, and flash load status for an individual switch or a stack.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **File System**.
3. In the work area, click the **FLASH** tab to view the software status.

Variable definitions

Use the data in this table to help you understand the currently loaded and operational software status display.

Variable	Value
Unit	Indicates the unit
Type	Indicates the type of
Version	Indicates the software version.
UsedSize	Indicates the used size.
CurSize	Indicates the current size.
Description	Indicates the description.
Age	Indicates the age.
Important: When the currently loaded and operational software status is displayed for a stack, the unit number is replaced by the word **All**.	

Configuring IPv6 global properties using EDM

Use the following procedure to configure IPv6 global properties.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **IPv6**.
3. On the work area, click the **Globals** tab.
4. Configure the IPv6 globally.
5. On the toolbar, click **Apply** to save the changes.
6. Click **Refresh** to display updated information.

Variable definitions

Use the data in this table to help you configure IPv6 globally.

Variable	Value
AdminEnabled	Enables or disables administration function.
OperEnabled	Indicates the operational status of the interface (enabled or disabled).
DefaultHopLimit	Indicates the Hop Limit. DEFAULT: 30
IcmpNetUnreach	Enables or disables the ICMP net unreach feature. DEFAULT: disabled
IcmpRedirectMsg	Indicates whether the ICMP redirect message feature is enabled (true) or disabled (false).
IcmpErrorInterval	Indicates the time to wait before sending an ICMP error message. A value of 0 means the system does not send an ICMP error message. Range is 0–2147483647 ms. DEFAULT: 10000
IcmpErrorQuota	Indicates the number of ICMP error messages that can be sent out during ICMP error interval. DEFAULT: 50
MulticastAdminStatus	Indicates the admin status for multicast for this interface.

IPv6 interface management using EDM

Use the information in this section to view, create, or delete IPv6 interfaces.

Viewing IPv6 interfaces using EDM

Use the following procedure to view an IPv6 interface ID to a VLAN to learn the ID.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **IPv6**.
3. On the work area, click the **Interfaces** tab.

Variable definitions

Use the data in this table to help you understand the Interfaces tab.

Variable	Value
IfIndex	Identifies a physical interface or a logical interface (VLAN). For a VLAN, it is the Ifindex of the VLAN.

Table continues…

Variable	Value
Identifier	Specifies the IPv6 address interface identifier, which is a binary string of up to 8 octets in network byte order.
IdentifierLength	Specifies the length of the interface identifier in bits.
Descr	Specifies a text string containing information about the interface. The network management system also sets this string.
VlanId	Identifies the Virtual LAN associated with the entry. This value corresponds to the lower 12 bits in the IEEE 802.1Q VLAN tag.
Type	Specifies Unicast, the only supported type.
ReasmMaxSize(MTU)	Specifies the MTU for this IPv6 interface. This value must be same for all the IP addresses defined on this interface. The default value is 1280.
PhysAddress	Specifies the media-dependent physical address. The range is 0 through 65535. For Ethernet, this is a MAC address.
AdminStatus	Specifies whether the administration status of the interface is enabled (true) or disabled (false). The default is enabled (true).
OperStatus	Specifies whether the operation status of the interface is up or down.
ReachableTime	Specifies the time (3600000 ms) that a neighbor is considered reachable after receiving a reachability confirmation.
RetransmitTime	Specifies the RetransmitTime, which is the time (3600000 ms) between retransmissions of neighbor solicitation messages to a neighbor when resolving the address or when probing the reachability of a neighbor.
MulticastAdminStatus	Specifies the multicast status as either True or False.

Creating an IPv6 interface using EDM

Use the following procedure to create an IPv6 interface.

Prerequisites

- Ensure that VLAN is configured before you assign an interface identifier, or an IPv6 address to the VLAN.
- The switch supports port-based and protocol-based VLANs. For more information about configuring VLANs, see *Configuring VLANs, Spanning Tree, and Multi-Link Trunking on Avaya Ethernet Routing Switch 4800 Series*, NN47205-501.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **IPv6**.
3. On the work area, click the **Interfaces** tab.
4. On the toolbar, click **Insert**.
5. Configure the IPv6 interface.

6. Click **Insert**.
7. On the toolbar, click **Apply**.

Variable definitions

Use the data in the following table to create an IPv6 interface.

Variable	Value
IfIndex	Identifies a physical interface or a logical interface (VLAN). For a VLAN, it is the Ifindex of the VLAN.
Identifier	Specifies the IPv6 address interface identifier, which is a binary string of up to 8 octets in network byte order.
Descr	Specifies a text string containing information about the interface. The network management system also sets this string.
ReasmMaxSize(MTU)	Specifies the MTU for this IPv6 interface. This value must be same for all the IP addresses defined on this interface. Value: 1280–9600
AdminStatus	Specifies whether the administration status of the interface is enabled (true) or disabled (false).
ReachableTime	Specifies the time (in milliseconds) that a neighbor is considered reachable after receiving a reachability confirmation. Value: 0–36000000 ms
RetransmitTime	Specifies the RetransmitTime, which is 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. Value: 0–36000000 ms

Deleting an IPv6 interface using EDM

Use the following procedure to delete an IPv6 interface.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **IPv6**.
3. On the work area, click the **Interfaces** tab.
4. To select an interface to delete, click the **IfIndex**.
5. Click **Delete** .

Graphing IPv6 Interface Statistics using EDM

Use the following procedure to display and graph IPv6 interface statistics for a switch or stack.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **IPv6**.
3. On the work area, click the **Interfaces** tab.
4. In the table, select the **IfIndex** you want to view.
5. On the toolbar, click **Graph**.

Variable definitions

The following table defines the variables for the Static Routes window

Variable	Value
InReceives	Indicates the total number of input datagrams received from interfaces, including those received in error.
InHdrErrors	Indicates the number of input datagrams discarded due to errors in their IP headers, including bad checksums, version number mismatch, other format errors, time-to-live exceeded, errors discovered in processing their IP options.
InNoRoutes	Indicates the number of input IP datagrams discarded because no route is found to transmit them to their destination.
InAddrErrors	Indicates the number of input datagrams discarded because the IP address in their IP header's destination field was not a valid address to be received at this entity. This count includes invalid addresses (for example, 0.0.0.0) and addresses of unsupported Classes (for example, Class E). For entities which are not IP Gateways and therefore do not forward datagrams, this counter includes datagrams discarded because the destination address was not a local address.
InUnknownProtos	Indicates the number of locally-addressed datagrams received successfully but discarded because of an unknown or unsupported protocol.

Table continues…

Variable	Value
InTruncatedPkts	Indicates the number of input IP datagrams discarded because the datagram frame did not carry enough data.
InDiscards	Indicates the number of input IP datagrams for which no problems were encountered to prevent their continued processing, but which were discarded (for example, for lack of buffer space). Note that this counter does not include any datagrams discarded while awaiting reassembly.
InDelivers	Indicates the total number of input datagrams successfully delivered to IP user-protocols (including ICMP).
OutForwDatagrams	Indicates the number of datagrams for which this entity was not their final IP destination and for which it was successful in finding a path to their final destination. In entities that do not act as IP routers, this counter will include only those datagrams that were Source-Routed through this entity, and the Source-Route processing was successful.
OutRequests	Indicates the total number of IP datagrams which local IP user-protocols (including ICMP) supplied to IP in requests for transmission. Note that this counter does not include any datagrams counted in ipForwDatagrams.
OutDiscards	Indicates the number of output IP datagrams for which no problem was encountered to prevent their transmission to their destination, but which were discarded (for example, for lack of buffer space). **Note:** This counter includes datagrams counted in ipForwDatagrams if any such packets met this (discretionary) discard criterion.
OutFragOKs	Indicates the number of IP datagrams that are successfully fragmented.
OutFragFails	Indicates the number of IP datagrams that are discarded because they needed to be fragmented but are not. This includes IPv4 packets that have the DF bit set and IPv6 packets that are being forwarded and exceed the outgoing link MTU.
OutFragCreates	Indicates the number of output datagram fragments that are generated because of IP fragmentation.
ReasmReqds	Indicates the number of IP fragments received which needed to be reassembled at this entity.

Table continues…

Variable	Value
ReasmOKs	Indicates the number of IP datagrams successfully reassembled.
ReasmFails	Indicates the number of failures detected by the IP re-assembly algorithm (for whatever reason: timed out, errors). Note that this is not necessarily a count of discarded IP fragments since some algorithms (notably the algorithm in RFC 815) can lose track of the number of fragments by combining them as they are received.
InMcastPkts	Indicates the number of IP multicast datagrams received.
OutMcastPkts	Indicates the number of IP multicast datagrams transmitted.

Important:

You can also change the **Poll Interval** by selecting and clicking on a value from the drop down list. The default value for the **Poll Interval** is 10ms.

Configuring an IPv6 address using EDM

Use this procedure to configure an IPv6 address for a switch or stack.

Procedure steps

1. From the navigation tree, double-click **IPv6** .
2. In the IPv6 tree, double-click **IPv6**.
3. In the work area, click the **Addresses** tab.
4. Click **Insert**.
5. Accept the default **IfIndex** value.

   OR

   Click **Vlan** to select a value from the list.
6. In the **Addr** box, type an IPv6 address.
7. In the **AddrLen** box, type the IPv6 prefix length.
8. In the **Type** section, click a radio button.
9. Click **Insert**.
10. Click **Apply** .

Variable definitions

Use the data in the following table to help you configure an IPv6 address for a switch or stack.

Variable	Value
IfIndex	This is the Ifindex of the VLAN.
Addr	Indicates the interface IPv6 address.
AddrLen	Indicates the interface IPv6 prefix length.
Type	Specifies the interface address type. Values include: • unicast • anycast
Origin	Indicates the origin of the interface address. Values include: • other • manual • dhcp • linklayer • random
Status	Indicates the status of the interface address. Values include: • preferred • deprecated • invalid • inaccessible • unknown • tentative • duplicate
Created	Indicates the value of the system up time when this address was created. A value of 0 indicates that this address was created before the last network management subsystem initialization.
LastChanged	Indicates the value of the system up time when this address was last updated. A value of 0 indicates that this address was updated before the last network management subsystem initialization.

Configuring IPv6 static routes using EDM

Use the following procedure to configure IPv6 static routes for a switch or stack.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **IPv6**.
3. On the work area, click the **Static Routes** tab.
4. On the toolbar, click **Insert**.

   The Insert Static Routes dialog box appears.
5. Configure the parameter as required.
6. Click **Insert** to save the changes.

Variable definitions

The following table defines the variables for the Static Routes window.

Variable	Value
Dest	Specifies the destination IP address of this route. An entry with a value of 0.0.0.0 is considered a default route. Multiple routes to a single destination can appear in the table, but access to such multiple entries depends on the table-access mechanisms defined by the network management protocol in use.
PrefixLength	Indicates the number of leading one bits which form the mask to be logical-ANDed with the destination address before being compared to the value in the rcIpv6StaticRouteDestAddr field.
NextHop	Specifies the IP address of the next hop of this route. (In the case of a route bound to an interface which is realized through a broadcast media, the value of this field is the agent's IP address on that interface).
IfIndex	Specifies the index value which uniquely identifies the local interface through which the next hop of this route is reached. The interface identified by a particular value of this index is the same interface as identified by the same value of ifIndex.
Status	Used to create or delete entries.

IPv6 neighbor cache management using EDM

Use the information in this section to view and configure the IPv6 neighbor cache.

Viewing the IPv6 neighbor cache using EDM

View the neighbor cache to discover information about neighbors in your network. Neighbor cache in IPv6 is similar to the IPv4 Address Resolution Protocol (ARP) table. The neighbor cache is a set of entries for individual neighbors to which traffic was sent recently. You make entries on the neighbor on-link unicast IP address, including information such as the link-layer address. A neighbor cache entry contains information used by the Neighbor Unreachability Detection algorithm, including the reachability state, the number of unanswered probes, and the time the next Neighbor Unreachability Detection event is scheduled.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **IPv6**.
3. On the work area, click the **Neighbors** tab.

Variable definitions

Use the data in this table to help you view the Neighbors tab.

Variable	Value
IfIndex	Specifies a unique Identifier of a physical interface or a logical interface (VLAN). For the VLAN, the value is the Ifindex of the VLAN.
NetAddress	Indicates the IP address corresponding to the media-dependent physical address.
PhysAddress	Indicates the media-dependent physical address. The range is 0–65535. For Ethernet, this is a MAC address.
Interface	Indicates either a physical port ID or the Multi-Link Trunking port ID. This entry is associated either with a port or with the Multi-Link Trunking in a VLAN.
LastUpdated	Specifies the value of sysUpTime at the time this entry was last updated. If this entry was updated prior to the last reinitialization of the local network management subsystem, this object contains a zero value.
Type	Specifies the types of mapping. • Dynamic type—indicates that the IP address to the physical address mapping is dynamically resolved using, for example, IPv4 ARP or the IPv6 Neighbor Discovery Protocol. • Static type—indicates that the mapping is statically configured.

Table continues…

Variable	Value
	• Local type—indicates that the mapping is provided for the interface address. The default is static.
State	Specifies the Neighbor Unreachability Detection state for the interface when the address mapping in this entry is used. If Neighbor Unreachability Detection is not in use (for example, for IPv4), this object is always unknown. Options include the following: • reachable—confirmed reachability • stale—unconfirmed reachability • delay—waiting for reachability confirmation before entering the probe state • probe—actively probing • invalid—an invalidated mapping • unknown—state cannot be determined • incomplete—address resolution is being performed

Configuring the IPv6 neighbor cache using EDM

Use the following procedure to configure the IPv6 neighbor cache.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **IPv6**
3. On the work area, click the **Neighbors** tab.
4. On the toolbar, click **Insert**.
5. Configure the parameters as required.
6. Click **Insert**.
7. Click **Apply**.

Variable definitions

The following table lists the fields in the Insert Neighbors dialog box.

Variable	Value
IfIndex	Indicates a unique identifier to a physical interface or a logical interface (VLAN). For the VLAN, the value is the Ifindex of the VLAN.

Table continues…

Variable	Value
NetAddress	Indicates the IP address corresponding to the media-dependent physical address.
PhysAddress	Indicates the media-dependent physical address. The range is 0–65535. For Ethernet, this is a MAC address.
Interface	Indicates either a physical port ID or the Multi-Link Trunking port ID. This entry is associated either with a port or with the Multi-Link Trunking in a VLAN.

Deleting the IPv6 neighbor cache using EDM

Use this procedure to delete the IPv6 neighbor cache.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **IPv6**.
3. On the work area, click the **Neighbors** tab.
4. To select an cache to delete, click the **IfIndex**.
5. Click **Delete** .

Graphing IPv6 interface ICMP statistics using EDM

Use the following procedure to display and graph the IPv6 ICMP statistics.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **IPv6**.
3. On the work area, click the **ICMP Stats** tab.
4. Click **Clear Counters** to reset the statistics.
5. Configure the **Poll interval** as required.
6. Highlight a data column to graph.
7. On the toolbar, click **Line Chart**, **Area Chart**, **Bar Chart**, or **Pie Chart**.

Variable definitions

The following table lists the fields in the ICMP Stats tab.

Variable	Value
InMsgs	Indicates the number of ICMP messages received.
InErrors	Indicates the number of ICMP error messages received.
OutMsgs	Indicates the number of ICMP messages sent.
OutErrors	Indicates the number of ICMP error messages sent.
Poll Interval	Sets polling interval. Value: 5s, 10s, 30s, 1m, 5m, 30m. 1h

Viewing ICMP message statistics using EDM

Use the following procedure to display the IPv6 interface ICMP message statistics.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **IPv6**.
3. On the work area, click the **ICMP Msg Stats** tab.
4. On the toolbar, click **Refresh** to update the ICMP message statistics.

Variable definitions

Use the data in the following table to display ICMP message statistics.

Variable	Value
Type	Indicates the type of packet received or sent.
InPkts	Indicates the number of packets received.
OutPkts	Indicates the number of packets sent.

Displaying IPv6 TCP global properties using EDM

Use the following procedure to display IPv6 TCP global properties.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **TCP/UDP**.
3. On the work area, click the **TCP Globals** tab.
4. Click **Refresh** to update the information.

Variable definitions

Use the data in the following table to display IPv6 TCP global properties.

Variable	Value
RtoAlgorithm	Indicates the algorithm identifier.
RtoMin	Indicates the minimum value in milliseconds.
RtoMax	Indicates the maximum value in milliseconds.
MaxConn	Indicates the maximum number of connections.

Displaying IPv6 TCP connections using EDM

Use the following procedure to display IPv6 TCP connections.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **TCP/UDP**.
3. On the work area, click the **TCP Connections** tab.
4. Click **Refresh** to update the information.

Variable definitions

Use the data in the following table to display IPv6 TCP connections.

Variable	Value
LocalAddressType	Indicates the type of the local address.

Table continues…

Variable	Value
LocalAddress	Indicates the local address.
LocalPort	Indicates the local port.
RemAddressType	Indicates the type of the remote address.
RemAddress	Indicates the remote address.
RemPort	Indicates the remote port.
State	Enables or disables the state.

