Interface and Hardware Commands

- bluetooth pin, on page 4
- clear macro auto configuration, on page 5
- device classifier, on page 6
- debug ilpower, on page 7
- debug interface, on page 8
- debug lldp packets, on page 9
- debug platform poe, on page 10
- debug platform software fed switch active punt packet-capture start, on page 11
- duplex, on page 12
- errdisable detect cause, on page 14
- errdisable recovery cause, on page 16
- errdisable recovery cause, on page 18
- hw-module switch upoe-plus, on page 20
- interface, on page 21
- interface range, on page 24
- ip mtu, on page 27
- ipv6 mtu, on page 28
- lldp (interface configuration), on page 29
- logging event power-inline-status, on page 31
- macro, on page 32
- macro auto, on page 35
- macro auto apply (Cisco IOS shell scripting capability), on page 38
- macro auto config (Cisco IOS shell scripting capability), on page 40
- macro auto control, on page 41
- macro auto execute, on page 43
- macro auto global control, on page 50
- macro auto global processing, on page 52
- macro auto mac-address-group, on page 53
- macro auto processing, on page 55
- macro auto sticky, on page 56
- macro auto trigger, on page 57
- macro description, on page 58
- macro global, on page 59

- macro global description, on page 61
- mdix auto, on page 62
- mode (power-stack configuration), on page 63
- monitoring, on page 65
- network-policy, on page 66
- network-policy profile (global configuration), on page 67
- power efficient-ethernet auto, on page 68
- power-priority , on page 69
- power inline, on page 71
- power inline police, on page 74
- power supply, on page 76
- shell trigger, on page 78
- show beacon all, on page 79
- show device classifier attached, on page 80
- show device classifier clients, on page 82
- show device classifier profile type, on page 83
- show eee, on page 86
- show environment, on page 89
- show errdisable detect, on page 91
- show errdisable recovery, on page 93
- show ip interface, on page 94
- show interfaces, on page 99
- show interfaces counters, on page 105
- show interfaces switchport, on page 107
- show interfaces transceiver, on page 109
- show inventory, on page 113
- show macro auto, on page 116
- show memory platform, on page 119
- show module, on page 122
- show mgmt-infra trace messages ilpower, on page 123
- show mgmt-infra trace messages ilpower-ha, on page 125
- show mgmt-infra trace messages platform-mgr-poe, on page 126
- show network-policy profile, on page 127
- show parser macro, on page 128
- show platform hardware bluetooth, on page 131
- show platform hardware capacity, on page 132
- show platform hardware fed switch forward, on page 144
- show platform hardware fed switch forward interface, on page 147
- show platform hardware fed switch forward last summary, on page 150
- show platform resources, on page 153
- show platform software audit, on page 154
- show platform software fed switch punt cpuq rates, on page 158
- show platform software fed switch punt packet-capture display, on page 160
- show platform software fed switch punt rates interfaces, on page 162
- show platform software ilpower, on page 165
- show platform software memory, on page 167

- show platform software process list, on page 172
- show platform software process memory, on page 176
- show platform software process slot switch, on page 179
- show platform software status control-processor, on page 181
- show platform software thread list, on page 184
- show processes cpu platform, on page 186
- show processes cpu platform history, on page 189
- show processes cpu platform monitor, on page 192
- show processes memory, on page 194
- show processes memory platform, on page 197
- show processes platform, on page 201
- show power inline, on page 204
- show stack-power , on page 210
- show shell, on page 212
- show system mtu, on page 215
- show tech-support , on page 216
- show tech-support bgp, on page 218
- show tech-support diagnostic, on page 221
- show tech-support poe, on page 226
- speed, on page 256
- stack-power , on page 258
- switchport block, on page 260
- system mtu, on page 261
- voice-signaling vlan (network-policy configuration), on page 262
- voice vlan (network-policy configuration), on page 264

bluetooth pin

To configure a new Bluetooth pin, use the **bluetooth pin** command in interface configuration or global configuration mode.

bluetooth pin *pin*

Syntax Description

pin	Pairing pin for the Bluetooth interface. The pin is a 4-digit number.

Command Modes

Interface configuration (config-if)

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

Usage Guidelines

The **bluetooth pin** command can be configured either in the interface configuration or global configuration mode. Cisco recommends using the global configuration mode to configure the Bluetooth pin.

Examples

This example shows how to configure a new Bluetooth pin using the **bluetooth pin** command.

```
Device> enable
Device# configure terminal
Device(config)# bluetooth pin 1111
Device(config)#
```

Related Commands

Command	Description
show platform hardware bluetooth	Displays information about the Bluetooth interface

clear macro auto configuration

To remove the macro applied configuration from the interfaces, use the **clear macro auto configuration** command.

Note Before executing the **clear macro auto configuration** command, you must disable Auto SmartPorts on the switch.

clear macro auto configuration {**all** | **interface** [*interface-id*]}

Syntax Description

all	Removes macro applied configuration from all the interfaces.
interface [*interface-id*]	Removes macro applied configuration from an interface.

Command Default

This command has no default setting.

Command Modes

User EXEC (>)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the command to remove configuration applied by macros from all the interfaces or a particular interface on the switch.

You can verify your settings by entering the **show macro auto interface** command in privileged EXEC mode.

Example

This example shows how to remove the configuration from all the switch interfaces:

```
Device(config)# clear macro auto configuration all
```

device classifier

To enable the device classifier, use the **device classifier** command in global configuration mode. Use the **no** form of this command to disable the device classifier.

device classifier

no device classifier

Command Default

This command is disabled by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **no device classifier** command, in global configuration mode, to disable the device classifier. You cannot disable the device classifier while it is being used by features such as Auto SmartPorts (ASP).