Displaying IPv6 TCP listeners using EDM

Use the following procedure to display IPv6 TCP listeners.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **TCP/UDP**.
3. On the work area, click the **TCP Listeners** tab.
4. Click **Refresh** to update the information.

Variable definitions

Use the data in the following table to display IPv6 TCP listeners.

Variable	Value
LocalAddressType	Indicates the local IP address type. Values include IPv4 or IPv6.
LocalAddress	Indicates the local IPv4 or IPv6 address.
Local Port	Indicates the local port.

Displaying IPv6 UDP endpoints using EDM

Use the following procedure to display IPv6 UDP endpoints.

Procedure steps

1. From the navigation tree, double-click **IPv6**.
2. In the IPv6 tree, double-click **TCP/UDP**.
3. On the work area, click the **UDP Endpoints** tab.
4. Click **Refresh** to update the information.

Variable definitions

Use the data in the following table to display IPv6 UDP endpoints.

Variable	Value
LocalAddressType	Indicates the local address.
LocalAddress	Indicates the local address port.
Local Port	Indicates the local port.
RemoteAddressType	Indicates the remote address type.
RemoteAddress	Indicates the remote address.
RemotePort	Indicates the remote port.
Instance	Indicates the instance.
Process	Indicates the process.

Viewing SFP GBIC ports using EDM

Use the following procedure to view the SFP GBIC ports.

Procedure steps

1. From the **Device Physical View**, click a unit.
2. From the navigation tree, double-click **Edit**.
3. In the Edit tree, double click **Chassis**.
4. In the Chassis tree, double-click **Ports**.

Initiating a cable diagnostic test using EDM

Use this procedure to initiate and display results for a cable diagnostic test on a specific switch port, using the Time Domain Reflectometer (TDR).

Procedure steps

1. From the **Device Physical View** right-click a port.
2. Click **Edit**.
3. In the work area, click the **TDR** tab.
4. Select the **StartTest** check box.
5. Click **Apply**.

Variable definitions

Use the data in this table to initiate a cable diagnostic test and help you understand the TDR display.

Variable	Value
StartTest	When selected, enables the cable diagnostic test.
TestDone	Indicates whether the TDR test is complete (true) or not (false).
CableStatus	Indicates the status of the cable as a summation of the status of the cable conductor pairs. • 1—Fail: the cable is experiencing any combination of open and shorted pairs • 2—Normal: the cable is operating normally with no fault found
Pair1Status	Indicates the status of the first pair in the cable. Values include: • 1—pairFail • 2—pairNormal • 3—pairOpen • 4—pairShorted • 5—pairNotApplicable • 6—pairNotTested • 7—pairForce • 8—pinShort

Table continues…

Variable	Value
	Important: If a 10MB or 100MB link is established without autonegotiation, Pair 1 returns Forced mode. The pair length is meaningless in this case.
Pair1Length	Indicates the length of the first pair in the cable, in meters, measured by the TDR.
Pair2Status	Indicates the status of the second pair in the cable. Values include: • 1—pairFail • 2—pairNormal • 3—pairOpen • 4—pairShorted • 5—pairNotApplicable • 6—pairNotTested • 7—pairForce • 8—pinShort
Pair2Length	Indicates the length of the second pair in the cable, in meters, measured by the TDR.
Pair3Status	Indicates the status of the third pair in the cable. Values include: • 1—pairFail • 2—pairNormal • 3—pairOpen • 4—pairShorted • 5—pairNotApplicable • 6—pairNotTested • 7—pairForce • 8—pinShort
Pair3Length	Indicates the length of the third pair in the cable, in meters, measured by the TDR.
Pair4Status	Indicates the status of the fourth pair in the cable. Values include: • 1—pairFail • 2—pairNormal • 3—pairOpen • 4—pairShorted

Table continues…

Variable	Value
	• 5—pairNotApplicable • 6—pairNotTested • 7—pairForce • 8—pinShort
Pair4Length	Indicates the length of the third pair in the cable, in meters, measured by the TDR.
CableLength	Indicates the length of cable, in meters, based on average electrical length of 4 pairs. This measurement can be performed whether or not network traffic is present on the cable.
Pair1Polarity	Indicates the polarity of the first pair in the cable. This capability is available only when the cable gigabit link is up, regardless of traffic activity. Values include: • 1—inversed • 2—normal • 3—invalid
Pair1Swap	Indicates the status of the pin assignments for the first pair in the cable. Values include: • 1—normal • 2—swapped • 3—invalid • 4—error
Pair1Skew	Indicates the differential length, in meters, of the first pair in the cable. The skew measurement can be performed only when the cable gigabit link is up, regardless of traffic activity. A value of –1 means an error occurred with the length measurement.
Pair2Polarity	Indicates the polarity of the second pair in the cable. This capability is available only when the cable gigabit link is up, regardless of traffic activity. Values include: • 1—inversed • 2—normal • 3—invalid
Pair2Swap	Indicates the status of the pin assignments for the second pair in the cable. Values include: • 1—normal

Table continues…

Variable	Value
	• 2—swapped • 3—invalid • 4—error
Pair2Skew	Indicates the differential length, in meters, of the second pair in the cable. The skew measurement can be performed only when the cable gigabit link is up, regardless of traffic activity. A value of –1 means an error occurred with the length measurement.
Pair3Polarity	Indicates the polarity of the third pair in the cable. This capability is available only when the cable gigabit link is up, regardless of traffic activity. Values include: • 1—inversed • 2—normal • 3—invalid
Pair3Swap	Indicates the status of the pin assignments for the third pair in the cable. Values include: • 1—normal • 2—swapped • 3—invalid • 4—error
Pair3Skew	Indicates the differential length, in meters, of the third pair in the cable. The skew measurement can be performed only when the cable gigabit link is up, regardless of traffic activity. A value of –1 means an error occurred with the length measurement.
Pair4Polarity	Indicates the polarity of the fourth pair in the cable. This capability is available only when the cable gigabit link is up, regardless of traffic activity. Values include: • 1—inversed • 2—normal • 3—invalid
Pair4Swap	Indicates the status of the pin assignments for the fourth pair in the cable. Values include: • 1—normal • 2—swapped • 3—invalid

Table continues…

Variable	Value
	• 4—error
Pair4Skew	Indicates the differential length, in meters, of the fourth pair in the cable. The skew measurement can be performed only when the cable gigabit link is up, regardless of traffic activity. A value of –1 means an error occurred with the length measurement.

Viewing basic system bridge information using EDM

Use this procedure to display system bridge information, including the MAC address, type, and number of ports participating in the bridge.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Bridge**.
3. On the work area, click the **Base** tab.

Variable definitions

Variable	Value
BridgeAddress	Indicates the MAC address of the bridge when it is uniquely referred to. This address must be the smallest MAC address of all ports that belong to the bridge. However, it must be unique. When concatenated with dot1dStpPriority, a unique bridge ID is formed that is then used in the Spanning Tree Protocol.
NumPorts	Indicates the number of ports controlled by the bridging entity.
Type	Indicates the type of bridging this bridge can perform. If the bridge is actually performing a certain type of bridging, this fact is indicated by entries in the port table for the given type.

Viewing transparent bridge information using EDM

Use the following procedure to display information about learned forwarding entry discards and to configure the aging time and MAC learning.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Bridge**.
3. On the work area, click the **Transparent** tab.
4. In the **AgingTime** dialog box, type a value.
5. To select a port to enable learning, click the **MacAddrTableLearningPorts** ellipsis.
6. To enable MAC learning, select one or more port numbers.

   OR

   To disable MAC learning, deselect one or more port numbers.

   Note:

   If you disable or enable a port that is part of an active MLT trunk or has the same LACP key, you also disable or enable the other ports in the trunk so that all ports in the trunk share the same behavior.
7. Click **Ok**.
8. On the tool bar, click **Apply**.

Variable definitions

Variable	Value
LearnedEntryDiscards	Indicates the number of Forwarding Database entries learned that are discarded due to insufficient space in the Forwarding Database. If this counter increases, it indicates that the Forwarding Database is becoming full regularly. This condition affects the performance of the subnetwork. If the counter has a significant value and is not presently increasing, it indicates that the problem has occurred but is not persistent.
AgingTime	Indicates the time-out period in seconds for removing old dynamically learned forwarding information. **Important:** The 802.1D-1990 specification recommends a default of 300 seconds.
MacAddrTableLearningPorts	Specifies the ports which are enabled for MAC learning.

Viewing forwarding bridge information using EDM

Use this procedure to display information about bridge forwarding status.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Bridge**.
3. On the work area, click the **Forwarding** tab.
4. To select specific bridge port status information display criteria, click **Filter**.
5. Select filtering criteria.
6. Click **Filter** .

Variable definitions

Use the data in the following table to help you understand the bridge port status display.

Variable	Value
Id	Specifies the VLAN identifier.
Address	Indicates the unicast MAC address for which the bridge has forwarding or filtering information.
Port	Indicates the port number. The source address must be equal to the value of the corresponding instance of dot1dTpFdbAddress A value of 0 indicates that the port number has not been learned, so the bridge does have the forwarding or filtering information for this address (in the dot1dStaticTable). You must assign the port value to this object whenever it is learned even for addresses for which the corresponding value of dot1dTpFdbStatus is not learned.
Status	Indicates the values for this field include: • invalid: Entry is no longer valid, but has not been removed from the table. • learned: Value of the corresponding instance of dot1dTpFdbPort was learned and is being used. • self: Value of the corresponding instance of dot1dTpFdbAddress represents an address of the bridge. The corresponding instance of dot1dTpFdbPort indicates that a specific port on the bridge has this address. • mgmt(5): Value of the corresponding instance of dot1dTpFdbAddress is also the value of an existing instance of dot1dStaticAddress. • other: None of the preceding. This includes instances where another MIB object (not the corresponding instance of dot1dTpFdbPort or an entry in the dot1dStaticTable) is used to determine if frames addressed to the value of dot1dTpFdbAddress are being forwarded.

Graphing port bridge statistics using EDM

Use the following procedure to graph port bridge statistical information.

Procedure steps

1. From the Device Physical View, click a port.
2. From the navigation tree, double-click **Graph**.
3. In the Graph tree, double-click **Port** .
4. In the work area, click the **Bridge** tab.
5. On the toolbar, select a value from the **Poll Interval** list.
6. To reset the statistics counters, click **Clear Counters**.
7. To select bridge statistical information to graph, click a data row under a column heading.
8. On the toolbar, click **Line Chart**, **Area Chart**, **Bar Chart**, or **Pie Chart**column.

Variable definitions

Use the data in the following table to help you understand port bridge statistics.

Variable	Value
DelayExceededDiscards	Number of frames discarded by the port due to excessive transit delays through the bridge. It is incremented by both transparent and source route bridges.
MtuExceededDiscards	Number of frames discarded by the port due to an excessive size. It is incremented by both transparent and source route bridges.
InFrames	The number of frames that have been received by this port from its segment.
OutFrames	The number of frames that have been received by this port from its segment.
InDiscards	Count of valid frames received which were discarded (filtered) by the Forwarding Process.

NTP configuration using Enterprise Device Manager

This section describes how to configure the Network Time Protocol (NTP) using Enterprise Device Manager.

Prerequisites to NTP configuration using EDM

Prerequisites

Before you configure NTP, you must perform the following tasks:

- Configure an IP interface on the switch and ensure that the NTP server is reachable through this interface. For instructions, see *Configuring IP Routing and Multicast on Avaya Ethernet Routing Switch 4800 Series*, NN47205-506.

Important:

NTP server MD5 authentication does not support passwords (keys) that start with a special character or that contain a space between characters.

Enabling NTP globally using EDM

Use this procedure to enable NTP globally on the switch. Default values are in effect for most NTP parameters.

Important:

If NTP is already activated, this configuration does not take effect until you disable NTP, and then re-enable it.

Procedure steps

1. From the navigation tree, click **Edit**.
2. In the Edit tree, click **NTP**.
3. On the **Globals** tab, select the **Enable** check box.
4. Click **Apply**.

Variable definitions

The following table provides the parameters for the Globalstat tab fields.

Variable definition

Variable	Value
Enable	Activates or disables NTP. DEFAULT: NTP is disabled.
Interval	Specifies the time interval (in minutes) between successive NTP updates within the range of 10 to 1440 minutes. DEFAULT: 15 minutes
ManualSyncRequest	Specifies to immediately attempt a synchronization with the NTP servers.

Adding or removing an NTP server using EDM

Use this procedure to add or remove a remote NTP server to the configuration by specifying its IP address. NTP adds this IP address to a list of servers, which the local NTP client uses when it queries remote time servers for time information. The list of qualified servers called to as a peer list. You can configure a maximum of 10 time servers.

Procedure steps

1. From the navigation tree, click **Edit**.
2. In the Edit tree, click **NTP**.
3. Click the **Server** tab.
4. Click **Insert**.
5. Specify the IP address of the NTP server.
6. Click **Insert**.

   The IP address of the NTP server that you configured is displayed in the ServerAddress tab of the NTP dialog box.

Variable definitions

The following table provides the parameters for the Server tab fields.

Variable definition

Variable	Value
Address	Specifies the IP address of the remote NTP server.
Enable	Activates or disables the remote NTP server.
Authentication	Activates or disables MD5 authentication on this NTP server. MD5 produces a message digest of the key. MD5 verifies the integrity of the communication, authenticates the origin, and checks for timeliness. DEFAULT: no MD5 authentication
KeyId	Specifies the key ID used to generate the MD5 digest for this NTP server within the range of 1 to 214743647. DEFAULT: 1, which indicates that authentication is disabled
AccessAttempts	Specifies the number of NTP requests sent to this NTP server.
AccessSuccess	Specifies the number of times this NTP server updated the time.
AccessFailure	Specifies the number of times this NTP server was rejected while attempting to update the time.

Table continues…

Variable	Value
Stratum	This variable is the stratum of the server.
Version	This variable is the NTP version of the server.
RootDelay	This variable is the root delay of the server.
Precision	This variable is the NTP precision of the server in seconds.
Reachable	This variable is the NTP reach ability of the server.
Synchronized	This variable is the status of synchronization with the server.

Configuring authentication keys using EDM

Use this procedure to assign an NTP key to use MD5 authentication on the server.

Procedure steps

1. From the navigation tree, click **Edit**.
2. In the Edit tree, click **NTP**.
3. Click the **Key** tab.
4. Click **Insert**.
5. Insert the key ID and the MD5 key ID in the Insert Key dialog box.
6. Click **Insert**.

   The values that you specified for the key ID and the MD5 key ID are displayed in the Key tab of the NTP dialog box.

Variable definitions

The following table provides the parameters for the Key tab fields.

Variable definition

Variable	Value
KeyId	Specifies the key id used to generate the MD5 digest within a range of 1 to 214743647. DEFAULT: 1, which indicates that authentication is disabled.
KeySecret	This field is the MD5 key used to generate the MD5 Digest. The key can be an alphanumeric string between 0 and 8. **Note:** You cannot specify the number sign (#) as a value in the KeySecret field. The NTP server

Table continues…

Variable	Value
	interprets the # as the beginning of a comment and truncates all text entered after the #. This limitation applies to xntpd, the NTP daemon, version 3 or lower.

Configuring SNTP using EDM

Use the following procedure to configure Simple Network Time Protocol (SNTP).

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **SNTP/Clock**.
3. In the work area, click the **Simple Network Time Protocol** tab.
4. In the **PrimaryServerInetAddressType** section, click a radio button.
5. In the **PrimaryServerInetAddress** dialog box, type a value.
6. In the **SecondaryServerInetAddressType** section, click a radio button.
7. In the **SecondaryServerInetAddress** dialog box, type a value.
8. In the **State** section, click a radio button.
9. In the **SyncInterval** dialog box, type a value.
10. In the ManualSyncRequest section, click the **requestSync** radio button to synchronize the switch with the NTP server.
11. Click **Apply** .

Variable definitions

Use the data in this table to configure SNTP.

Variable	Value
PrimaryServerInetAddress Type	Specifies the primary SNTP server IP address type. Values include ipv4 and ipv6.
PrimaryServerInetAddress	Specifies the IP address of the primary SNTP server.
SecondaryServerInetAddress Type	Specifies the secondary SNTP server IP address type. Values include ipv4 and ipv6.

Table continues…

Variable	Value
SecondaryServerInetAddress	Specifies the IP address of the secondary SNTP server.
State	Specifies if the switch uses SNTP to synchronize the switch clock to the Coordinated Universal Time (UTC). • disabled—the device cannot synchronize its clock using SNTP • enabled (unicast)—the device synchronizes to UTC shortly after start time when network access becomes available, and periodically thereafter
SynchInterval	Specifies the frequency, in hours, that the device attempts to synchronize with the NTP servers. Values range from 0 to 168. With a value of 0, synchronization occurs only when the switch boots up.
ManualSyncRequest	Specifies that the device to immediately attempt to synchronize with the NTP servers.
LastSyncTime	Indicates the Coordinated Universal Time (UTC) when the device last synchronized with an NTP server. This is a read-only value.
LastSyncSourceInetAddress Type	Indicates the IP source address type of the NTP server with which this device last synchronized.
LastSyncSourceInetAddress	Indicates the IP source address of the NTP server with which this device last synchronized. This is a read-only value.
NextSyncTime	Indicates the UTC at which the next synchronization is scheduled.
PrimaryServerSyncFailures	Indicates the number of times the switch failed to synchronize with the primary server address. However, synchronization with the secondary server address can still occur.
SecondaryServerSyncFailures	Indicates the number of times the switch failed to synchronize with the secondary server address,
CurrentTime	Indicates the current switch UTC.