Example

This example shows how to enable the ASP device classifier on a switch:

```
Device(config)# device classifier
Device(config)# end
```

debug ilpower

To enable debugging of the power controller and Power over Ethernet (PoE) system, use the **debug ilpower** command in privileged EXEC mode. To disable debugging, use the **no** form of this command.

debug ilpower {**cdp** | **event** | **ha** | **ipc** | **police** | **port** | **powerman** | **registries** | **scp** | **sense** | **upoe**}
no debug ilpower {**cdp** | **event** | **ha** | **ipc** | **police** | **port** | **powerman** | **registries** | **scp** | **sense** | **upoe**}

Syntax Description

cdp	Displays PoE Cisco Discovery Protocol (CDP) debug messages.
event	Displays PoE event debug messages.
ha	Displays PoE high-availability messages.
ipc	Displays PoE Inter-Process Communication (IPC) debug messages.
police	Displays PoE police debug messages.
port	Displays PoE port manager debug messages.
powerman	Displays PoE power management debug messages.
registries	Displays PoE registries debug messages.
scp	Displays PoE SCP debug messages.
sense	Displays PoE sense debug messages.
upoe	Displays Cisco UPOE debug messages.

Command Default

Debugging is disabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

This command is supported only on PoE-capable switches.

When you enable debugging on a switch stack, it is enabled only on the active switch. To enable debugging on a stack member, you can start a session from the active switch by using the **session** *switch-number* EXEC command. Then enter the **debug** command at the command-line prompt of the stack member. You also can use the **remote command** *stack-member-number LINE* EXEC command on the active switc to enable debugging on a member switch without first starting a session.

debug interface

To enable debugging of interface-related activities, use the **debug interface** command in privileged EXEC mode. To disable debugging, use the **no** form of this command.

debug interface {*interface-id* | **counters** {**exceptions** | **protocol memory**} | **null** *interface-number* | **port-channel** *port-channel-number* | **states** | **vlan** *vlan-id*}
no debug interface {*interface-id* | **counters** {**exceptions** | **protocol memory**} | **null** *interface-number* | **port-channel** *port-channel-number* | **states** | **vlan** *vlan-id*}

Syntax Description

interface-id	ID of the physical interface. Displays debug messages for the specified physical port, identified by type switch number/module number/port, for example, gigabitethernet 1/0/2.
null *interface-number*	Displays debug messages for null interfaces. The interface number is always **0**.
port-channel *port-channel-number*	Displays debug messages for the specified EtherChannel port-channel interface. The *port-channel-number* range is 1 to 48.
vlan *vlan-id*	Displays debug messages for the specified VLAN. The vlan range is 1 to 4094.
counters	Displays counters debugging information.
exceptions	Displays debug messages when a recoverable exceptional condition occurs during the computation of the interface packet and data rate statistics.
protocol memory	Displays debug messages for memory operations of protocol counters.
states	Displays intermediary debug messages when an interface's state transitions.

Command Default

Debugging is disabled.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

If you do not specify a keyword, all debug messages appear.

The **undebug interface** command is the same as the **no debug interface** command.

When you enable debugging on a switch stack, it is enabled only on the active switch. To enable debugging on a stack member, you can start a session from the active switch by using the **session** *switch-number* EXEC command. Then enter the **debug** command at the command-line prompt of the stack member. You also can use the **remote command** *stack-member-number LINE* EXEC command on the active switch to enable debugging on a member switch without first starting a session.

debug lldp packets

To enable debugging of Link Layer Discovery Protocol (LLDP) packets, use the **debug lldp packets** command in privileged EXEC mode. To disable debugging, use the **no** form of this command.

debug lldp packets
no debug lldp packets

Syntax Description

This commnd has no arguments or keywords.

Command Default

Debugging is disabled.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

The **undebug lldp packets** command is the same as the **no debug lldp packets** command.

When you enable debugging on a switch stack, it is enabled only on the active switch. To enable debugging on a stack member, you can start a session from the active switch by using the **session** *switch-number* EXEC command.

debug platform poe

To enable debugging of a Power over Ethernet (PoE) port, use the **debug platform poe** command in privileged EXEC mode. To disable debugging, use the **no** form of this command.

debug platform poe [{**error** | **info**}] [**switch** *switch-number*]
no debug platform poe [{**error** | **info**}] [**switch** *switch-number*]

Syntax Description

error	(Optional) Displays PoE-related error debug messages.
info	(Optional) Displays PoE-related information debug messages.
switch *switch-number*	(Optional) Specifies the stack member. This keyword is supported only on stacking-capable switches.

Command Default

Debugging is disabled.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

The **undebug platform poe** command is the same as the **no debug platform poe** command.

debug platform software fed switch active punt packet-capture start

To enable debugging of packets during high CPU utilization, for an active switch, use the **debug platform software fed switch active punt packet-capture start** command in privileged EXEC mode. To disable debugging of packets during high CPU utilization, for an active switch, use the **debug platform software fed switch active punt packet-capture stop** command in privileged EXEC mode.

debug platform software fed switch active punt packet-capture start
debug platform software fed switch active punt packet-capture stop

Syntax Description

switch active	Displays information about the active switch.
punt	Specifies the punt information.
packet-capture	Specifies information about the captured packet.
start	Enables debugging of the active switch.
stop	Disables debugging of the active switch.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Usage Guidelines

The **debug platform software fed switch active punt packet-capture start** command starts the debugging of packets during high CPU utilization. The packet capture is stopped when the 4k buffer size is exceeded.