Configuring the local time zone using EDM

Use the following procedure to set a local time zone.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **SNTP/Clock**.
3. In the work area, click the**Time Zone** tab.

4. In the **TimeZone** box, select the time zone offset.
5. In the **TimeZoneAcronym** dialog box, type a time zone acronym.
6. Click **Apply**.

Variable definitions

The following table describes the Time Zone screen fields.

Variable	Value
TimeZone	Specifies the time zone of the switch, measured as an offset in 15-minute increments from Greenwich Mean Time (GMT).
TimeZoneAcronym	Specifies the time zone acronym.

Configuring daylight savings time using EDM

Use this procedure to configure the start and end of the daylight saving time period.

Prerequisites

- Disable the summer time recurring feature.

Procedure steps

1. From the navigation tree, double-click Edit.
2. In the Edit tree, double-click **SNTP/Clock**.
3. In the work area, click the **Daylight Saving Time** tab.
4. In the **Offset** dialog box, type a value.
5. In the **TimeZoneAcronym** dialog box, type the time zone acronym.
6. In the **StartYear** dialog box, type a value.
7. In the **StartMonth** box, select a month.
8. In the **StartDay** dialog box, type a value.
9. In the **StartHour** box, select an hour.
10. In the **StartMinutes** dialog box, type a value.
11. In the **EndYear** dialog box, type a value.
12. In the **EndMonth** box, select a month.

13. In the **EndDay** dialog box, type a value.
14. In the **EndHour** box, select an hour.
15. In the **EndMinutes** dialog box, type a value.
16. Select the **Enabled** check box to enable daylight saving time for the switch.

    OR

    Clear the **Enabled** check box to disable daylight saving time for the switch.
17. Click **Apply** .

Variable definitions

Use the data in this table to configure the start and end of the daylight saving time period.

Variable	Value
Offset	Specifies the time in minutes by which you want to change the time when daylight savings begins and ends. The offset is added to the current time when daylight saving time begins and subtracted from the current time when daylight saving time ends.
TimeZoneAcronym	Specifies a time zone acronym.
StartYear	Specifies the year from when you want to start the daylight savings time.
StartMonth	Specifies the month of each year from when you want to start the daylight savings time.
StartDay	Specifies the day of the particular month from when you want to start the daylight savings time.
StartHour	Specifies the hour of the particular day from when you want to start the daylight savings time.
StartMinutes	Specifies the minutes of the particular hour from when you want to start the daylight savings time.
EndYear	Specifies the year when to end the daylight savings time.
EndMonth	Specifies the month of each year when to end the daylight savings time.
EndDay	Specifies the day of the particular month when to end the daylight savings time.
EndHour	Specifies the hour of the particular day when to end the daylight savings time.
EndMinutes	Specifies the minute of the particular hour when to end the daylight savings time.
Enabled	Enables or disables daylight saving time.

Table continues…

Variable	Value
	Important: Before you enable daylight saving time, configure the feature attributes.

Configuring recurring daylight saving time using EDM

Use this procedure to configure the daylight saving time start and end times for a single occurrence or to recur yearly.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **SNTP/Clock**.
3. In the work area, click the **Summer Time Recurring** tab.
4. Select the **Recurring** check box to enable recurring daylight saving time for the switch.

   OR

   Clear the **Recurring** check box to disable recurring daylight saving time for the switch.
5. In **RecurringStartMonth**, make a selection from the drop-down list.
6. In **RecurringStartWeek**., click a button.
7. In **RecurringStartDay**, make a selection from the drop-down list.
8. In **RecurringStartHour**, make a selection from the drop-down list.
9. In the **RecurringStartMinute** dialog box, type a value from 0 to 59.
10. In **RecurringEndMonth**, make a selection from the drop-down list.
11. In **RecurringEndWeek**, click a button.
12. In **RecurringEndDay**, make a selection from the drop-down list.
13. In **RecurringEndHour**, make a selection from the drop-down list.
14. In the **RecurringEndMinute** dialog box, type a value from 0 to 59.
15. In the **RecurringOffset** dialog box, type a value from 1 to 1440.
16. On the tool bar, click **Apply**.

Variable definitions

Use the data in this table to configure recurring daylight saving time.

Variable	Value
Recurring	When selected, enables daylight saving time to recur yearly.
RecurringStartMonth	Specifies the month of each year you want recurring daylight savings time to start.
RecurringStartWeek	Specifies the week of the month you want recurring daylight savings time to start. Week 5 may not apply in certain years. In that case summer time start falls back to the 'last' option. For example: in a year where there is no Sunday in the fifth week of March, summer time will start on the last Sunday of March.
RecurringStartDay	Specifies the day of the particular month you want recurring daylight savings time to start.
RecurringStartHour	Specifies the hour of the particular day you want recurring daylight savings time to start.
RecurringStartMinute	Specifies the minutes of the particular hour you want recurring daylight savings time to start.
RecurringEndMonth	Specifies the month of each year you want recurring daylight savings time to end.
RecurringEndWeek	Specifies the week of the month you want recurring daylight savings time to end. Week 5 may not apply in certain years. In that case summer time start falls back to the 'last' option. For example: in a year where there is no Sunday in the fifth week of October, summer time will end on the last Sunday of October.
RecurringEndDay	Specifies the day of the particular month you want recurring daylight savings time to end.
RecurringEndHour	Specifies the hour of the particular day you want recurring daylight savings time to end.
RecurringEndMinute	Specifies the minutes of the particular hour you want recurring daylight savings time to end.
RecurringOffset	Specifies the time in minutes by which you want to change the time when recurring daylight savings begins and ends. The offset is added to the current time when daylight saving time begins and subtracted from the current time when daylight saving time ends.

Enabling or disabling UTC timestamp in ACLI show command outputs

Use this procedure to enable or disable the display of the UTC timestamp in ACLI show command outputs. The default, the timestamp state is disabled.

Procedure

1. Log on to ACLI in Global Configuration command mode.
2. To enable the display of the UTC timestamp, enter the following command:

   ```
   cli timestamp enable
   ```

3. To disable the display of the UTC timestamp, enter the following command:

   ```
   no cli timestamp enable
   ```

Link-state configuration using EDM

Use the following procedure to configure link-state using EDM.

Enabling link-state tracking

About this task

Link-state tracking (LST) binds the link state of multiple interfaces. The association between the upstream and downstream interfaces form link-state tracking group.

To enable link-state tracking, create a link-state group, and specify the interfaces that are assigned to the link-state group. The downstream interfaces are bound to the upstream interfaces. After assigning the upstream and downstream interfaces, enable the link-state group.

Procedure

1. From the navigation tree, double-click **Administration**.
2. In the Administration tree, double-click **Edit**.
3. In the Edit tree, click **Link State Tracking**.
4. On the **Link State Tracking** tab, click the **GroupId** to select the group.
5. In the **GroupId** row, double-click the cell in the **UpstreamPortList** column.
6. Select the ports and click **Ok**.
7. Double-click the cell in the **DownstreamPortList** column.
8. Select the ports and click **Ok**.

9. Double-click the cell in the **UpstreamMLTList** column.
10. Select the trunks and click **Ok**.
11. Double-click the cell in the **DownstreamMLTList** column.
12. Select the trunks and click **Ok**.
13. Double-click the cell in the **Enabled** column.
14. Click **true** to enable the selected group.
15. The **OperState** displays if the tracking group configuration status.
16. Click **Apply**, to save the configuration.

Variable definitions

The following table defines the variables for the Link State Tracking window.

Name	Description
GroupId	Specifies the link-state tracking group ID.
Enabled	Specifies if the link-state group is enabled or not. Values are: • true • False
UpstreamPortList	Specifies the ports that can be added to the link-state group as up stream ports.
DownstreamPortList	Specifies the ports that can be added to link-state group as down stream ports.
UpstreamMltList	Specifies the trunks that can be added to the up stream MLT list.
DownstreamMltList	Specifies the trunks that can be added to the down stream MLT list.
OperState	Displays the operating status of the link-state group.

Viewing network topology information using EDM

Use this procedure to display network topology information.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostics tree, double-click **Topology**.

4. In the work area, click the **Topology** tab.
5. In the **Status** section, click a radio button..
6. Click **Apply** .

Variable definitions

Use the data in this table to help you understand the topology display.

Variable	Value
IpAddr	Indicates the IP address of the device.
Status	Specifies whether Avaya topology is on (topOn) or off (topOff) for the device. The default value is topOn.
NmmLstChg	Indicates the value of sysUpTime the last time an entry in the network management MIB (NMM) topology table was added, deleted, or modified. If the table has not changed since the last cold or warm start of the agent.
NmmMaxNum	Indicates the maximum number of entries in the NMM topology table.
NmmCurNum	Indicates the current number of entries in the NMM topology table.

Viewing the topology table using EDM

Use this procedure to display the topology table.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostics tree, double-click **Topology**.
4. In the work area, click the **Topology Table** tab.

Variable definitions

Use the data in this table to help you understand the topology table display.

Variable	Value
Slot	Indicates the slot number in the chassis in which the topology message was received.
Port	Indicates the port on which the topology message was received.

Table continues…

Variable	Value
IpAddr	Indicates the IP address of the sender of the topology message.
SegId	Indicates the segment identifier of the segment from which the remote agent sent the topology message. This value is extracted from the message.
MacAddr	Indicates the MAC address of the sender of the topology message.
ChassisType	Indicates the chassis type of the device that sent the topology message.
BkplType	Indicates the backplane type of the device that sent the topology message.
LocalSeg	Indicates if the sender of the topology message is on the same Ethernet segment as the reporting agent.
CurState	Indicates the current state of the sender of the topology message. The choices are: • topChanged—Topology information has recently changed. • heartbeat—Topology information is unchanged. • new—The sending agent is in a new state.

LLDP configuration using EDM

Use the information in this section to configure and view Link Layer Discovery Protocol (LLDP) global and transmit properties for local and neighbor systems:

Configuring LLDP globally using EDM

Use the following procedure to configure LLDP transmit properties and view remote table statistics.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **LLDP**.
5. On the work area, click the **Globals** tab.
6. Edit global LLDP transmit properties.
7. Click **Apply** .

Variable definitions

The following table describes the Globals tab fields.

Variable	Value
lldpMessageTxInterval	Indicates interval, in seconds, at which LLDP frames are transmitted on behalf of this LLDP agent.
lldpMessageTx HoldMultiplier	Indicates the time-to-live value expressed as a multiple of the object. The actual time-to-live value used in LLDP frames, transmitted on behalf of this LLDP agent, is expressed by the following formula: TTL = min(65535, (lldpMessageTxInterval *lldpMessageTxHoldMultiplier) For example, if the value of lldpMessageTxInterval is 30, and the value of lldpMessageTxHoldMultiplier is 4, the value 120 is encoded in the TTL field in the LLDP header.
lldpReinitDelay	Indicates the lldpReinitDelay indicates the delay (in seconds) from when the LLDP Port AdminStatus of a particular port is disabled until reinitialization begins.
lldpTxDelay	Indicates the lldpTxDelay indicates the delay (in seconds) between successive LLDP frame transmissions initiated by value or status changes in the LLDP local systems MIB. The recommended value for the lldpTxDelay is set by the following formula: 1 <= lldpTxDelay <= (0.25 * lldpMessageTxInterval)
lldpNotificationInterval	Controls the transmission of LLDP notifications. The agent must not generate more than one lldpRemTablesChange notification-event in the indicated period, where a *notification-event* is the "transmission of a single notification PDU type to a list of notification destinations." If additional changes in lldpRemoteSystemsData object groups occur within the indicated throttling period, these trap-events must be suppressed by the agent. An NMS must periodically check the value of lldpStatsRemTableLastChangeTime to detect any missed lldpRemTablesChange notification-events, for example, due to throttling or transmission loss. If notification transmission is enabled for particular ports, the suggested default throttling period is 5 seconds.
RemTablesLast ChangeTime	Indicates the value of the sysUpTime object (defined in IETF RFC 3418) at the time an entry is created, modified, or deleted in tables associated with the lldpRemoteSystemsData objects, and all LLDP extension objects associated with remote systems. An NMS can use this object to reduce polling of the lldpRemoteSystemsData objects.
RemTablesInserts	Indicates the number of times the complete set of information advertised by a particular MSAP is inserted into tables in lldpRemoteSystemsData and lldpExtensions objects. The complete set of information received from a particular MSAP is inserted into related tables. If partial information cannot be inserted for a reason such as lack of resources, all of the complete set of information is removed. This counter is incremented only once after the complete set of information is successfully recorded in all related tables. Any failures occurring

Table continues…

Variable	Value
	during insertion of the information set, which result in deletion of previously inserted information, do not trigger any changes in lldpStatsRemTablesInserts because the insert is not completed yet or in lldpStatsRemTablesDeletes, because the deletion is only a partial deletion. If the failure is the result of a lack of resources, the lldpStatsRemTablesDrops counter is incremented once.
RemTablesDeletes	Indicates the number of times the complete set of information advertised by a particular MSAP is deleted from tables in lldpRemoteSystemsData and lldpExtensions objects. This counter is incremented only once when the complete set of information is completely deleted from all related tables. Partial deletions, such as a deletion of rows associated with a particular MSAP, from some tables, but not from all tables, are not allowed, and thus, do not change the value of this counter.
RemTablesDrops	Indicates the number of times the complete set of information advertised by a particular MSAP can not be entered into tables in lldpRemoteSystemsData and lldpExtensions objects because of insufficient resources.
RemTablesAgeouts	Indicates the number of times the complete set of information advertised by a particular MSAP is deleted from tables in lldpRemoteSystemsData and lldpExtensions objects because the information timeliness interval has expired. This counter is incremented only once when the complete set of information is completely invalidated (aged out) from all related tables. Partial aging, similar to deletion case, is not allowed, and thus, does not change the value of this counter.
FastStartRepeatCount	Indicates the number of times the fast start LLDPDU is sent during the activation of the fast start mechanism defined by LLDP-MED.

Configuring port LLDP using EDM

Use the following procedure to configure the optional TLVs to include in the LLDPUs transmitted by each port.

Procedure steps

Procedure

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **LLDP**.
5. On the work area, click the **Port** tab.

6. To configure LLDP for a port, double-click a cell in a port row under a column heading.
7. Click **Apply**.
8. Optionally, to configure parameters for multiple ports, you can use the Make Selection section as below.
9. 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.
10. In the Port Editor window, click the ports you want to configure.

    Note:

    If you want to configure all ports, click **All**.
11. Click **OK** to return to the Make Selection pane.

    The ports you selected appear in the Switch/Stack/Ports box.
12. 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:
    - If applicable, select a value from a drop-down list.
    - Otherwise, type a value in the cell.
13. In the Make Selection pane, click **Apply Selection**.

    The changes appear in the table.
14. **(Optional)** Click **Clear Selection** to clear Multiple Port Configurations or click **Hide Non-Editable** to display only those parameters that are editable in the Multiple Port Configuration pane for the selected ports.
15. On the toolbar, click **Apply**.

Variable definitions

The following table describes the Port tab fields.

Variable	Value
PortNum	Indicates the port number. This is a read-only cell.
AdminStatus	Indicates the administratively desired status of the local LLDP agent: • txOnly: the LLDP agent transmits LLDP frames on this port and does not store any information about the remote systems to which it is connected. • rxOnly: the LLDP agent receives but does not transmit LLDP frames on this port. • txAndRx: the LLDP agent transmits and receives LLDP frames on this port. To enable LLDP support for PoE+, this option must be enabled. By default, this option is enabled on all the PWR+ switch ports.

Table continues…

Variable	Value
	• disabled: the LLDP agent does not transmit or receive LLDP frames on this port. If the port receives remote systems information which is stored in other tables before AdminStatus is disabled, the information ages out.
NotificationEnable	Controls, on a per-port basis, whether notifications from the agent are enabled. • true: indicates that notifications are enabled • false: indicates that notifications are disabled.
TLVsTxEnable	Sets the optional Management TLVs to be included in the transmitted LLDPDUs: • portDesc: Port Description TLV • sysName: System Name TLV • sysDesc: System Description TLV • sysCap: System Capabilities TLV **Note:** The Local Management tab controls Management Address TLV transmission.
VLANTxEnable(dot1)	Specifies whether the IEEE 802.1 organizationally defined port VLAN TLV transmission is included in the transmitted LLDPDUs.
TLVsTxEnable(dot3)	Sets the optional IEEE 802.3 organizationally defined TLVs to be included in the transmitted LLDPDUs: • macPhyConfigStatus: MAC/PHY configuration/status TLV • powerViaMDI: Power over MDI TLV • linkAggregation: Link Aggregation TLV • maxFrameSize: Maximum-frame-size TLV.
CapSupported(med)	Identifies which MED system capabilities are supported on the local system. This is a read-only cell.
TLVsTxEnable(med)	Sets the optional organizationally defined TLVs for MED devices to include in the transmitted LLDPDUs. • capabilities: Capabilities TLVs • networkPolicy: Network Policy TLVs • location: Emergency Communications System Location TLVs • extendedPSE: Extended PoE TLVs with PSE capabilities • inventory: Hardware Revision, Firmware Revision, Software Revision, Serial Number, Manufacturer Name, Model Name, and Asset ID TLVs. The preceding list of TLVs are enabled by default.
NotifyEnable(med)	Enables or disables the topology change traps on this port.

Viewing LLDP TX statistics using EDM

Use the following procedure to display LLDP transmit statistics by port.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click**802.1AB**.
4. In the 802.1AB tree, double-click **LLDP**.
5. On the work area, click the **TX Stats** tab.

Variable definitions

The following table describes the TX Stats tab fields.

Variable	Value
PortNum	Indicates the port number
FramesTotal	Indicates the number of LLDP frames transmitted by this LLDP agent on the indicated port

Graphing LLDP transmit statistics using EDM

Use the following procedure to graph LLDP transmit statistics

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **LLDP**.
5. On the work area, click the **TX Stats** tab.
6. In the table, select the port for which you want to display statistics.
7. On the toolbar, click **Graph**.
8. Highlight a data column to graph.
9. On the toolbar, click a graph button.

Viewing LLDP RX statistics using EDM

Use the following procedure to display LLDP receive statistics by port.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **LLDP**.
5. On the work area, click the **RX Stats** tab.

Variable definitions

The following table describes the RX Stats tab fields.

Variable	Value
PortNum	Indicates the port number.
FramesDiscardedTotal	Indicates the number of LLDP frames received on the port and discarded for any reason. This counter provides an indication that LLDP header formatting problems exist with the local LLDP agent in the sending system, or that LLDPDU validation problems exist with the local LLDP agent in the receiving system.
FramesErrors	Indicates the number of invalid LLDP frames received on the port, while the LLDP agent is enabled.
FramesTotal	Indicates the number of valid LLDP frames received on the port, while the LLDP agent is enabled.
TLVsDiscardedTotal	Indicates the number of LLDP TLVs discarded for any reason.
TLVsUnrecognizedTotal	Indicates the number of LLDP TLVs received on a given port that are not recognized by this LLDP agent on the indicated port. An unrecognized TLV is referred to as the TLV whose type value is in the range of reserved TLV types (000 1001–111 1110) in Table 9.1 of IEEE 802.1ab-2004. An unrecognized TLV can be a basic management TLV from a later LLDP version.
AgeoutsTotal	Represents the number of age-outs that occurred on a given port. An age-out is "the number of times the complete set of information advertised by a particular MSAP is deleted from tables in lldpRemoteSystemsData and lldpExtensions objects because the information timeliness interval has expired." This counter is similar to lldpStatsRemTablesAgeouts, except that it is on a per-port basis. This enables NMS to poll tables associated with the lldpRemoteSystemsData objects and all LLDP extension objects associated with remote systems on the indicated port only. This counter is set to zero during agent initialization. When the admin status for a port changes from disabled to rxOnly, txOnly or txAndRx, the counter associated with the same port is reset to 0. The agent also flushes all remote system information associated with the same port. This

Table continues…

Variable	Value
	counter is incremented only once when the complete set of information is invalidated (aged out) from all related tables on a particular port. Partial aging is not allowed, and thus, does not change the value of this counter.

Graphing LLDP RX statistics using EDM

Use the following procedure to graph LLDP receive statistics.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **LLDP**.
5. On the work area, click the **RX Stats** tab.
6. In the table, select the port for which you want to display statistics.
7. On the toolbar, click **Graph**.
8. Highlight a data column to graph.
9. On the toolbar, click a graph button.

Viewing LLDP local system information using EDM

Use the following procedure to display LLDP properties for the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **LLDP**.
5. On the work area, click the **Local System** tab.

Variable definitions

The following table describes the Local System tab fields.

Variable	Value
ChassisIdSubtype	Indicates the type of encoding used to identify the local system chassis: • chassisComponent • interfaceAlias • portComponent • macAddress • networkAddress • interfaceName • local
ChassisId	Indicates the chassis ID.
SysName	Indicates the local system name.
SysDesc	Indicates the local system description.
SysCapSupported	Indicates the system capabilities supported on the local system.
SysCapEnabled	Indicates the system capabilities that are enabled on the local system
DeviceClass	Indicates the MED device class.
HardwareRev	Indicates the vendor-specific hardware revision string.
FirmwareRev	Indicates the vendor-specific firmware revision string.
SoftwareRev	Indicates the vendor-specific software revision string.
SerialNum	Indicates the vendor-specific serial number.
MfgName	Indicates the vendor-specific manufacturer name.
ModelName	Indicates the vendor-specific model name.
AssetID	Indicates the vendor-specific asset tracking identifier
DeviceType	Defines the type of Power-via-MDI (PoE). • pseDevice • pdDevice • none
PDPowerSource	Defines the type of PD Power Source.
PDPowerReq	Specifies the value of the power required in 0.1 W increments by a PD.
PSEPowerSource	Defines the type of PSE Power Source (primary or back-up).
PDPowerPriority	Defines the Powered Device (PD) power priority. • critical • high • low

Viewing LLDP local port information using EDM

Use the following procedure to display LLDP port properties for the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **LLDP**.
5. On the work area, click the **Local Port** tab.

Variable definitions

The following table describes the Local Port tab fields.

Variable	Value
PortNum	Indicates the port number.
PortIdSubtype	Indicates the type of port identifier encoding used in the associated PortId object. • interfaceAlias • portComponent • macAddress • networkAddress • interfaceName • agentCircuitId • local.
PortId	Indicates the string value used to identify the port component associated with a given port in the local system.
PortDesc	Indicates the string value used to identify the 802 LAN station port description associated with the local system. If the local agent supports IETF RFC 2863, the PortDesc object has the same value as the ifDescr object.

Viewing LLDP local management information using EDM

Use the following procedure to display LLDP management properties for the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.

3. In the Diagnostic tree, click **802.1AB**.
4. In the 802.1AB tree, click **LLDP**.
5. In the work area, click the **Local Management** tab.

Variable definitions

The following table describes the Local Management tab fields.

Variable	Value
AddrSubtype	Indicates the type of management address identifier encoding used in the associated Addr object.
Addr	Indicates the string value used to identify the management address component associated with the local system. This address is used to contact the management entity. The switch supports IPv4 and IPv6 management addresses. **Note:** If you configure both IPv4 and IPv6 management addresses, the switch displays each on a separate row.
AddrLen	Indicates the total length of the management address subtype and the management address fields in LLDPDUs transmitted by the local LLDP agent. The management address length field is needed so that the receiving systems that do not implement SNMP are not required to implement the family numbers/ address length equivalency table to decode the management address.
AddrIfSubtype	Identifies the numbering method used to define the interface number associated with the remote system. • unknown • ifIndex • systemPortNumber
AddrIfId	Indicates the integer value used to identify the interface number of the management address component associated with the local system.
AddrOID	Indicates the value used to identify the type of hardware component or protocol entity associated with the management address advertised by the local system agent.
AddrPortsTxEnable	Specifies the ports on which the local system management address TLVs are transmitted in the LLDPUs.

Enabling or disabling LLDP Management Address TLV transmission using EDM

Use the following procedure to enable or disable the transmission of Management Address TLVs on the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **LLDP**.
5. In the work area, click the **Local Management** tab.
6. Double-lick the cell in the **AddPortsTxEnable** column for an IPv4 or IPv6 row.
7. To enable the transmission of Management Address TLVs, select one or more port numbers.

   OR

   To disable the transmission of Management Address TLVs, deselect one or more port numbers.
8. Click **Ok**.
9. On the toolbar, click **Apply**.

Viewing LLDP neighbor information using EDM

Use the following procedure to display LLDP properties for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **LLDP**.
5. On the work area, click the **Neighbor** tab.

Variable definitions

The following table describes the Neighbor tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry. For more information about TimeFilter, see the TimeFilter textual convention in IETF RFC 2021.
LocalPortNum	Identifies the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.

Table continues…

Variable	Value
ChassisIdSubtype	Indicates the type of encoding used to identify the remote system chassis: • chassisComponent • interfaceAlias • portComponent • macAddress • networkAddress • interfaceName • local.
ChassisId	Indicates the remote chassis ID.
SysCapSupported	Identifies the system capabilities supported on the remote system.
SysCapEnabled	Identifies the system capabilities that are enabled on the remote system.
SysName	Indicates the remote system name.
SysDesc	Indicates the remote system description.
PortIdSubtype	Indicates the type of encoding used to identify the remote port. • interfaceAlias • portComponent • macAddress • networkAddress • interfaceName • agentCircuitId • local
PortId	Indicates the remote port ID.
PortDesc	Indicates the remote port description.

Viewing LLDP neighbor management information using EDM

Use the following procedure to display LLDP management properties for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostic tree, click **802.1AB**.
4. In the 802.1AB tree, click **LLDP**.

5. In the work area, click the **Neighbor Mgmt Address** tab.

Variable definitions

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Indicates the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
AddrSubtype	Indicates the type of encoding used in the associated Addr object.
Addr	Indicates the management address associated with the remote system. The switch supports IPv4 and IPv6 management addresses. **Note:** If you configure both IPv4 and IPv6 management addresses, the switch displays each on a separate row.
AddrIfSubtype	Indicates the numbering method used to define the interface number associated with the remote system. • unknown • ifIndex • systemPortNumber
AddrIfId	Indicates the integer value used to identify the interface number of the management address component associated with the remote system.
AddrOID	Indicates the value used to identify the type of hardware component or protocol entity associated with the management address advertised by the remote system agent.

Viewing LLDP unknown TLV information using EDM

Use the following procedure to display details about unknown TLVs received on the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **LLDP**.
5. On the work area, click the **Unknown TLV** tab.

Variable definitions

The following table describes the Unknown TLV tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Indicates the local port which receives the remote system information.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
UnknownTLVType	Indicates the value extracted from the type field of the unknown TLV.
UnknownTLVInfo	Indicates the value extracted from the value field of the unknown TLV.

Viewing LLDP organizational defined information using EDM

Use the following procedure to display organizational-specific properties for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **LLDP**.
5. On the work area, click the **Organizational Defined Info** tab.

Variable definitions

The following table describes the Organizational Defined Info tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Indicates the local port that receives the remote system information.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
OrgDefInfoOUI	Indicates the Organizationally Unique Identifier, as defined in IEEE 802-2001, is a 24 bit (three octets) globally unique

Table continues…

Variable	Value
	assigned number referenced by various standards, of the information received from the remote system.
OrgDefInfoSubtype	Indicates the integer value used to identify the subtype of the organizationally defined information received from the remote system. The subtype value is required to identify different instances of organizationally defined information that cannot be retrieved without a unique identifier that indicates the particular type of information in the information string.
OrgDefInfoIndex	Represents an arbitrary local integer value used by this agent to identify a particular unrecognized organizationally defined information instance, unique only for the OrgDefInfoOUI and lldpRemOrgDefInfoSubtype of the same remote system. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot. It is unlikely that the lldpRemOrgDefInfoIndex will wrap between reboots.
OrdDefInfo	Indicates the string value used to identify the organizationally defined information of the remote system. The encoding for this object is the same as that defined for SnmpAdminString TC.

LLDP Port dot1 configuration using EDM

Use the information in this section to configure and view IEEE 802.1 LLDP information.

Viewing local VLAN Id information using EDM

Use the following procedure to display LLDP VLAN ID properties for the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot1**.
5. On the work area, click the **Local VLAN Id** tab.

Variable definitions

The following table describes the Local VLAN Id tab fields.

Variable	Value
PortNum	Indicates the port number.
VlanId	Indicates the local port VLAN ID. A value of zero is used if the system does not know the PVID.

Viewing LLDP local protocol VLAN information using EDM

Use the following procedure to display LLDP local protocol VLAN properties for the local system and to enable or disable the transmission of this information from a specified port.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot1**.
5. On the work area, click the **Local Protocol VLAN** tab.
6. To select a port to edit, click the port row.
7. In the port row, double-click the cell in the **ProtoVlanTxEnable** column.
8. Select a value from the list—**true** to enable transmitting local port and protocol VLAN information from the port, or **false** to disable transmitting local port and protocol VLAN information from the port.
9. Click **Apply** .

Variable definitions

The following table describes the Local Protocol VLAN tab fields.

Variable	Value
PortNum	Indicates the port number.
ProtoVlanId	Indicates the ID of the port and protocol VLANs associated with the local port. A value of zero is used if the system does not know the protocol VLAN ID (PPVID).
ProtoVlanSuported	Indicates whether the local port supports port and protocol VLANs.
ProtoVlanEnabled	Indicates whether the port and protocol VLANs are enabled on the local port.
ProtoVlanTxEnable	Specifies whether the corresponding local port and protocol VLAN information are transmitted from the port.

Viewing LLDP local VLAN name information using EDM

Use the following procedure to display LLDP VLAN Name properties for the local system and to enable or disable the transmission of this information from a specified port.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot1**.
5. On the work area, click the **Local VLAN Name** tab.
6. To select a port to edit, click the port row.
7. In the port row, double-click the cell in the **VlanNameTxEnable** column.
8. Select a value from the list—**true** to enable transmitting local VLAN name information from the port, or **false** to disable transmitting local VLAN name information from the port.
9. Click **Apply** .

Variable definitions

The following table describes the Local VLAN Name tab fields.

Variable	Value
PortNum	Indicates the port number.
VlanId	Indicates the integer value used to identify the IEEE 802.1Q VLAN IDs with which the given port is compatible.
VlanName	Indicates the string value used to identify the VLAN name identified by the VLAN ID associated with the given port on the local system. This object contains the value of the dot1QVLANStaticName object (defined in IETF RFC 2674) identified with the given lldpXdot1LocVlanId.
VlanNameTxEnable	Specifies whether the corresponding Local System VLAN name instance is transmitted from the port.

Viewing LLDP local protocol information using EDM

Use the following procedure to display LLDP protocol properties for the local system and to enable or disable the transmission of this information from a specified port.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.

3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot1**.
5. On the work area, click the **Local Protocol** tab.
6. To select a port to edit, click the port row.
7. In the port row, double-click the cell in the **VlanNameTxEnable** column.
8. Select a value from the list—**true** to enable transmitting local protocol information from the port, or **false** to disable transmitting local protocol information from the port.
9. Click **Apply** .

Variable definitions

The following table describes the Local Protocol tab fields.

Variable	Value
PortNum	Indicates the port number.
ProtocolIndex	Indicates the arbitrary local integer value used by this agent to identify a particular protocol identity.
ProtocolId	Indicates the octet string value used to identify the protocols associated with the given port of the local system.
ProtocolTxEnable	Specifies whether the corresponding Local System Protocol Identity instance is transmitted on the port.

Viewing LLDP neighbor VLAN ID information using EDM

Use the following procedure to view the LLDP VLAN ID properties for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot1**.
5. On the work area, click the **Neighbor VLAN Id** tab.

Variable definitions

The following table describes the Neighbor VLAN ID tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.

Table continues…

Variable	Value
LocalPortNum	Identifies the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
VlanId	Indicates the port VLAN identifier associated with the remote system. If the remote system does not know the PVID or does not support port-based VLAN operation, the value is zero.

Viewing LLDP neighbor protocol VLAN information using EDM

Use the following procedure to display LLDP protocol VLAN properties for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot1**.
5. On the work area, click the **Neighbor Protocol VLAN** tab.

Variable definitions

The following table describes the Neighbor Protocol VLAN tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Identifies the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
ProtoVlanId	Indicates the ID of the port and protocol VLANs associated with the remote port. A value of zero is used if the system does not know the protocol VLAN ID (PPVID).
ProtoVlanSuported	Indicates whether the remote port supports port and protocol VLANs.
ProtoVlanEnabled	Indicates whether the port and protocol VLANs are enabled on the remote port.

Viewing LLDP neighbor VLAN name information using EDM

Using the following procedure to display LLDP VLAN name properties for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot1**.
5. On the work area, click the **Neighbor VLAN Name** tab.

Variable definitions

The following table describes the Neighbor VLAN Name tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Identifies the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
VlanId	Indicates the integer value used to identify the IEEE 802.1Q VLAN IDs with which the remote port is compatible.
VlanName	Indicates the VLAN name identified by the VLAN ID associated with the remote system.

Viewing LLDP neighbor protocol information using EDM

Use the following procedure to display LLDP protocol properties for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot1**.
5. On the work area, click the **Neighbor Protocol** tab.

Variable definitions

The following table describes the Neighbor Protocol tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Indicates the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
ProtocolIndex	Represents an arbitrary local integer value used by this agent to identify a particular protocol identity.
ProtocolId	Indicates the protocols associated with the remote port.

LLDP Port dot3 configuration using EDM

Use the information in this section to configure and view IEEE 802.3 LLDP information.

Viewing LLDP local port auto-negotiation information using EDM

Use the following procedure to display LLDP auto-negotiation properties for the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot3**.
5. On the work area, click the **Local Port Auto-negotiation** tab.