Examples

The following is a sample output from the **debug platform software fed switch active punt packet-capture start** command:

```
Device# debug platform software fed switch active packet-capture start
Punt packet capturing started.
```

The following is a sample output from the **debug platform software fed switch active punt packet-capture stop** command:

```
Device# debug platform software fed switch active packet-capture stop
Punt packet capturing stopped. Captured 101 packet(s)
```

duplex

To specify the duplex mode of operation for a port, use the **duplex** command in interface configuration mode. To return to the default value, use the **no** form of this command.

duplex {**auto** | **full** | **half**}
no duplex {**auto** | **full** | **half**}

Syntax Description

auto	Enables automatic duplex configuration. The port automatically detects whether it should run in full- or half-duplex mode, depending on the attached device mode.
full	Enables full-duplex mode.
half	Enables half-duplex mode (only for interfaces operating at 10 or 100 Mb/s). You cannot configure half-duplex mode for interfaces operating at 1000 Mb/s, 10,000 Mb/s, 2.5Gb/s, or 5Gb/s.

Command Default

The default is **auto** for Gigabit Ethernet ports.

Duplex options are not supported on the 1000BASE-*x* or 10GBASE-*x* (where -*x* is -BX, -CWDM, -LX, -SX, or -ZX) small form-factor pluggable (SFP) modules.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

For Gigabit Ethernet ports, setting the port to **auto** has the same effect as specifying **full** if the attached device does not autonegotiate the duplex parameter.

Note Half-duplex mode is supported on Gigabit Ethernet interfaces if the duplex mode is **auto** and the connected device is operating at half duplex. However, you cannot configure these interfaces to operate in half-duplex mode.

Certain ports can be configured to be either full duplex or half duplex. How this command is applied depends on the device to which the switch is attached.

If both ends of the line support autonegotiation, we highly recommend using the default autonegotiation settings. If one interface supports autonegotiation and the other end does not, configure duplex and speed on both interfaces, and use the **auto** setting on the supported side.

If the speed is set to **auto**, the switch negotiates with the device at the other end of the link for the speed setting and then forces the speed setting to the negotiated value. The duplex setting remains as configured on each end of the link, which could result in a duplex setting mismatch.

You can configure the duplex setting when the speed is set to **auto**.

Caution Changing the interface speed and duplex mode configuration might shut down and re-enable the interface during the reconfiguration.

You can verify your setting by entering the **show interfaces** privileged EXEC command.

Examples

This example shows how to configure an interface for full-duplex operation:

```
Device(config)# interface gigabitethernet1/0/1
Devic(config-if)# duplex full
```

errdisable detect cause

To enable error-disable detection for a specific cause or for all causes, use the **errdisable detect cause** command in global configuration mode. To disable the error-disable detection feature, use the **no** form of this command.

errdisable detect cause {**all** | **arp-inspection** | **bpduguard shutdown vlan** | **dhcp-rate-limit** | **dtp-flap** | **gbic-invalid** | **inline-power** | **link-flap** | **loopback** | **pagp-flap** | **pppoe-ia-rate-limit** | **psp shutdown vlan** | **security-violation shutdown vlan** | **sfp-config-mismatch**}
no errdisable detect cause {**all** | **arp-inspection** | **bpduguard shutdown vlan** | **dhcp-rate-limit** | **dtp-flap** | **gbic-invalid** | **inline-power** | **link-flap** | **loopback** | **pagp-flap** | **pppoe-ia-rate-limit** | **psp shutdown vlan** | **security-violation shutdown vlan** | **sfp-config-mismatch**}

Syntax Description

all	Enables error detection for all error-disabled causes.
arp-inspection	Enables error detection for dynamic Address Resolution Protocol (ARP) inspection.
bpduguard shutdown vlan	Enables per-VLAN error-disable for BPDU guard.
dhcp-rate-limit	Enables error detection for DHCP snooping.
dtp-flap	Enables error detection for the Dynamic Trunking Protocol (DTP) flapping.
gbic-invalid	Enables error detection for an invalid Gigabit Interface Converter (GBIC) module. **Note** This error refers to an invalid small form-factor pluggable (SFP) module.
inline-power	Enables error detection for the Power over Ethernet (PoE) error-disabled cause. **Note** This keyword is supported only on switches with PoE ports.
link-flap	Enables error detection for link-state flapping.
loopback	Enables error detection for detected loopbacks.
pagp-flap	Enables error detection for the Port Aggregation Protocol (PAgP) flap error-disabled cause.
pppoe-ia-rate-limit	Enables error detection for the PPPoE Intermediate Agent rate-limit error-disabled cause.
psp shutdown vlan	Enables error detection for protocol storm protection (PSP).
security-violation shutdown vlan	Enables voice aware 802.1x security.
sfp-config-mismatch	Enables error detection on an SFP configuration mismatch.

Command Default

Detection is enabled for all causes. All causes, except per-VLAN error disabling, are configured to shut down the entire port.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

A cause (such as a link-flap or dhcp-rate-limit) is the reason for the error-disabled state. When a cause is detected on an interface, the interface is placed in an error-disabled state, an operational state that is similar to a link-down state.

When a port is error-disabled, it is effectively shut down, and no traffic is sent or received on the port. For the bridge protocol data unit (BPDU) guard, voice-aware 802.1x security, and port-security features, you can configure the switch to shut down only the offending VLAN on the port when a violation occurs, instead of shutting down the entire port.

If you set a recovery mechanism for the cause by entering the **errdisable recovery** global configuration command, the interface is brought out of the error-disabled state and allowed to retry the operation when all causes have timed out. If you do not set a recovery mechanism, you must enter the **shutdown** and then the **no shutdown** commands to manually recover an interface from the error-disabled state.

For protocol storm protection, excess packets are dropped for a maximum of two virtual ports. Virtual port error disabling using the **psp** keyword is not supported for EtherChannel and Flexlink interfaces.

To verify your settings, enter the **show errdisable detect** privileged EXEC command.

This example shows how to enable error-disabled detection for the link-flap error-disabled cause:

```
Device(config)# errdisable detect cause link-flap
```

This command shows how to globally configure BPDU guard for a per-VLAN error-disabled state:

```
Device(config)# errdisable detect cause bpduguard shutdown vlan
```

This command shows how to globally configure voice-aware 802.1x security for a per-VLAN error-disabled state:

```
Device(config)# errdisable detect cause security-violation shutdown vlan
```

You can verify your setting by entering the **show errdisable detect** privileged EXEC command.

errdisable recovery cause

To enable the error-disabled mechanism to recover from a specific cause, use the **errdisable recovery cause** command in global configuration mode. To return to the default setting, use the **no** form of this command.

errdisable recovery cause {**all** | **arp-inspection** | **bpduguard** | **channel-misconfig** | **dhcp-rate-limit** | **dtp-flap** | **gbic-invalid** | **inline-power** | **link-flap** | **loopback** | **mac-limit** | **pagp-flap** | **port-mode-failure** | **pppoe-ia-rate-limit** | **psecure-violation** | **psp** | **security-violation** | **sfp-config-mismatch** | **storm-control** | **udld**}
no errdisable recovery cause {**all** | **arp-inspection** | **bpduguard** | **channel-misconfig** | **dhcp-rate-limit** | **dtp-flap** | **gbic-invalid** | **inline-power** | **link-flap** | **loopback** | **mac-limit** | **pagp-flap** | **port-mode-failure** | **pppoe-ia-rate-limit** | **psecure-violation** | **psp** | **security-violation** | **sfp-config-mismatch** | **storm-control** | **udld**}

Syntax Description

all	Enables the timer to recover from all error-disabled causes.
arp-inspection	Enables the timer to recover from the Address Resolution Protocol (ARP) inspection error-disabled state.
bpduguard	Enables the timer to recover from the bridge protocol data unit (BPDU) guard error-disabled state.
channel-misconfig	Enables the timer to recover from the EtherChannel misconfiguration error-disabled state.
dhcp-rate-limit	Enables the timer to recover from the DHCP snooping error-disabled state.
dtp-flap	Enables the timer to recover from the Dynamic Trunking Protocol (DTP) flap error-disabled state.
gbic-invalid	Enables the timer to recover from an invalid Gigabit Interface Converter (GBIC) module error-disabled state. **Note** This error refers to an invalid small form-factor pluggable (SFP) error-disabled state.
inline-power	Enables the timer to recover from the Power over Ethernet (PoE) error-disabled state. This keyword is supported only on switches with PoE ports.
link-flap	Enables the timer to recover from the link-flap error-disabled state.
loopback	Enables the timer to recover from a loopback error-disabled state.
mac-limit	Enables the timer to recover from the mac limit error-disabled state.
pagp-flap	Enables the timer to recover from the Port Aggregation Protocol (PAgP)-flap error-disabled state.

port-mode-failure	Enables the timer to recover from the port mode change failure error-disabled state.
pppoe-ia-rate-limit	Enables the timer to recover from the PPPoE IA rate limit error-disabled state.
psecure-violation	Enables the timer to recover from a port security violation disable state.
psp	Enables the timer to recover from the protocol storm protection (PSP) error-disabled state.
security-violation	Enables the timer to recover from an IEEE 802.1x-violation disabled state.
sfp-config-mismatch	Enables error detection on an SFP configuration mismatch.
storm-control	Enables the timer to recover from a storm control error.
udld	Enables the timer to recover from the UniDirectional Link Detection (UDLD) error-disabled state.

Command Default

Recovery is disabled for all causes.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

A cause (such as all or BDPU guard) is defined as the reason that the error-disabled state occurred. When a cause is detected on an interface, the interface is placed in the error-disabled state, an operational state similar to link-down state.

When a port is error-disabled, it is effectively shut down, and no traffic is sent or received on the port. For the BPDU guard and port-security features, you can configure the switch to shut down only the offending VLAN on the port when a violation occurs, instead of shutting down the entire port.

If you do not enable the recovery for the cause, the interface stays in the error-disabled state until you enter the **shutdown** and the **no shutdown** interface configuration commands. If you enable the recovery for a cause, the interface is brought out of the error-disabled state and allowed to retry the operation again when all the causes have timed out.

Otherwise, you must enter the **shutdown** and then the **no shutdown** commands to manually recover an interface from the error-disabled state.

You can verify your settings by entering the **show errdisable recovery** privileged EXEC command.