Variable definitions

The following table describes the Local Port Auto-negotiation tab fields.

Variable	Value
PortNum	Indicates the port number.
AutoNegSupported	Indicates whether the local port supports Auto-negotiation.
AutoNegEnabled	Indicates whether Auto-negotiation is enabled on the local port.

Table continues…

Variable	Value
AutoNegAdvertisedCap	Contains the value (bitmap) of the ifMauAutoNegCapAdvertisedBits object (defined in IETF RFC 3636) associated with the local port on the system.
OperMauType	Indicates the value that indicates the operational MAU type of the given port on the local system.

Viewing LLDP local PoE information using EDM

Use the following procedure to display LLDP PoE properties for the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot3**.
5. On the work area, click the **Local PoE** tab.

Variable definitions

The following table describes the Local PoE tab fields.

Variable	Value
PortNum	Indicates the port number.
PowerPortClass	Indicates the port Class of the local port.
PowerMDISupported	Indicates whether MDI power is supported on the local port.
PowerMDIEnabled	Indicates whether MDI power is enabled on the local port.
PowerPairControlable	Indicates the value derived from the value of the pethPsePortPowerPairsControlAbility object (defined in IETF RFC 3621), this value is used to indicate whether pair selection can be controlled on the local port.
PowerPairs	Contains the value of the pethPsePortPowerPairs object (defined in IETF RFC 3621) for the local port: • signal • spare
PowerClass	Contains the value of the pethPsePortPowerClassifications object (defined in IETF RFC 3621) for the local port: • class0 • class1 • class2

Table continues…

Variable	Value
	• class3 • class4

Viewing Local Link Aggregate tab using EDM

Use the following procedure to display LLDP link aggregation properties for the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot3**.
5. On the work area, click the **Local Link Aggregate** tab.

Variable definitions

The following table describes the Local Link Aggregate tab fields.

Variable	Value
PortNum	Indicates the port number.
LinkAggStatus	Specifies the link aggregation capabilities and the current aggregation status of the link.
LinkAggPortId	Contains the IEEE 802.3 aggregated port identifier, aAggPortID (IEEE 802.3-2002, 30.7.2.1.1), derived from the ifNumber of the ifIndex for the port component in link aggregation. If the port is not in a link aggregation state or does not support link aggregation, this value is set to zero.

Viewing LLDP local maximum frame information using EDM

Use the following procedure to display LLDP maximum frame size properties for the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot3**.
5. On the work area, click the **Local Max Frame** tab.

Variable definitions

The following table describes the Local Max Frame tab fields.

Variable	Value
PortNum	Indicates the port number.
MaxFrameSize	Indicates the maximum frame size for the port.

Viewing LLDP neighbor port auto-negotiation information using EDM

Use the following procedure to display LLDP auto-negotiation properties for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot3**.
5. On the work area, click the **Neighbor Port Auto-negotiation** tab.

Variable definitions

The following table describes the Neighbor Port Auto-negotiation tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Indicates the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
AutoNegSupported	Indicates the truth value used to indicate whether the given port (associated with a remote system) supports Auto-negotiation.
AutoNegEnabled	Indicates whether Auto-negotiation is enabled on the remote port.
AutoNegAdvertisedCap	Contains the value (bitmap) of the ifMauAutoNegCapAdvertisedBits object (defined in IETF RFC 3636) associated with the remote port.
OperMauType	Indicates the value that indicates the operational MAU type of the given port on the remote system.

Viewing LLDP neighbor PoE information using EDM

Use the following procedure to display LLDP PoE properties for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot3**.
5. On the work area, click the **Neighbor PoE** tab.

Variable definitions

The following table describes the Neighbor PoE tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Indicates the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
PowerPortClass	Indicates the port Class of the remote port.
PowerMDISupported	Indicates whether MDI power is supported on the remote port.
PowerMDIEnabled	Indicates whether MDI power is enabled on the remote port.
PowerPairControlable	Indicates the value derived from the value of the pethPsePortPowerPairsControlAbility object (defined in IETF RFC 3621), this value is used to indicate whether pair selection can be controlled on the remote port.
PowerPairs	Contains the value of the pethPsePortPowerPairs object (defined in IETF RFC 3621) for the remote port. • signal • spare
PowerClass	Contains the value of the pethPsePortPowerClassifications object (defined in IETF RFC 3621) for the remote port. • class0 • class1 • class2 • class3

Table continues…

Variable	Value
	• class4

Viewing LLDP neighbor link aggregation information using EDM

Use the following procedure to display LLDP link aggregation properties for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port dot3**.
5. On the work area, click the **Neighbor Link Aggregate** tab.

Variable definitions

The following table describes the Neighbor Link Aggregate tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Indicates the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
LinkAggStatus	Specifies the link aggregation capabilities and the current aggregation status of the remote link.
LinkAggPortId	Contains the IEEE 802.3 aggregated port identifier, aAggPortID (IEEE 802.3-2002, 30.7.2.1.1), derived from the ifNumber of the ifIndex for the port component in link aggregation. If the port is not in a link aggregation state or does not support link aggregation, this value is set to zero.

Viewing LLDP neighbor maximum frame information using EDM

Use the following procedure to display LLDP maximum frame size properties for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.

4. In the 802.1AB tree, double-click **Port dot3**.
5. On the work area, click the **Neighbor Max Frame** tab.

Variable definitions

The following table describes the Neighbor Max Frame tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Indicates the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
MaxFrameSize	Indicates the maximum frame size for the remote port.

LLDP Port MED configuration using EDM

Use the information in this section to configure and view LLDP Media Endpoint Devices (MED) information.

LLDP MED policy management using EDM

Use the information in this section to view, create, and edit LLDP MED policies for the switch.

Viewing LLDP MED policies using EDM

Use this procedure to view LLDP MED policy properties for the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. In the work area, click the **Local Policy** tab.

Variable definitions

Use the data in the following table to help you understand the LLDP MED local policy display.

Field	Description
PortNum	Indicates the port number
PolicyAppType	Shows the policy application type.
PolicyVlanID	Indicates the extension of the VLAN Identifier for the port, as defined in IEEE 802.1P-1998. A value of 1 through 4094 is used to define a valid PVID. A value of 0 is used if the device is using priority tagged frames, meaning that only the 802.1p priority level is significant and the default VID of the ingress port is being used instead. A value of 4095 is reserved for implementation use.
PolicyPriority	Indicates the value of the 802.1p priority which is associated with the local port. The default value is 6.
PolicyDscp	Contains the value of the Differentiated Service Code Point (DSCP) as defined in IETF RFC 2474 and RFC 2475 that is associated with the given port on the local system. The default value is 46.
PolicyTagged	Indicates whether the application is using a tagged VLAN, untagged VLAN, or does not support a port based VLAN operation.

Creating LLDP MED policies using EDM

Use this procedure to create a new LLDP MED policy for the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. In the work area, click the **Local Policy** tab.
6. Click **Insert** .
7. To select a port to create a policy for, click the **PortNum** ellipsis.
8. Click **Ok** .
9. In the **PolicyAppType** section, select one or both checkboxes.
10. To select a VLAN identifier for the selected port, click the **PolicyVlanID** ellipsis.
11. Click **Ok** .
12. Double-click the **PolicyPriority** field.
13. Type a priority value.
14. Double-click the **PolicyDscp** field.
15. Type a DSCP value.
16. To use a tagged VLAN, select the **PolicyTagged** checkbox.

OR

To use an untagged VLAN, clear the **PolicyTagged** checkbox.

17. Click **Insert** .

Variable definitions

Use the data in the following table to create a new LLDP MED policy for the local system.

Field	Description
PortNum	Specifies the port on which to configure LLDP MED policies.
PolicyAppType	Specifies the policy application type. • voice—selects the voice network policy • voiceSignaling—selects the voice signalling network policy
PolicyVlanID	Specifies the VLAN identifier for the selected port or ports. Values range from 1–4094. If you select priority tagged frames, the system recognizes only the 802.1p priority level and uses a value of 0 for the VLAN ID of the ingress port.
PolicyPriority	Specifies the value of the 802.1p priority that applies to the selected switch port or ports. Values range from 0–7. The default value is 6.
PolicyDscp	Specifies the value of the Differentiated Service Code Point (DSCP) as defined in IETF RFC 2474 and RFC 2475 that is associated with the selected switch port or ports. Values range from 0–63. The default value is 46.
PolicyTagged	Specifies the type of VLAN tagging to apply on the selected switch port or ports. • when selected—uses a tagged VLAN • when cleared—uses an untagged VLAN or does not support port-based VLANs. If you select untagged, the system ignores the VLAN ID and priority values, and recognizes only the DSCP value.

Editing LLDP MED policies using EDM

Use this procedure to edit a previously configured LLDP MED policy for the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.

5. To select a policy to edit, click the **PortNum**.
6. In the policy row, double-click the cell in the**PolicyVlanID** column.
7. Select a VLAN from the list.
8. Click **Ok** .
9. In the policy row, double-click the cell in the**PolicyPriority** column.
10. Edit the policy priority value.
11. In the policy row, double-click the cell in the**PolicyDscp** column.
12. Edit the policy DSCP value.
13. In the policy row, double-click the cell in the**PolicyTagged** column.
14. Select a value from the list.
15. Click **Apply** .

Variable definitions

Use the data in the following table to edit a previously configured LLDP MED policy for the local system.

Variable	Value
PortNum	Indicates the port on which to configure LLDP MED policies. This is a read-only cell.
PolicyAppType	Indicates the policy application type. This is a read-only cell. • voice— voice network policy • voiceSignaling— voice signalling network policy
PolicyVlanID	Specifies the VLAN identifier for the selected port or ports. Values range from 1–4094. If you select priority tagged frames, the system recognizes only the 802.1p priority level and uses a value of 0 for the VLAN ID of the ingress port.
PolicyPriority	Specifies the value of the 802.1p priority that applies to the selected switch port or ports. Values range from 0–7. The default value is 6.
PolicyDscp	Specifies the value of the Differentiated Service Code Point (DSCP) as defined in IETF RFC 2474 and RFC 2475 that is associated with the selected switch port or ports. Values range from 0–63. The default value is 46.
PolicyTagged	Specifies the type of VLAN tagging to apply on the selected switch port or ports. • true—uses a tagged VLAN • false—uses an untagged VLAN or does not support port-based VLANs.

Table continues…

Variable	Value
	If you select untagged, the system ignores the VLAN ID and priority values, and recognizes only the DSCP value.

Deleting LLDP MED policies using EDM

Use this procedure to delete a LLDP MED policy.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. In the work area, click the **Local Policy** tab.
6. To select a policy to delete, click the **PortNum**.
7. Click **Delete** .

Local location information management using EDM

Use the information in this section to view and add local location information for remote network devices connected to a switch or stack.

Viewing device location information using EDM

Use this procedure to display local location information for remote network devices connected to a switch or stack.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Local Location** tab.

Variable definitions

Use the data in the following table to help you understand the remote device local location information display.

Field	Description
PortNum	Identifies the port number of the local system to which the remote device is connected.

Table continues…

Field	Description
LocationSubtype	Indicates the location subtype advertised by the remote device. • unknown • coordinateBased—location information is based on geographical coordinates of the remote device • civicAddress—location information is based on the civic address of the remote device • elin—location information is based on the Emergency Location Information Number (ELIN) of the remote device
LocationInfo	Displays local location information advertised by the remote device. The information displayed in this cell is directly associated with the location subtype value.

Adding ELIN based device location information using EDM

Use this procedure to add information to the local location table for remote network devices connected to a switch or stack, based on an Emergency Location Information Number (ELIN).

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Local Location** tab.
6. In the port row with **elin** as the location subtype, double-click the cell in the **LocationInfo** column.
7. Type an alphanumeric value from 10 to 25 characters in length.
8. Click **Apply** .

Adding coordinate and civic address based device location information using EDM

Use this procedure to add local location information to the local location table for remote network devices connected to a switch or stack, based on geographical coordinates and a civic address.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Local Location** tab.

6. To add location information based on geographical coordinates for the remote device, click the **coordinateBased** cell in the LocationSubtype column for a port.
7. To add location information based on the civic address for the remote device, click the **civicAddress** cell in the LocationSubtype column for a port.
8. Click **Location Detail**.
9. Insert the local location information for the remote device.
10. Click **Ok** .
11. Click **Apply** .

Variable definitions

Use the data in the following table to add coordinate-based location information for the remote device.

Field	Description
Latitude	Specifies the latitude in degrees, and its relation to the equator (North or South).
Longitude	Specifies the longitude in degrees, and its relation to the prime meridian (East or West).
Altitude	Specifies the altitude, and the units of measurement used (meters or floors).
Map Datum	Specifies the map reference datum. Values include: • WGS84—World Geodesic System 1984, Prime Meridian Name: Greenwich • NAD83/NAVD88—North American Datum 1983/ North American Vertical Datum of 1988 • NAD83/MLLW—North American Datum 1983/ Mean Lower Low Water

Viewing local PoE PSE information using EDM

Use this procedure to display LLDP PoE PSE information for the local system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Local PoE PSE** tab.

Variable definitions

The following table describes the Local PoE PSE tab fields.

Field	Description
PortNum	Indicates the port number.
PSEPortPowerAvailable	Contains the value of the power available (in units of 0.1 watts) from the PSE through this port.
PSEPortPDPriority	Indicates the PD power priority that is advertised on this PSE port: • unknown: priority is not configured or known by the PD • critical: the device advertises its power priority as critical, see RFC 3621 • high: the device advertises its power priority as high, see RFC 3621 • low: the device advertises its power priority as low, see RFC 3621

Viewing neighbor capabilities using EDM

Use this procedure to display LLDP capabilities for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Neighbor Capabilities** tab.

Variable definitions

The following table describes the Neighbor Capabilities tab fields.

Field	Description
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Identifies the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.

Table continues…

Field	Description
CapSupported	Identifies the MED system capabilities supported on the remote system.
CapCurrent	Identifies the MED system capabilities that are enabled on the remote system.
DeviceClass	Indicates the remote MED device class.

Viewing neighbor policies using EDM

Use this procedure to display LLDP policy information for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Neighbor Policy** tab.

Variable definitions

The following table describes the Neighbor Policy tab fields.

Field	Description
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Identifies the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
PolicyAppType	Shows the policy application type.
PolicyVlanID	Indicates the extension of the VLAN Identifier for the port, as defined in IEEE 802.1P-1998. A value of 1 through 4094 is used to define a valid PVID. A value of 0 is used if the device is using priority tagged frames, meaning that only the 802.1p priority level is significant and that the default VID of the ingress port is being used instead. A value of 4095 is reserved for implementation use.

Table continues…

Field	Description
PolicyPriority	Indicates the value of the 802.1p priority which is associated with the remote system connected to the port.
PolicyDscp	Contains the value of the Differentiated Service Code Point (DSCP) as defined in IETF RFC 2474 and RFC 2475 that is associated with the remote system connected to the port.
PolicyUnknown	Indicates whether the network policy for the specified application type is currently unknown or defined.
PolicyTagged	Indicates whether the application is using a tagged VLAN, untagged VLAN, or does not support a port based VLAN operation.

Neighbor location information management using EDM

Use the information in this section to view and add neighbor location information for network devices connected to a switch or stack.

Viewing neighbor location information using EDM

Use this procedure to display LLDP neighbor location information.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Neighbor Location** tab.

Variable definitions

The following table describes the Neighbor Location tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Identifies the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.

Table continues…

Variable	Value
LocationSubtype	Indicates the location subtype advertised by the remote device: • unknown • coordinateBased • civicAddress • elin
LocationInfo	Indicates the location information advertised by the remote device. The parsing of this information depends on the location subtype.

Adding coordinate-based neighbor location information using EDM

Use this procedure to add coordinate-based location information to the neighbor location table.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Neighbor Location** tab.
6. In the table, select a location with the **LocationSubtype** listed as **coordinateBased**.
7. On the toolbar, click the **Location Details** button.

   The Insert Local Location dialog box appears.
8. Click **Close** to close the dialog box.
9. Click **Apply** .

Adding civic address location information using EDM

Use this procedure to add civic address-based location information to the neighbor location table.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Neighbor Location** tab.
6. In the table, select a location with the **LocationSubtype** listed as **civicAddress**.
7. On the toolbar, click the **Location Details** button.

   The Insert Local Location dialog box appears.
8. Click **Close** to close the dialog box.

9. Click **Apply** .

Viewing neighbor PoE information using EDM

Use this procedure to display LLDP PoE properties for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Neighbor PoE** tab.

Variable definitions

The following table describes the Neighbor PoE tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Identifies the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
PoeDeviceType	Defines the type of Power-via-MDI (Power over Ethernet) advertised by the remote device: • pseDevice: indicates that the device is advertised as a Power Sourcing Entity (PSE). • pdDevice: indicates that the device is advertised as a Powered Device (PD). • none: indicates that the device does not support PoE.

Viewing neighbor PoE PSE information using EDM

Use this procedure to display LLDP PoE PSE information for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.

3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Neighbor PoE PSE** tab.