Examples

This example shows how to enable the recovery timer for the BPDU guard error-disabled cause:

```
Device# Device#configure terminal
Device(config)# errdisable recovery cause bpduguard
```

errdisable recovery cause

To enable the error-disabled mechanism to recover from a specific cause, use the **errdisable recovery cause** command in global configuration mode. To return to the default setting, use the **no** form of this command.

errdisable recovery cause {**all** | **arp-inspection** | **bpduguard** | **channel-misconfig** | **dhcp-rate-limit** | **dtp-flap** | **gbic-invalid** | **inline-power** | **link-flap** | **loopback** | **mac-limit** | **pagp-flap** | **port-mode-failure** | **pppoe-ia-rate-limit** | **psecure-violation** | **psp** | **security-violation** | **sfp-config-mismatch** | **storm-control** | **udld**}
no errdisable recovery cause {**all** | **arp-inspection** | **bpduguard** | **channel-misconfig** | **dhcp-rate-limit** | **dtp-flap** | **gbic-invalid** | **inline-power** | **link-flap** | **loopback** | **mac-limit** | **pagp-flap** | **port-mode-failure** | **pppoe-ia-rate-limit** | **psecure-violation** | **psp** | **security-violation** | **sfp-config-mismatch** | **storm-control** | **udld**}

Syntax Description

all	Enables the timer to recover from all error-disabled causes.
arp-inspection	Enables the timer to recover from the Address Resolution Protocol (ARP) inspection error-disabled state.
bpduguard	Enables the timer to recover from the bridge protocol data unit (BPDU) guard error-disabled state.
channel-misconfig	Enables the timer to recover from the EtherChannel misconfiguration error-disabled state.
dhcp-rate-limit	Enables the timer to recover from the DHCP snooping error-disabled state.
dtp-flap	Enables the timer to recover from the Dynamic Trunking Protocol (DTP) flap error-disabled state.
gbic-invalid	Enables the timer to recover from an invalid Gigabit Interface Converter (GBIC) module error-disabled state. **Note** This error refers to an invalid small form-factor pluggable (SFP) error-disabled state.
inline-power	Enables the timer to recover from the Power over Ethernet (PoE) error-disabled state. This keyword is supported only on switches with PoE ports.
link-flap	Enables the timer to recover from the link-flap error-disabled state.
loopback	Enables the timer to recover from a loopback error-disabled state.
mac-limit	Enables the timer to recover from the mac limit error-disabled state.
pagp-flap	Enables the timer to recover from the Port Aggregation Protocol (PAgP)-flap error-disabled state.

port-mode-failure	Enables the timer to recover from the port mode change failure error-disabled state.
pppoe-ia-rate-limit	Enables the timer to recover from the PPPoE IA rate limit error-disabled state.
psecure-violation	Enables the timer to recover from a port security violation disable state.
psp	Enables the timer to recover from the protocol storm protection (PSP) error-disabled state.
security-violation	Enables the timer to recover from an IEEE 802.1x-violation disabled state.
sfp-config-mismatch	Enables error detection on an SFP configuration mismatch.
storm-control	Enables the timer to recover from a storm control error.
udld	Enables the timer to recover from the UniDirectional Link Detection (UDLD) error-disabled state.

Command Default

Recovery is disabled for all causes.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

A cause (such as all or BDPU guard) is defined as the reason that the error-disabled state occurred. When a cause is detected on an interface, the interface is placed in the error-disabled state, an operational state similar to link-down state.

When a port is error-disabled, it is effectively shut down, and no traffic is sent or received on the port. For the BPDU guard and port-security features, you can configure the switch to shut down only the offending VLAN on the port when a violation occurs, instead of shutting down the entire port.

If you do not enable the recovery for the cause, the interface stays in the error-disabled state until you enter the **shutdown** and the **no shutdown** interface configuration commands. If you enable the recovery for a cause, the interface is brought out of the error-disabled state and allowed to retry the operation again when all the causes have timed out.

Otherwise, you must enter the **shutdown** and then the **no shutdown** commands to manually recover an interface from the error-disabled state.

You can verify your settings by entering the **show errdisable recovery** privileged EXEC command.

Examples

This example shows how to enable the recovery timer for the BPDU guard error-disabled cause:

```
Device# Device#configure terminal
Device(config)# errdisable recovery cause bpduguard
```

hw-module switch upoe-plus

To enable the 802.3bt mode on the device, use the **hw-module switch upoe-plus** comamnd in the Global Configuration mode. To unconfigure the 802.3bt mode, use the **no** form of the command.

hw-module switch *switch-number* **upoe-plus**
no hw-module switch *switch-number* **upoe-plus**

Command Default

The device is in 802.3at mode.

Command Modes

Global Configuration (config)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

Usage Guidelines

When the device boots up, it is in 802.3at-compliant mode by default. Use the **hw-module switch***switch-number* upoe-plus command to enable 802.3bt Type 3 mode ton the device. This command causes the device to be power-cycled to enable 802.3bt compliance.

The following command enables 802.3bt mode on the switch which is the second member of the stack.

```
Device> enable
Device# configure terminal
Device(config)# hw-module switch 2 upoe-plus
!!!WARNING!!!This configuration will power cycle the switch to make it effective. Would you
 like to continue y/n?
```

interface

To configure an interface, use the **interface** command.

interface {**Auto-Template** *interface-number* | **FiveGigabitEthernet** *switch-number/slot-number/port-number* | **GigabitEthernet** *switch-number/slot-number/port-number* | **Loopback** *interface-number* **Null** *interface-number* **Port-channel** *interface-number* **TenGigabitEthernet** *switch-number/slot-number/port-number* **TwentyFiveGigE** *switch-number/slot-number/port-number* **TwoGigabitEthernet** *switch-number/slot-number/port-number* **Tunnel** *interface-number* **Vlan** *interface-number* }

Syntax Description

Auto-Template *interface-number*	Enables you to configure a auto-template interface. The range is from 1 to 999.
FiveGigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a 5-Gigabit Ethernet interface. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. Value is 0. • *port-number* — Port number. The range is from 1 to 48.
FortyGigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a 40-Gigabit Ethernet interface. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. Value is 1. • *port-number* — Port number. The range is from 1 to 2.
GigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a Gigabit Ethernet IEEE 802.3z interface. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. The range is from 0 to 1. • *port-number* — Port number. The range is from 1 to 48.
Loopback *interface-number*	Enables you to configure a loopback interface. The range is from 0 to 2147483647.
Null *interface-number*	Enables you to configure a null interface. The default value is 0.