Variable definitions

The following table describes the Neighbor PoE PSE tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Identifies the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
PSEPowerAvailable	Specifies the power available (in units of 0.1 watts) from the PSE connected remotely to this port.
PSEPowerSource	Defines the type of PSE Power Source advertised by the remote device. • primary: indicates that the device advertises its power source as primary. • backup: indicates that the device advertises its power source as backup.
PSEPowerPriority	Specifies the priority advertised by the PSE connected remotely to the port: • critical: indicates that the device advertises its power priority as critical, see RFC 3621. • high: indicates that the device advertises its power priority as high, see RFC 3621. • low: indicates that the device advertises its power priority as low, see RFC 3621.

Viewing neighbor PoE PD information using EDM

Use this procedure to display LLDP PoE PD information for the remote system.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.

4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Neighbor PoE PD** tab.

Variable definitions

The following table describes the Neighbor PoE PD tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Identifies the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
PDPowerReq	Specifies the value of the power required (in units of 0.1 watts) by a Powered Device (PD) connected remotely to the port.
PDPowerSource	Defines the type of Power Source advertised as being used by the remote device: • fromPSE: indicates that the device advertises its power source as received from a PSE. • local: indicates that the device advertises its power source as local. • localAndPSE: indicates that the device advertises its power source as using both local and PSE power.
PDPowerPriority	Defines the priority advertised as being required by the PD connected remotely to the port: • critical: indicates that the device advertises its power priority as critical, see RFC 3621. • high: indicates that the device advertises its power priority as high, see RFC 3621. • low: indicates that the device advertises its power priority as low, see RFC 3621.

Viewing neighbor inventory using EDM

Use this procedure to display LLDP inventory information for the remote system.

Procedure steps

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

2. In the Edit tree, double-click **Diagnostics**.
3. In the Diagnostic tree, double-click **802.1AB**.
4. In the 802.1AB tree, double-click **Port MED**.
5. On the work area, click the **Neighbor Inventory** tab.

Variable definitions

The following table describes the Neighbor Inventory tab fields.

Variable	Value
TimeMark	Indicates the TimeFilter for this entry.
LocalPortNum	Identifies the local port on which the remote system information is received.
Index	Indicates the arbitrary local integer value used by this agent to identify a particular MSAP. An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot.
HardwareRev	Indicates the vendor-specific hardware revision string as advertised by the remote device.
FirmwareRev	Indicates the vendor-specific firmware revision string as advertised by the remote device.
SoftwareRev	Indicates the vendor-specific software revision string as advertised by the remote device.
SerialNum	Indicates the vendor-specific serial number as advertised by the remote device.
MfgName	Indicates the vendor-specific manufacturer name as advertised by the remote device.
ModelName	Indicates the vendor-specific model name as advertised by the remote device.
AssetID	Indicates the vendor-specific asset tracking identifier as advertised by the remote device.

Enabling or disabling Avaya TLV transmit flags using EDM

Use this procedure to enable or disable the transmission of optional proprietary Avaya TLVs from switch ports to Avaya IP phones.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.

4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Port Config** tab.
6. To select a port, click the **PortNum**.
7. In the port row, double-click the cell in the **TLVsTxEnable** column.
8. Select a checkbox to enable a TLV.

   OR

   Clear a checkbox to disable a TLV.
9. Click **Ok**.
10. On the toolbar, click **Apply**.

Variable definition

Variable	Value
poeConservationLevel	Enables or disables the TLV for requesting a specific power conservation level for an Avaya IP phone connected to the switch port. **Important:** Only Ethernet ports on switches that support PoE can request a specific power conservation level for an Avaya IP phone.
callServer	Enables or disables the TLV for advertising call server IPv4 addresses to an Avaya IP phone connected to the switch port.
fileServer	Enables or disables the TLV for advertising file server IPv4 addresses to an Avaya IP phone connected to the switch port.
framingTlv	Enables or disables the frame tagging TLV for exchanging Layer 2 priority tagging information between the switch and an Avaya IP phone.
faElementType	Enables or disables the TLV for advertising Fabric Attach operation to Fabric Attach-capable devices connected to the switch port.
faIsidVlanAsgns	Enables or disables the TLV for advertising Fabric Attach I-SID/VLAN assignments to a Fabric Attach-capable device connected to the switch port.

Viewing the Avaya TLV transmit flag status using EDM

Use this procedure to display the status of transmit flags for switch ports on which Avaya IP phone support TLVs are configured.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Port Config** tab.

Variable definition

Variable	Value
poeConservationLevel	When displayed, indicates that the TLV for requesting a specific power conservation level for an Avaya IP phone is enabled on the switch port. **Important:** Only Ethernet ports on switches that support PoE can request a specific power conservation level for an Avaya IP phone.
callServer	When displayed, indicates that call server IPv4 address advertisement to an Avaya IP phone is enabled on the switch port.
fileServer	When displayed, indicates that file server IPv4 address advertisement to an Avaya IP phone is enabled on the switch port.
framingTlv	When displayed, indicates that frame tagging is enabled on the port, for exchanging Layer 2 priority tagging information between the switch and an Avaya IP phone.
faElementType	When displayed, indicates that Fabric Attach advertisement to a Fabric Attach-capable device is enabled on the switch port.
faIsidVlanAsgns	When displayed, indicates that Fabric Attach I-SID/VLAN assignments advertisement to a Fabric Attach-capable device is enabled on the switch port.

Configuring the PoE conservation level request TLV using EDM

Use this procedure to request a specific power conservation level for an Avaya IP phone connected to a switch port.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.

4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Local Port** tab.
6. To select a port, click the **PortNum**.
7. In the port row, double-click the cell in the **PoeConsLevelRequest** column.
8. Type a value in the box.
9. On the toolbar, click **Apply**.

Variable definition

Variable	Value
PoeConsLevelRequest	Specifies the power conservation level to request for a vendor specific PD. Values range from 0 to 255. With the default value of 0, the switch does not request a power conservation level for an Avaya IP phone connected to the port.

Configuring the 802.1Q framing TLV using EDM

Use this procedure to configure the frame tagging mode for exchanging Layer 2 priority tagging information between the switch and an Avaya IP phone.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Local Port** tab.
6. To select a port, click the **PortNum**.
7. In the port row, double-click the cell in the **Dot1QFramingRequest** column.
8. Select a value from the list.
9. On the toolbar, click **Apply**.

Variable definition

Variable	Value
Dot1QFramingRequest	Specifies the frame tagging mode. Values include: • tagged—frames are tagged based on the tagging value the Avaya IP phone receives with the LLDP-MED Network Policy TLV. • non-tagged—frames are not tagged with 802.1Q priority.

Variable	Value
	• auto—an attempt is made to tag frames based on the tagging value the Avaya IP phone receives with the LLDP-MED Network Policy TLV. If there is no LLDP-MED Network Policy information available, an attempt is made to tag frames based on server configuration. If that fails, traffic is transmitted untagged. The default tagging mode is auto.

Viewing the PoE conservation level request and 802.1Q framing TLV configuration using EDM

Use this procedure to display the configuration status of the PoE conservation level request and 802.1Q framing TLVs that the switch can transmit to Avaya IP phones.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Local Port** tab.

Variable definition

Variable	Value
Dot1QFramingRequest	Displays the frame tagging mode. Values include: • tagged—frames are tagged based on the tagging value the Avaya IP phone receives with the LLDP-MED Network Policy TLV. • non-tagged—frames are not tagged with 802.1Q priority. • auto—an attempt is made to tag frames based on the tagging value the Avaya IP phone receives with the LLDP-MED Network Policy TLV. If there is no LLDP-MED Network Policy information available, an attempt is made to tag frames based on server configuration. If that fails, traffic is transmitted untagged. The default tagging mode is auto.
PoeConsLevelRequest	Specifies the power conservation level to request for a vendor specific PD. Values range from 0 to 255.

Table continues…

Variable	Value
	With the default value of 0, the switch does not request a power conservation level for an Avaya IP phone connected to the port.

Configuring the switch call server IP address TLV using EDM

Use this procedure to define the local call server IP addresses that switch ports can advertise to Avaya IP phones.

You can define IP addresses for a maximum of 8 local call servers.

Important:

The switch does not support the advertisement of IPv6 addresses to Avaya IP phones.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Local Call Servers** tab.
6. To select a port, click the **CallServerNum**.
7. In the port row, double-click the cell in the **CallServerAddress** column.
8. Type an IP address in the box.
9. On the toolbar, click **Apply**.

Variable definition

Variable	Value
CallServerNum	Displays the call server number.
CallServerAddressType	Displays the call server IP address type.
CallServerAddress	Defines the local call server IP address to advertise.

Viewing the switch call server IP address TLV configuration using EDM

Use this procedure to display information about the defined local call server IP addresses that switch ports can advertise to Avaya IP phones.

Important:

The switch does not support the advertisement of IPv6 addresses to Avaya IP phones.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Local Call Servers** tab.

Variable definition

Variable	Value
CallServerNum	Displays the call server number.
CallServerAddressType	Displays the call server IP address type.
CallServerAddress	Displays the defined call server IP address.

Configuring the switch file server IP address TLV using EDM

Use this procedure to define the local file server IP addresses that switch ports can advertise to Avaya IP phones.

You can define IP addresses for a maximum of 4 local call servers.

Note:

If your Avaya IP Handset uses SIP, 802.1AB (LLDP) TLVs do not provide all information for the IP Phone. You must specify a file server IP address TLV so the IP phone can download the SIP configuration information, because the IP Phone retrieves information related to the SIP domain, port number and transport protocol from the file server.

Important:

The switch does not support the advertisement of IPv6 addresses to Avaya IP phones.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Local File Servers** tab.

6. To select a port, click the **FileServerNum**.
7. In the port row, double-click the cell in the **FileServerAddress** column.
8. Type an IP address in the box.
9. On the toolbar, click **Apply**.

Variable definition

Variable	Value
FileServerNum	Displays the file server number.
FileServerAddressType	Displays the file server IP address type.
FileServerAddress	Defines file server IP address to advertise.

Viewing the switch file server IP address TLV configuration using EDM

Use this procedure to display information about the defined local file server IP addresses that switch ports can advertise to Avaya IP phones.

Important:

The switch does not support the advertisement of IPv6 addresses to Avaya IP phones.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Local File Servers** tab.

Variable definition

Variable	Value
FileServerNum	Displays the file server number.
FileServerAddressType	Displays the file server IP address type.
FileServerAddress	Displays the defined file server IP address.

Viewing Avaya IP phone power level TLV information using EDM

Use this procedure to display power level information received on switch ports from an Avaya IP phone.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Neighbor Devices** tab.

Variable definition

Variable	Value
TimeMark	Displays the time the latest TLV-based information is received from an Avaya IP phone.
LocalPortNum	Displays the number of the switch port on which the TLV-based information is received.
Index	Displays a unique identifier for the connected Avaya IP phone.
CurrentConsLevel	Displays the PoE conservation level configured on the Avaya IP phone connected to the switch port.
TypicalPower	Displays the average power level used by the Avaya IP phone connected to the switch port.
MaxPower	Displays the maximum power level for the Avaya IP phone connected to the switch port.

Viewing remote call server IP address TLV information using EDM

Use this procedure to display call server IP address information received on switch ports from an Avaya IP phone.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Neighbor Call Servers** tab.

Variable definition

Variable	Value
TimeMark	Displays the time the latest TLV-based information is received from an Avaya IP phone.
LocalPortNum	Displays the number of the switch port on which the TLV-based information is received.
Index	Displays a unique identifier for the connected Avaya IP phone.
PortCallServerAddressType	Displays the call server IP address type used by the Avaya IP phone connected to the switch port.
PortCallServerAddress	Displays the call server IP address used by the Avaya IP phone connected to the switch port.

Viewing remote file server IP address TLV information using EDM

Use this procedure to display file server IP address information received on switch ports from an Avaya IP phone.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Neighbor File Servers** tab.

Variable definition

Variable	Value
TimeMark	Displays the time the latest TLV-based information is received from an Avaya IP phone.
LocalPortNum	Displays the number of the switch port on which the TLV-based information is received.
Index	Displays a unique identifier for the connected Avaya IP phone.
PortFileServerAddressType	Displays the file server IP address type used by the Avaya IP phone connected to the switch port.
PortFileServerAddress	Displays the file server IP address used by the Avaya IP phone connected to the switch port.

Viewing PoE conservation level support TLV information using EDM

Use this procedure to display PoE conservation level information received on switch ports from an Avaya IP phone.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Neighbor PoE** tab.

Variable definition

Variable	Value
TimeMark	Displays the time the latest TLV-based information is received from an Avaya IP phone.
LocalPortNum	Displays the number of the switch port on which the TLV-based information is received.
Index	Displays a unique identifier for the connected Avaya IP phone.
PoeConsLevelValue	Displays the PoE conservation level supported by the Avaya IP phone connected to the switch port.

Viewing remote 802.1Q Framing TLV information using EDM

Use this procedure to display Layer 2 frame tagging mode information received on switch ports from connected Avaya IP phones.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Neighbor Dot1Q** tab.

Variable definition

Variable	Value
TimeMark	Displays the time the latest TLV-based information is received from an Avaya IP phone.
LocalPortNum	Displays the number of the switch port on which the TLV-based information is received.
Index	Displays a unique identifier for the connected Avaya IP phone.
Dot1QFraming	Displays the Layer 2 frame tagging mode for the Avaya IP phone connected to the switch port. Values include: • tagged—frames are tagged based on the tagging value the Avaya IP phone receives with the LLDP-MED Network Policy TLV. • non-tagged—frames are not tagged with 802.1Q priority. • auto—an attempt is made to tag frames based on the tagging value the Avaya IP phone receives with the LLDP-MED Network Policy TLV. If there is no LLDP-MED Network Policy information available, an attempt is made to tag frames based on server configuration. If that fails, traffic is transmitted untagged. • The default tagging mode is auto.

Viewing remote IP TLV information using EDM

Use this procedure to display IP address configuration information received on switch ports from connected Avaya IP phones.

Procedure steps

1. From the navigation tree, double-click **Edit**.
2. In the Edit tree, click **Diagnostics**.
3. In the Diagnostics tree, click **802.1AB**.
4. In the 802.1AB tree, click **Avaya**.
5. In the work area, click the **Neighbor IP Phone** tab.

Variable definition

Variable	Value
TimeMark	Displays the time the latest TLV-based information is received from an Avaya IP phone.

Table continues…

Variable	Value
LocalPortNum	Displays the number of the switch port on which the TLV-based information is received.
Index	Displays a unique identifier for the connected Avaya IP phone.
PortPhoneAddressType	Displays the IP address type for the Avaya IP phone connected to the switch port.
PortPhoneAddress	Displays the IP address for the Avaya IP phone connected to the switch port.
PortPhoneAddressMask	Displays the IP address subnet mask for the Avaya IP phone connected to the switch port.
PortPhoneGatewayAddress	Displays gateway the IP address for the Avaya IP phone connected to the switch port.

Global AES configuration using EDM

Use the information in this section to configure Avaya Energy Saver (AES) for an single switch or a stack.

Enabling global AES using EDM

Use the following procedure to enable energy saving for the switch.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **Energy Saver**.
3. In the work area, click the **Energy Saver Globals** tab.
4. Select the **EnergySaverEnabled** check box.
5. On the toolbar, click **Apply**.
6. On the toolbar, you can click **Refresh** to update the work area data display.

Variable definitions

The following table describes the Energy Saver Globals tab fields.

Variable	Value
EnergySaverEnabled	Enables or disables energy saving for the switch.

Table continues…

Variable	Value
PoePowerSavingEnabled	Enables or disables AES PoE power save mode for the switch.
EfficiencyModeEnabled	Enables or disables AES efficiency mode for the switch.
EnergySaverActive	Activates or deactivates the Avaya Energy Saver.

Disabling global AES using EDM

Use the following procedure to disable energy saving for the switch.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **Energy Saver**.
3. In the work area, click the **Energy Saver Globals** tab.
4. Clear the **EnergySaverEnabled** check box.
5. Click **Apply**.
6. On the toolbar, you can click **Refresh** to update the work area data display.

Enabling global AES PoE power save mode using EDM

Use the following procedure to enable AES PoE power save mode for the switch.

When enabled, AES PoE power save mode provides the capability to control power consumption savings for only ports that have AES enabled, and PoE priority configured to low.

Prerequisites

- Disable AES globally.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **Energy Saver**.
3. In the work area, click the **Energy Saver Globals** tab.
4. Select the **PoePowerSavingEnabled** check box.
5. Click **Apply**.
6. On the toolbar, you can click **Refresh** to update the work area data display.

Disabling global AES PoE power save mode using EDM

Use the following procedure to disable AES PoE power save mode for the switch.

When enabled, AES PoE power save mode provides the capability to control power consumption savings for only ports that have AES enabled, and PoE priority configured to low.

Prerequisites

- Disable AES globally.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **Energy Saver**.
3. In the work area, click the **Energy Saver Globals** tab.
4. Clear the **PoePowerSavingEnabled** check box.
5. Click **Apply**.
6. On the toolbar, you can click **Refresh** to update the work area data display.

Enabling AES efficiency mode using EDM

Use the following procedure to enable AES efficiency mode for the switch.

When enabled, AES efficiency mode enables AES globally and for each port, enables AES PoE power save mode, and configures AES scheduling to predetermined values (on time 18:00 and off time 07:30 daily).

Important:

AES efficiency mode overrides custom AES scheduling and PoE power saving mode. You will be prompted to confirm that you want to enable AES efficiency mode before proceeding.

Prerequisites

- Disable AES globally.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **Energy Saver**.
3. In the work area, click the **Energy Saver Globals** tab.
4. Select the **EfficiencyModeEnabled** check box.
5. Click **Apply**.
6. On the toolbar, you can click **Refresh** to update the work area data display.

Disabling AES efficiency mode using EDM

Use the following procedure to disable AES efficiency mode for the switch.

When enabled, AES efficiency mode enables AES globally and for each port, enables AES PoE power save mode, and configures AES scheduling to predetermined values (on time 18:00 and off time 07:30 daily).

Prerequisites

- Disable AES globally.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **Energy Saver**.
3. In the work area, click the **Energy Saver Globals** tab.
4. Clear the **EfficiencyModeEnabled** check box.
5. Click **Apply**.
6. On the toolbar, you can click **Refresh** to update the work area data display.

AES schedule configuration using EDM

Use the information in this section to configure a time interval for the switch to enter lower power states.

Configuring the AES schedule on time using EDM

Use the following procedure to configure the start of a time interval for the switch to enter lower power states. The time interval can span a complete week, a complete weekend, multiple days, or be configured within an individual day.

Prerequisites

- Disable AES globally.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **Energy Saver**.
3. In the work area, click the **Energy Saver Schedules** tab.
4. Click **Insert**.

5. To choose a day for the AES schedule on time, select a radio button in the **ScheduleDay** section.
6. To choose an hour of the day for the AES schedule on time, type a value in the **ScheduleHour** section.
7. To choose a portion of an hour for the AES schedule on time, type a value in the **ScheduleMinute** section.
8. To configure the selected day, hour, and minutes as the AES schedule on time, select the **activate** radio button in the ScheduleAction section.

   Activate is selected by default.
9. Click **Insert**.

Variable definitions

The following table describes the fields of Insert Energy Saver Schedule screen.

Variable	Value
ScheduleDay	Indicates the day on which this schedule entry takes effect.
ScheduleHour	Indicates the hour on which this schedule entry takes effect.
ScheduleMinute	Indicates the Minute on which this schedule entry takes effect.
ScheduleAction	Activates or deactivates the energy savings.

Configuring the AES schedule off time using EDM

Use the following procedure to configure the end of a time interval for the switch to enter lower power states. The time interval can span a complete week, a complete weekend, multiple days, or be configured within an individual day.

Prerequisites

- Disable AES globally.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **Energy Saver**.
3. In the work area, click the **Energy Saver Schedules** tab.
4. Click **Insert**.
5. To choose a day for the AES schedule off time, select a radio button in the **ScheduleDay** section.
6. To choose an hour of the day for the AES schedule off time, type a value in the **ScheduleHour** section.
7. To choose a portion of an hour for the AES schedule off time, type a value in the **ScheduleMinute** section.

8. To configure the selected day, hour, and minutes as the AES schedule off time, select the **deactivate** radio button in the ScheduleAction section.

   Activate is selected by default.

9. Click **Insert**.

Modifying an AES schedule on and off time status using EDM

Use the following procedure to change an existing schedule off time to on time or to change an existing schedule on time to off time.

Prerequisites

- Disable AES globally.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **Energy Saver**.
3. In the work area, click the **Energy Saver Schedules** tab.
4. To select a schedule time to edit, click a schedule day.
5. In the schedule day row, double-click the cell in the **ScheduleAction** column.
6. Select a value from the list—**activate** to configure the schedule time as the on time, or **deactivate** to configure the schedule time as the off time.
7. Click **Apply**.

Port-based AES configuration using EDM

Configure port-based AES to enable or disable energy saving for individual ports, or all ports on a switch or stack.

Enabling AES on individual ports using EDM

Use the following procedure to turn on AES for individual ports on a switch or stack.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **Energy Saver**.
3. In the work area, click the **ports** tab.

4. Select a **Port**.
5. In the Port row, double-click the cell in the **EnergySaverEnabled** column.
6. Select **true** from the list.
7. Repeat steps 4, 5 and 6 to enable AES for additional ports as required.
8. Click **Apply**.
9. On the toolbar, you can click **Refresh** to update the work area data display.

Variable definitions

The following table describes the fields of Ports tab.

Variable	Value
Port	Indicates the port.
EnergySaverEnabled	Indicates whether the Avaya Energy Saver feature is enabled for the port.

Disabling AES on individual ports using EDM

Use the following procedure to turn off AES for individual ports on a switch or stack.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **Energy Saver**.
3. In the work area, click the **ports** tab.
4. Select a **Port**.
5. In the Port row, double-click the cell in the **EnergySaverEnabled** column.
6. Select **false** from the list.
7. Repeat steps 4, 5 and 6 to disable AES for additional ports as required.
8. Click **Apply**.
9. On the toolbar, you can click **Refresh** to update the work area data display.

Viewing AES information using EDM

Use the following procedure to display energy saving information for an individual switch or switches in a stack.

Procedure steps

1. From the navigation tree, double-click **Power Management**.
2. In the Power Management tree, double-click **Energy Saver**.
3. In the work area, click the **Energy Savings** tab.
4. On the toolbar, you can click **Refresh** update the data.

Variable definitions

Use the data in this table to help you understand the displayed AES information.

Variable	Value
Total	Indicates the total power saving values for all switches in a stack.
UnitIndex	Indicates the unit number of the switch.
UnitSavings(watts)	Indicates the total power capacity being saved on the switch.
PoeSavings(watts)	Indicates the total PoE power being saved on the switch.

Chapter 8: Configuration reference

The sections in this chapter provide information on the factory default configuration.

Factory default configuration

When you initially access a newly installed switch or you reset a switch to factory defaults, the switch is in a factory default configuration. This factory default configuration is the base configuration from which you build the switch configuration.

Table 17: Factory default configuration settings on page 407 outlines the factory default configuration settings present in a switch in a factory default state.

Table 17: Factory default configuration settings

Setting	Factory default configuration value
Unit Select switch	non-Base
Unit	1
BootP Request Mode	BootP or Default IP
In-Band Stack IP Address	0.0.0.0 (no IP address assigned)
In-Band Switch IP Address	0.0.0.0 (no IP address assigned)
In-Band Subnet Mask	0.0.0.0 (no subnet mask assigned)
Default Gateway	0.0.0.0 (no IP address assigned)
Read-Only Community String	public
read/write Community String	private
Trap IP Address	0.0.0.0 (no IP address assigned)
Community String	Zero-length string
Authentication Trap	Enabled
Autotopology	Enabled
sysContact	Zero-length string
sysName	Zero-length string
sysLocation	Zero-length string
Aging Time	300 seconds

Table continues…

Setting	Factory default configuration value
MAC Address Security	Disabled
MAC Address Security SNMP-Locked	Disabled
Partition Port on Intrusion Detected	Disabled
Partition Time	0 seconds (the value 0 indicates forever)
DA Filtering on Intrusion Detected	Disabled
Generate SNMP Trap on Intrusion	Disabled
Clear by Ports	NONE
Learn by Ports	NONE
Trunk	blank field
Security	Disabled
Port List	blank field
Allowed Source	- (blank field)
VLAN Name	VLAN #
Management VLAN	Yes (VLAN #1)
VLAN Type	Port-based
Protocol ID (PID)	None
User-Defined PID	0x0000
VLAN State	Active (VLAN #1)
Port Membership	All ports assigned as members of VLAN 1
Filter Untagged Frames	No
Filter Unregistered Frames	Yes
Port Name	Unit 1, Port 1
PVID	1
Port Priority	0
Tagging	Untag All
AutoPVID	Enabled
Status	Enabled (for all ports)
Linktrap	On
Autonegotiation	Enabled (for all ports)
Speed/Duplex	(Refer to Autonegotiation)
Trunk Members (Unit/Port)	Blank field
STP Learning	Normal
Trunk Mode	Basic
Trunk Status	Disabled
Trunk Name	Trunk #1 to Trunk #32

Table continues…

Setting	Factory default configuration value
Traffic Type	Rx and Tx
Monitoring Mode	Disabled
Rate Limit Packet Type	Both
Limit	None
Snooping	Disabled
Proxy	Disabled
Robust Value	2
Query Time	125 seconds
Set Router Ports	Version 1
Static Router Ports	- (for all ports)
Console Port Speed	9600 baud
Console Switch Password	None
Telnet/Web Stack Password	None
Console Read-Only Switch Password	user
Console Read/Write Switch Password	Passwords are user/secure for non-SSH SW images and userpasswd/securepasswd for SSH SW images.
Console Read-Only Stack Password	user
Console Read/Write Stack Password	secure
Radius password/server	secret
New Unit Number	Current stack order
Group	1
Bridge Priority	8000
Bridge Hello Time	2 seconds
Bridge Maximum Age Time	20 seconds
Bridge Forward Delay	15 seconds
Add VLAN Membership	1
Tagged BPDU on tagged port	STP Group 1--No Other STP Groups--Yes
STP Group State	STP Group 1--Active Other STP Groups--InActive
VID used for tagged BPDU	4001-4008 for STGs 1-8, respectively
STP Group	1
Participation	Normal Learning
Priority	128
Path Cost	1

Table continues…

Setting	Factory default configuration value
TELNET Access/SNMP/Web	By default, SNMP access is disabled in the SSH image and enabled in the non-SSH image. Telnet and Web are enabled by default in both SSH and non-SSH images. Use list: Yes
Login Timeout	1 minute
Login Retries	3
Inactivity Timeout	15 minutes
Event Logging	All
Allowed Source IP Address (50 user-configurable fields)	Entry 51: ::/0 Entry 52: ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff/128 Entry 53: ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff/128 …… Entry 100: ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff/128
	Remaining 49 fields: 255.255.255.255 (any address is allowed)
Allowed Source Mask(50 user-configurable fields)	First field: 0.0.0.0 (no IP address assigned)
	Remaining 49 fields: 255.255.255.255 (any address is allowed)
Image Filename	Zero-length string
Diagnostics image filename	Zero-length string
TFTP Server IP Address	0.0.0.0 (no IP address assigned)
Start TFTP Load of New Image	No
Configuration Image Filename	Zero-length string
Copy Configuration Image to Server	No
Retrieve Configuration Image from Server	No
ASCII Configuration Filename	Zero-length string
Retrieve Configuration file from Server	No
Auto Configuration on Reset	Disabled
EAPOL Security Configuration	Disabled
High Speed Flow Control Configuration	
VLAN Configuration Control	Strict
Agent Auto Unit Replacement	Enabled
PoE admin status	Enabled
PoE Current status	Detecting
PoE Limit	16W (PWR units)/32W (PWR+ units)
PoE Port Priority	Low

Table continues…

Setting	Factory default configuration value
PoE pd-detect-type	PoE pd-detect-type 802dot2af_and_legacy (PWR) / 802dot3at_and_legacy (PWR+) Default value: **802.3at**
PoE Power Usage Threshold	80%
PoE Traps Control Status	Enable

Chapter 9: Related resources

Documentation

For a list of the documentation for this product and more information about documents on how to configure other switch features, see *Documentation Reference for Avaya Ethernet Routing Switch 4800 Series*, NN47205–101.

For more information on new features of the switch and important information about the latest release, see *Release Notes for Avaya Ethernet Routing Switch 4800 Series*, NN47205-400.

For more information about how to configure security, see *Configuring Security on Avaya Ethernet Routing Switch 4800 Series*, NN47205-505.

For the current documentation, see the Avaya Support web site: www.avaya.com/support.

Training

Ongoing product training is available. For more information or to register, see http://avaya-learning.com/.

Enter the course code in the **Search** field and click **Go** to search for the course.

Course code	Course title
8D00020E	Stackable ERS and VSP Products Virtual Campus Offering

Viewing Avaya Mentor videos

Avaya Mentor videos provide technical content on how to install, configure, and troubleshoot Avaya products.

About this task

Videos are available on the Avaya Support website, listed under the video document type, and on the Avaya-run channel on YouTube.

Procedure

- To find videos on the Avaya Support website, go to http://support.avaya.com and perform one of the following actions:
  - In **Search**, type `Avaya Mentor Videos` to see a list of the available videos.
  - In **Search**, type the product name. On the Search Results page, select **Video** in the **Content Type** column on the left.
- To find the Avaya Mentor videos on YouTube, go to www.youtube.com/AvayaMentor and perform one of the following actions:
  - Enter a key word or key words in the **Search Channel** to search for a specific product or topic.
  - Scroll down Playlists, and click the name of a topic to see the available list of videos posted on the website.

Note:

Videos are not available for all products.

Searching a documentation collection

On the Avaya Support website, you can download the documentation library for a specific product and software release to perform searches across an entire document collection. For example, you can perform a single, simultaneous search across the collection to quickly find all occurrences of a particular feature. Use this procedure to perform an index search of your documentation collection.

Before you begin

- Download the documentation collection zip file to your local computer.
- You must have Adobe Acrobat or Adobe Reader installed on your computer.

Procedure

1. Extract the document collection zip file into a folder.
2. Navigate to the folder that contains the extracted files and open the file named <*product_name_release*>.pdx.
3. In the Search dialog box, select the option **In the index named <*product_name_release*>.pdx**.
4. Enter a search word or phrase.
5. Select any of the following to narrow your search:
   - Whole Words Only
   - Case-Sensitive
   - Include Bookmarks

- Include Comments

6. Click **Search**.

   The search results show the number of documents and instances found. You can sort the search results by Relevance Ranking, Date Modified, Filename, or Location. The default is Relevance Ranking.

Subscribing to e-notifications

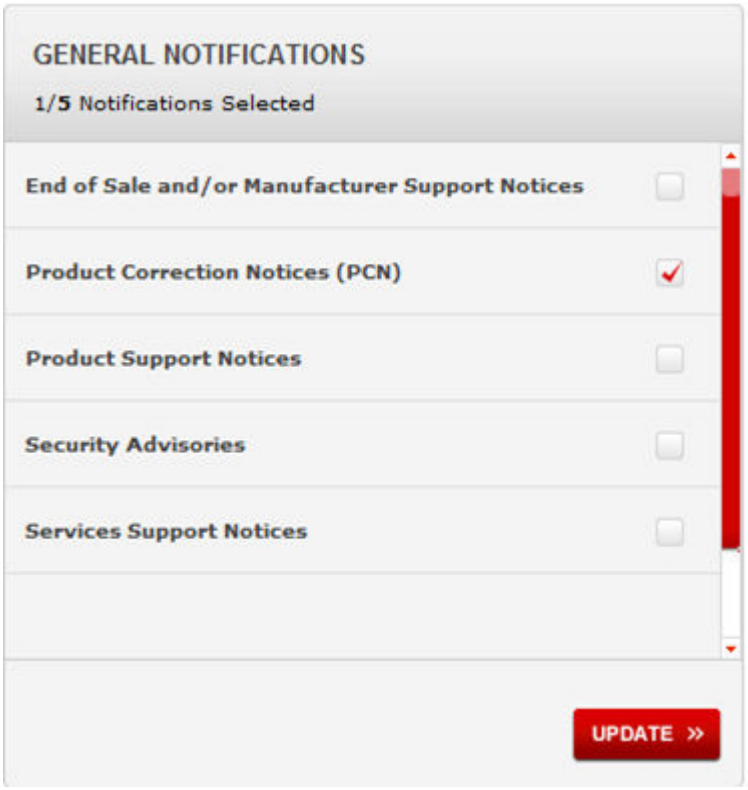
Subscribe to e-notifications to receive an email notification when documents are added to or changed on the Avaya Support website.

About this task

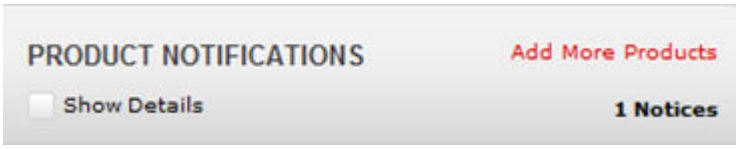
You can subscribe to different types of general notifications, for example, Product Correction Notices (PCN), which apply to any product or a specific product. You can also subscribe to specific types of documentation for a specific product, for example, Application & Technical Notes for Virtual Services Platform 7000.