Port-channel *interface-number*	Enables you to configure a port-channel interface. The range is from 1 to 128.
TenGigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a 10-Gigabit Ethernet interface. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. The range is from 0 to 1. • *port-number* — Port number. The range is from 1 to 24 and 37 to 48 .
TwentyFiveGigE *switch-number/slot-number/port-number*	Enables you to configure a 25-Gigabit Ethernet interface. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. Value is 1. • *port-number* — Port number. The range is from 1 to 2.
TwoGigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a 2.5-Gigabit Ethernet interface. **Note** 2.5G ports are available only on C9300-48UXM switch model. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. Value is 0. • *port-number* — Port number. The range is from 1 to 36.
Tunnel *interface-number*	Enables you to configure a tunnel interface. The range is from 0 to 2147483647.
Vlan *interface-number*	Enables you to configure a switch VLAN. The range is from 1 to 4094.

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

You can not use the "no" form of this command.

Examples

The following example shows how to configure a tunnel interface:

```
Device(config)# interface Tunnel 15
Device(config-if)#
```

The following example shows how to configure a 25-Gigabit Ethernet interface

```
Device(config)# interface TwentyFiveGigE 1/1/1
Device(config-if)#
```

The following example shows how to configure a 40-Gigabit Ethernet interface

```
Device(config)# interface FortyGigabitEthernet 1/1/2
Device(config-if)#
```

interface range

To configure an interface range, use the **interface range** command.

interface range {**Auto-Template** *interface-number* | **FiveGigabitEthernet** *switch-number/slot-number/port-number* | **FortyGigabitEthernet** *switch-number/slot-number/port-number* | **GigabitEthernet** *switch-number/slot-number/port-number* | **Loopback** *interface-number* **Null** *interface-number* **Port-channel** *interface-number* **TenGigabitEthernet** *switch-number/slot-number/port-number* **TwentyFiveGigE** *switch-number/slot-number/port-number* **TwoGigabitEthernet** *switch-number/slot-number/port-number* **Tunnel** *interface-number* **Vlan** *interface-number* }

Syntax Description

Auto-Template *interface-number*	Enables you to configure a auto-template interface. The range is from 1 to 999.
FiveGigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a 5-Gigabit Ethernet interface. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. Value is 0. • *port-number* — Port number. The range is from 1 to 48.
FortyGigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a 40-Gigabit Ethernet interface. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. Value is 1. • *port-number* — Port number. The range is from 1 to 2.
GigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a Gigabit Ethernet IEEE 802.3z interface. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. The range is from 0 to 1. • *port-number* — Port number. The range is from 1 to 48.
Loopback *interface-number*	Enables you to configure a loopback interface. The range is from 0 to 2147483647.

Null *interface-number*	Enables you to configure a null interface. The default value is 0.
Port-channel *interface-number*	Enables you to configure a port-channel interface. The range is from 1 to 128.
TenGigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a 10-Gigabit Ethernet interface. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. The range is from 0 to 1. • *port-number* — Port number. The range is from 1 to 24 and 37 to 48 .
TwentyFiveGigE *switch-number/slot-number/port-number*	Enables you to configure a 25-Gigabit Ethernet interface. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. Value is 1. • *port-number* — Port number. The range is from 1 to 2.
TwoGigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a 2.5-Gigabit Ethernet interface. **Note** 2.5G ports are available only on C9300-48UXM switch model. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. Value is 0. • *port-number* — Port number. The range is from 1 to 36.
Tunnel *interface-number*	Enables you to configure a tunnel interface. The range is from 0 to 2147483647.
Vlan *interface-number*	Enables you to configure a switch VLAN. The range is from 1 to 4094.

Command Default None

Command Modes Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Examples

This example shows how you can configure interface range:

```
Device(config)# interface range vlan 1-100
```

ip mtu

To set the IP maximum transmission unit (MTU) size of routed packets on all routed ports of the switch or switch stack, use the **ip mtu** command in interface configuration mode. To restore the default IP MTU size, use the **no** form of this command.

ip mtu *bytes*
no ip mtu *bytes*

Syntax Description

bytes	MTU size, in bytes. The range is from 68 up to the system MTU value (in bytes).

Command Default

The default IP MTU size for frames received and sent on all switch interfaces is 1500 bytes.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

The upper limit of the IP value is based on the switch or switch stack configuration and refers to the currently applied system MTU value. For more information about setting the MTU sizes, see the **system mtu** global configuration command.

To return to the default IP MTU setting, you can apply the **default ip mtu** command or the **no ip mtu** command on the interface.

You can verify your setting by entering the **show ip interface** *interface-id* or **show interfaces** *interface-id* privileged EXEC command.

The following example sets the maximum IP packet size for VLAN 200 to 1000 bytes:

```
Device(config)# interface vlan 200
Device(config-if)# ip mtu 1000
```

The following example sets the maximum IP packet size for VLAN 200 to the default setting of 1500 bytes:

```
Device(config)# interface vlan 200
Device(config-if)# default ip mtu
```

This is an example of partial output from the **show ip interface** *interface-id* command. It displays the current IP MTU setting for the interface.

```
Device# show ip interface gigabitethernet4/0/1
GigabitEthernet4/0/1 is up, line protocol is up
  Internet address is 18.0.0.1/24
  Broadcast address is 255.255.255.255
  Address determined by setup command
  MTU is 1500 bytes
  Helper address is not set

<output truncated>
```

ipv6 mtu

To set the IPv6 maximum transmission unit (MTU) size of routed packets on all routed ports of the switch or switch stack, use the **ipv6 mtu** command in interface configuration mode. To restore the default IPv6 MTU size, use the **no** form of this command.

ipv6 mtu *bytes*
no ipv6 mtu *bytes*

Syntax Description

bytes	MTU size, in bytes. The range is from 1280 up to the system MTU value (in bytes).