Procedure

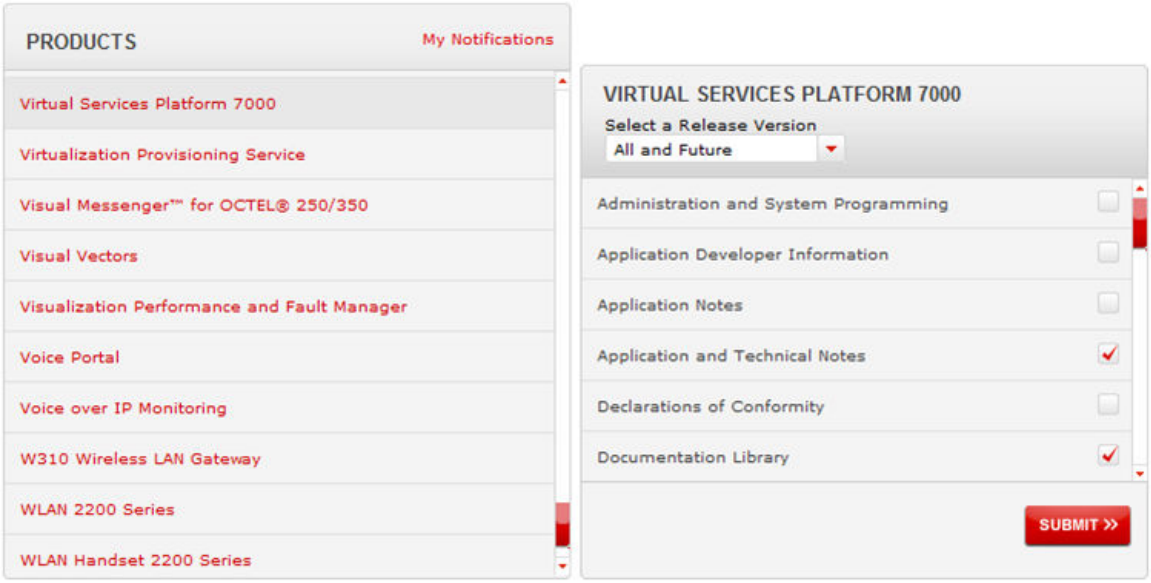
1. In an Internet browser, go to https://support.avaya.com.
2. Type your username and password, and then click **Login**.
3. Under **My Information**, select **SSO login Profile**.
4. Click **E-NOTIFICATIONS**.
5. In the GENERAL NOTIFICATIONS area, select the required documentation types, and then click **UPDATE**.



6. Click **OK**.
7. In the PRODUCT NOTIFICATIONS area, click **Add More Products**.



8. Scroll through the list, and then select the product name.
9. Select a release version.
10. Select the check box next to the required documentation types.



11. Click **Submit**.

Glossary

ACLI	Avaya Command Line Interface (ACLI) is a text-based, common command line interface used for device configuration and management across Avaya products.
ACLI modes	Differing command modes are available within the text-based interface, dependant on the level of user permissions determined by logon password. Each successive mode level provides access to more complex command sets, from the most restrictive—show level only, to the highest configuration levels for routing parameters, interface configuration, and security.
Address Resolution Protocol (ARP)	Maps an IP address to a physical machine address, for example, maps an IP address to an Ethernet media access control (MAC) address.
Agent Auto Unit Replacement (AAUR)	Enabled by default, AAUR inspects all units in a stack and downloads the stack software image to any joining unit with a dissimilar image.
American Standard Code for Information Interchange (ASCII)	A code to represent characters in computers. ASCII uses uppercase and lowercase alphabetic letters, numeric digits, and special symbols.
Authentication, Authorization, and Accounting (AAA)	Authentication, Authorization, and Accounting (AAA) is a framework used to control access to a network, limit network services to certain users, and track what users do. Authentication determines who a user is before allowing the user to access the network and network services. Authorization allows you to determine what you allow a user to do. Accounting records what a user is doing or has done.
Auto MDIX	The automatic detection of transmit and received twisted pairs. When Auto MDIX is active, you can use any straight or crossover category 5 cable to provide connection to a port. You must enable Autonegotiation to activate Auto MDIX.
Auto polarity	Compensates for reversal of positive and negative signals on the receive cables. When you enable autonegotiation, auto polarity can reverse the polarity of a pair of pins to correct polarity of received data.
Auto Unit Replacement (AUR)	Allows users to replace a unit from a stack while retaining the configuration of the unit. Stack power must remain on during the unit replacement. AUR does not work in a stack of two units only.

Auto-Detection and Auto-Configuration (ADAC)	Provides automatic switch configuration for IP phone traffic support and prioritization. ADAC can configure the switch whether it is directly connected to the Call Server or uses a network uplink.
Automatic PVID	Automatically sets the port-based VLAN ID when you add the port to the VLAN. The PVID value is the same value as the last port-based VLAN ID associated with the port.
Autonegotiation	Allows the switch to select the best speed and duplex modes for communication between two IEEE-capable devices.
Autosensing	Determines the speed of the attached device if it is incapable of autonegotiation or if it uses an incompatible form of autonegotiation.
Autotopology	An Enterprise Network Management System (ENMS) protocol that automates and simplifies discovery and collection of network topology information, presented in a table.
base unit (BU)	When you connect multiple switches into a stack, one unit, and only one unit, must be designated as a base unit to perform stack configuration tasks. The position of the unit select switch, on the back of the switch, determines base unit designation.
Bootstrap Protocol (BootP)	A User Datagram Protocol (UDP)/Internet Protocol (IP)-based protocol that a booting host uses to configure itself dynamically and without user supervision.
Bridge Protocol Data Unit (BPDU)	A data frame used to exchange information among the bridges in local or wide area networks for network topology maintenance.
Bridging	A forwarding process, used on Local Area Networks (LAN) and confined to network bridges, that works on Layer 2 and depends on the Spanning Tree Protocol (STP) or Rapid Spanning Tree Protocol (RSTP). Bridging is also known as MAC forwarding.
Custom AutoNegotiation Advertisement (CANA)	An enhancement of the IEEE 802.3 autonegotiation process on the 10/100/1000 copper ports. Custom AutoNegotiation Advertisement offers improved control over the autonegotiation process. The system advertises all port capabilities that include, for tri-speed ports, 10 Mb/s, 100 Mb/s, 1000 Mb/s speeds, and duplex and half-duplex modes of operation. This advertisement results in autonegotiation between the local and remote end that settles on the highest common denominator. Custom AutoNegotiation Advertisement can advertise a user-defined subset of the capabilities that settle on a lower or particular capability.
daemon	A program that services network requests for authentication and authorization. A daemon verifies, identifies, grants or denies authorizations, and logs accounting records.

Differentiated Services (DiffServ)	A network architecture enabling service providers and enterprise network environments to offer varied levels of service for different traffic types.
Differentiated Services Code Point (DSCP)	The first six bits of the DS field. The DSCP uses packet marking to guarantee a fixed percentage of total bandwidth to each of several applications (guarantees quality of service).
Differentiated Services Quality of Service (DiffServ QoS)	Allows specific level of performance designation, on a packet-by-packet basis, for high performance and reliable service for voice or video over IP, or for preferential treatment of data over other traffic.
Domain Name System (DNS)	A system that maps and converts domain and host names to IP addresses.
Duplicate Address Detection (DAD)	A method used to discover duplicate addresses in an IPv6 network.
Dynamic Host Configuration Protocol (DHCP)	A standard Internet protocol that dynamically configures hosts on an Internet Protocol (IP) network for either IPv4 or IPv6. DHCP extends the Bootstrap Protocol (BOOTP).
equal cost multipath (ECMP)	Distributes routing traffic among multiple equal-cost routes.
Extensible Authentication Protocol over LAN (EAPoL)	A port-based network access control protocol. EAPoL provides security in that it prevents users from accessing network resources before they are authenticated.
flash memory	All switch configuration parameters are stored in flash memory. If you store switch software images in flash memory, you can update switch software images without changing switch hardware.
gigabit Ethernet (GbE)	Ethernet technology with speeds up to 10 Gbps.
Gigabit Interface Converter (GBIC)	A hotswappable input and output enhancement component, designed for use with Avaya products, that allows Gigabit Ethernet ports to link with other Gigabit Ethernet ports over various media types.
Internet Control Message Protocol (ICMP)	A collection of error conditions and control messages exchanged by IP modules in both hosts and gateways.
Internet Group Management Protocol (IGMP)	IGMP is a host membership protocol used to arbitrate membership in multicast services. IP multicast routers use IGMP to learn the existence of host group members on their directly attached subnets.

Internet Protocol Flow Information eXport (IPFIX)	An IETF standard that improves the Netflow V9 protocol. IPFIX monitors IP flows.
Internet Protocol Manager (IP Manager)	Used to limit access to switch management features by defining IP addresses allowed access to the switch.
Internet Protocol Security (IPsec)	Internet Protocol security (IPsec) is a set of security protocols and cryptographic algorithms that protect communication in a network. Use IPsec in scenarios where you need to encrypt packets between two hosts, two routers, or a router and a host.
Internet Protocol version 4 (IPv4)	The protocol used to format packets for the Internet and many enterprise networks. IPv4 provides packet routing and reassembly.
Internet Protocol version 6 (IPv6)	An improved version of the IP protocol, IPv6 improves the IPv4 limitations of security and user address numbers.
Layer 2	Layer 2 is the Data Link Layer of the OSI model. Examples of Layer 2 protocols are Ethernet and Frame Relay.
Layer 3	Layer 3 is the Network Layer of the OSI model. An example of a Layer 3 protocol is Internet Protocol (IP).
light emitting diode (LED)	A semiconductor diode that emits light when a current passes through it.
Link Aggregation	Provides the mechanism to create and manage trunk groups automatically using Link Aggregation Control Protocol (LACP).
Link Aggregation Control Protocol (LACP)	A network handshaking protocol that provides a means to aggregate multiple links between appropriately configured devices.
Link Layer Discovery Protocol (LLDP)	Link Layer Discovery Protocol is used by network devices to advertise their identities. Devices send LLDP information at fixed intervals in the form of Ethernet frames, with each frame having one Link Layer Discovery Protocol Data Unit.
Local Area Network (LAN)	A data communications system that lies within a limited spatial area, uses a specific user group and topology, and can connect to a public switched telecommunications network (but is not one).
management information base (MIB)	The MIB defines system operations and parameters used for the Simple Network Management Protocol (SNMP).

mask	A bit string that the device uses along with an IP address to indicate the number of leading bits in the address that correspond with the network part.
maximum transmission unit (MTU)	The largest number of bytes in a packet—the maximum transmission unit of the port.
media	A substance that transmits data between ports; usually fiber optic cables or category 5 unshielded twisted pair (UTP) copper wires.
Media Access Control (MAC)	Arbitrates access to and from a shared medium.
media access unit (MAU)	The equipment in a communications system that adapts or formats signals, such as optical signals, for transmission over the propagation medium.
Message Digest 5 (MD5)	A one-way hash function that creates a message digest for digital signatures.
MultiLink Trunking (MLT)	A method of link aggregation that uses multiple Ethernet trunks aggregated to provide a single logical trunk. A multilink trunk provides the combined bandwidth of multiple links and the physical layer protection against the failure of a single link.
Multiple Spanning Tree Protocol (MSTP)	Configures multiple instances of the Rapid Spanning Tree Protocol (RSTP) on the switch.
Network Time Protocol (NTP)	A protocol that works with TCP that assures accurate local time keeping with reference to radio and atomic clocks located on the Internet. NTP synchronizes distributed clocks within milliseconds over long time periods.
nonbase unit (NBU)	A nonbase unit is any unit in a stack except the base unit.
NonVolatile Random Access Memory (NVRAM)	Random Access Memory that retains its contents after electrical power turns off.
Open Shortest Path First (OSPF)	A link-state routing protocol used as an Interior Gateway Protocol (IGP).
policy-enabled networking	User-defined characteristics that can be set in policies used to control and monitor traffic.
port	A physical interface that transmits and receives data.
port mirroring	A feature that sends received or transmitted traffic to a second destination.
port VLAN ID	Used to coordinate VLANs across multiple switches. When you create a port-based VLAN on a switch, assign a VLAN identification number (VLAN ID) and specify the ports that belong to the VLAN.

Power over Ethernet (PoE)	The capacity of a switch to power network devices, according to the 802.3af standard, over an Ethernet cable. Devices include IP phones, Wireless LAN Access Points (WLAN AP), security cameras, and access control points.
prefix	A group of contiguous bits, from 0 to 32 bits in length, that defines a set of addresses.
Protocol Data Units (PDUs)	A unit of data that is specified in a protocol of a specific layer and that consists of protocol-control information of the specific layer and possibly user data of that layer.
Proxy Address Resolution Protocol (Proxy ARP)	Allows the switch to respond to an Address Resolution Protocol (ARP) request from a locally attached host (or end station) for a remote destination.
quality of service (QoS)	QoS features reserve resources in a congested network, allowing you to configure a higher priority for certain devices. For example, you can configure a higher priority for IP deskphones, which need a fixed bit rate and split the remaining bandwidth between data connections if calls in the network are more important than the file transfers.
Rapid Spanning Tree Protocol (RSTP)	Reduces the recovery time after a network breakdown. RSTP enhances switch-generated Topology Change Notification (TCN) packets to reduce network flooding.
rate limiting	Rate limiting sets the percentage of traffic that is multicast, broadcast, or both, on specified ports.
real time clock	Provides the switch with time information if Simple Network Time Protocol (SNTP) time is unavailable.
redundant power supply unit (RPSU)	Provides alternate backup power over a DC cable connection into an Avaya Ethernet Routing Switch.
Remote Authentication Dial-in User Service (RADIUS)	A protocol that authenticates, authorizes, and accounts for remote access connections that use dial-up networking and Virtual Private Network (VPN) functionality.
request for comments (RFC)	A document series published by the Internet Engineering Task Force (IETF) that describe Internet standards.
routing switch	Virtualizes the physical router interfaces to switches. A virtual router port, or interface, acts as a router port to consolidate switching and routing functions in the broadcast domain, or between broadcast domains, and enable IP routing for higher traffic volumes.
Secure Shell (SSH)	SSH uses encryption to provide security for remote logons and data transfer over the Internet.

SFP	A hot pluggable, small form-factor pluggable (SFP) transceiver, which is used in Ethernet applications up to 1 Gbps.
shortest path first (SPF)	A class of routing protocols that use Djikstra's algorithm to compute the shortest path through a network, according to specified metrics, for efficient transmission of packet data.
Simple Network Time Protocol (SNTP)	Provides a simple mechanism for time synchronization of the switch to any RFC 2030-compliant Network Time Protocol (NTP) or SNTP server.
spanning tree	A simple, fully-connected active topology formed from the arbitrary physical topology of connected bridged Local Area Network components by relaying frames through selected bridge ports. The protocol parameters and states that are used and exchanged to facilitate the calculation of the active topology and to control the bridge relay function.
Spanning Tree Group (STG)	A collection of ports in one spanning-tree instance.
Spanning Tree Protocol (STP)	MAC bridges use the STP to exchange information across Local Area Networks to compute the active topology of a bridged Local Area Network in accordance with the Spanning Tree Protocol algorithm.
stack	Stackable Avaya Ethernet Routing Switches can be connected in a stack configuration of two or more units, up to eight units maximum. A switch stack operates and is managed as a single virtual switch.
stack IP address	An IP address must be assigned to a stack so that all units can operate as a single entity.
stack unit	Any switch within a stack.
stand-alone	Refers to a single Avaya Ethernet Routing Switch operating outside a stack.
Terminal Access Controller Access Control System plus	Terminal Access Controller Access Control System plus (TACACS+) is a security protocol that provides centralized validation of users who attempt to gain access to a router or network access server. TACACS+ uses Transmission Control Protocol (TCP) for its transport to ensure reliable delivery and encrypts the entire body of the packet. TACACS+ provides separate authentication, authorization, and accounting services. TACACS+ is not compatible with previous versions of TACACS.
Time Domain Reflectometer (TDR)	Provides diagnostic capability on Ethernet copper ports to test connected cables for defects. The TDR interrupts 10/100 MB/s links but does not affect 1 GB/s links.
time-to-live (TTL)	The field in a packet used to determine the valid duration for the packet. The TTL determines the packet lifetime. The system discards a packet with a TTL of zero.

Transmission Control Protocol (TCP)	Provides flow control and sequencing for transmitted data over an end-to-end connection.
Trivial File Transfer Protocol (TFTP)	A protocol that governs transferring files between nodes without protection against packet loss.
trunk	A logical group of ports that behaves like a single large port.
type of service (TOS)	A field in the IPv4 header that determines the Class of Service prior to the standardization of Differentiated Services.
unit select switch	Use the unit select switch on the back of a unit in the stack to designate the unit as the base or nonbase unit.
unshielded twisted pair (UTP)	A cable with one or more pairs of twisted insulated copper conductors bound in a single plastic sheath.
User Datagram Protocol (UDP)	In TCP/IP, a packet-level protocol built directly on the Internet Protocol layer. TCP/IP host systems use UDP for application-to-application programs.
Virtual Local Area Network (VLAN)	A Virtual Local Area Network is a group of hosts that communicate as if they are attached to the same broadcast domain regardless of their physical location. VLANs are layer 2 constructs.
Virtual Router Redundancy Protocol (VRRP)	A protocol used in static routing configurations, typically at the edge of the network. This protocol operates on multiple routers on an IP subnet and elects a primary gateway router. When the primary router fails, a backup router is quickly available to take its place.
Voice over IP (VOIP)	The technology that delivers voice information in digital form in discrete packets using the Internet Protocol (IP) rather than the traditional circuit-committed protocols of the public switched telephone network (PSTN).
XFP	A pluggable 10 gigabit transceiver capable of providing different optical media for a switch. The XFP is similar to an SFP transceiver but is larger in size.