Command Default

The default IPv6 MTU size for frames received and sent on all switch interfaces is 1500 bytes.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

The upper limit of the IPv6 MTU value is based on the switch or switch stack configuration and refers to the currently applied system MTU value. For more information about setting the MTU sizes, see the **system mtu** global configuration command.

To return to the default IPv6 MTU setting, you can apply the **default ipv6 mtu** command or the **no ipv6 mtu** command on the interface.

You can verify your setting by entering the **show ipv6 interface** *interface-id* or **show interface** *interface-id* privileged EXEC command.

The following example sets the maximum IPv6 packet size for an interface to 2000 bytes:

```
Device(config)# interface gigabitethernet4/0/1
Device(config-if)# ipv6 mtu 2000
```

The following example sets the maximum IPv6 packet size for an interface to the default setting of 1500 bytes:

```
Device(config)# interface gigabitethernet4/0/1
Device(config-if)# default ipv6 mtu
```

This is an example of partial output from the **show ipv6 interface** *interface-id* command. It displays the current IPv6 MTU setting for the interface.

```
Device# show ipv6 interface gigabitethernet4/0/1
GigabitEthernet4/0/1 is up, line protocol is up
  Internet address is 18.0.0.1/24
  Broadcast address is 255.255.255.255
  Address determined by setup command
  MTU is 1500 bytes
  Helper address is not set

<output truncated>
```

lldp (interface configuration)

To enable Link Layer Discovery Protocol (LLDP) on an interface, use the **lldp** command in interface configuration mode. To disable LLDP on an interface, use the **no** form of this command.

lldp {**med-tlv-select** *tlv* | **receive** | **tlv-select** **power-management** | **transmit**}
no lldp {**med-tlv-select** *tlv* | **receive** | **tlv-select** **power-management** | **transmit**}

Syntax Description

med-tlv-select	Selects an LLDP Media Endpoint Discovery (MED) time-length-value (TLV) element to send.
tlv	String that identifies the TLV element. Valid values are the following: • **inventory-management**— LLDP MED Inventory Management TLV. • **location**— LLDP MED Location TLV. • **network-policy**— LLDP MED Network Policy TLV. • **power-management**— LLDP MED Power Management TLV.
receive	Enables the interface to receive LLDP transmissions.
tlv-select	Selects the LLDP TLVs to send.
power-management	Sends the LLDP Power Management TLV.
transmit	Enables LLDP transmission on the interface.

Command Default

LLDP is disabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

This command is supported on 802.1 media types.

If the interface is configured as a tunnel port, LLDP is automatically disabled.

The following example shows how to disable LLDP transmission on an interface:

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# no lldp transmit
```

The following example shows how to enable LLDP transmission on an interface:

```
Device(config)# interface gigabitethernet1/0/1
```

```
Device(config-if)# lldp transmit
```

logging event power-inline-status

To enable the logging of Power over Ethernet (PoE) events, use the **logging event power-inline-status** command in interface configuration mode. To disable the logging of PoE status events, use the **no** form of this command.

logging event power-inline-status
no logging event power-inline-status

Syntax Description

This command has no arguments or keywords.

Command Default

Logging of PoE events is enabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

The **no** form of this command does not disable PoE error events.

Examples

This example shows how to enable logging of PoE events on a port:

```
Device(config-if)# interface gigabitethernet1/0/1
Device(config-if)# logging event power-inline-status
Device(config-if)#
```

macro

To apply a macro to an interface or to apply and debug a macro on an interface, use the **macro** command in interface configuration mode.

macro {**apply** | **trace**}*macro-name* [**parameter** {*value*}][**parameter** {*value*}][**parameter** {*value*}]

Syntax Description

apply	Applies a macro to an interface.
trace	Applies a macro to an interface and then debugs it.
macro-name	Specifies the name of the macro.
parameter *value*	(Optional) Specifies unique parameter values that are specific to the interface. You can enter up to three keyword-value pairs. Parameter keyword matching is case sensitive. All matching occurrences of the keyword are replaced with the corresponding value.

Command Default

This command has no default setting.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

You can use the **macro apply** *macro-name* command to apply and show the macros running on an interface.

You can use the **macro trace** *macro-name* command to apply and then debug the macro to find any syntax or configuration errors.

If a command fails because of a syntax error or a configuration error when you apply a macro, the macro continues to apply the remaining commands to the interface.

When creating a macro that requires the assignment of unique values, use the **parameter** *value* keywords to designate values specific to the interface.

Keyword matching is case sensitive. All matching occurrences of the keyword are replaced with the corresponding value. Any full match of a keyword, even if it is part of a larger string, is considered a match and is replaced by the corresponding value.

Some macros might contain keywords that require a parameter value. You can use the **macro apply** *macro-name* ? command to display a list of any required values in the macro. If you apply a macro without entering the keyword values, the commands are invalid and are not applied.

There are Cisco-default SmartPorts macros embedded in the switch software. You can display these macros and the commands that they contain by using the **show parser macro** command in user EXEC mode.

Follow these guidelines when you apply a Cisco-default SmartPorts macro on an interface:

- Display all macros on the switch by using the **show parser macro** command in user EXEC mode. Display the contents of a specific macro by using the **show parser macro** *macro-name* command in user EXEC mode.
- Keywords that begin with $ mean that a unique parameter value is required. Append the Cisco-default macro with the required values by using the **parameter** *value* keywords.

The Cisco-default macros use the $ character to identify required keywords. You can use the $ character to define keywords when you create a macro.

When you apply a macro to an interface, the macro name is automatically added to the interface. You can display the applied commands and macro names by using the **show running-config interface** *interface-id* command in user EXEC mode.

A macro applied to an interface range behaves the same way as a macro applied to a single interface. When you use an interface range, the macro is applied sequentially to each interface within the range. If a macro command fails on one interface, it is still applied to the remaining interfaces.

You can delete a macro-applied configuration on an interface by entering the **default interface** *interface-id* command in interface configuration mode.

Example

After you use the **macro name** command, in interface configuration mode, you can apply it to an interface. This example shows how to apply a user-created macro called duplex to an interface:

```
Device(config-if)# macro apply duplex
```

To debug a macro, use the **macro trace** command, in interface configuration mode, to find any syntax or configuration errors in the macro as it is applied to an interface.

```
Device(config-if)# macro trace duplex
Applying command...'duplex auto'
%Error Unknown error.
Applying command...'speed nonegotiate'
```

This example shows how to display the Cisco-default cisco-desktop macro and how to apply the macro and set the access VLAN ID to 25 on an interface:

```
Device# show parser macro cisco-desktop
-------------------------------------------------------------
Macro name : cisco-desktop
Macro type : default
# Basic interface - Enable data VLAN only
# Recommended value for access vlan (AVID) should not be 1
switchport access vlan $AVID
switchport mode access
# Enable port security limiting port to a single
# MAC address -- that of desktop
switchport port-security
switchport port-security maximum 1
# Ensure port-security age is greater than one minute
# and use inactivity timer
switchport port-security violation restrict
switchport port-security aging time 2
switchport port-security aging type inactivity
# Configure port as an edge network port
spanning-tree portfast
```

```
spanning-tree bpduguard enable
------------------------------------------------------------------
Device#
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# interface gigabitethernet1/0/4
Device(config-if)# macro apply cisco-desktop $AVID 25
```

macro auto

To configure and apply a global macro using the CLI, use the **macro auto** command in privileged EXEC mode.

Use the **no** form of this command to return to the default setting.

macro auto {**apply** | **config**} *macro-name*

Syntax Description

apply	Applies the macro.
config	Enters the macro parameters.
macro-name	Specifies the macro name.

Command Default

No macros are applied to the switch.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

To remove the macro from the switch, enter the **no** forms of the macro commands.

If you enter the **macro auto config** *macro-name* command, you are prompted to enter values for all the macro parameters.

Use the exact text string when entering the macro-name. The entries are case sensitive.

The user-defined values appear only in the **show macro auto** or **show running-config** command output.

Example

This example shows how to display global macros:

```
Device# macro auto apply ?
CISCO_SWITCH_AAA_ACCOUNTING         Configure aaa accounting parameters
CISCO_SWITCH_AAA_AUTHENTICATION     Configure aaa authentication parameters
CISCO_SWITCH_AAA_AUTHORIZATION      Configure aaa authorization parameters
CISCO_SWITCH_AUTO_IP_CONFIG         Configure the ip parameters
CISCO_SWITCH_AUTO_PCI_CONFIG        Configure PCI compliant parameters
CISCO_SWITCH_DOMAIN_NAME_CONFIG     Configure domain name
CISCO_SWITCH_ETHERCHANNEL_CONFIG    Configure the etherchannel parameters
CISCO_SWITCH_HOSTNAME_CONFIG        Configure hostname
CISCO_SWITCH_HTTP_SERVER_CONFIG     Configure http server
CISCO_SWITCH_LOGGING_SERVER_CONFIG  Configure logging server
CISCO_SWITCH_MGMT_VLAN_CONFIG       Configure management vlan parameters
CISCO_SWITCH_NAME_SERVER_CONFIG     Configure name server parameters
CISCO_SWITCH_NTP_SERVER_CONFIG      Configure NTP server
CISCO_SWITCH_RADIUS_SERVER_CONFIG   Configure radius server
CISCO_SWITCH_SETUP_SNMP_TRAPS       Configure SNMP trap parameters
CISCO_SWITCH_SETUP_USR_CONFIG       Configure the user parameters
CISCO_SWITCH_SNMP_SOURCE_CONFIG     Configure snmp source interface
```

```
CISCO_SWITCH_TACACS_SERVER_CONFIG   Configure tacacs server
CISCO_SWITCH_USER_PASS_CONFIG       Configure username and password

Device# macro auto config ?
CISCO_SWITCH_AAA_ACCOUNTING         Configure aaa accounting parameters
CISCO_SWITCH_AAA_AUTHENTICATION     Configure aaa authentication parameters
CISCO_SWITCH_AAA_AUTHORIZATION      Configure aaa authorization parameters
CISCO_SWITCH_AUTO_IP_CONFIG         Configure the ip parameters
CISCO_SWITCH_AUTO_PCI_CONFIG        Configure PCI compliant parameters
CISCO_SWITCH_DOMAIN_NAME_CONFIG     Configure domain name
CISCO_SWITCH_ETHERCHANNEL_CONFIG    Configure the etherchannel parameters
CISCO_SWITCH_HOSTNAME_CONFIG        Configure hostname
CISCO_SWITCH_HTTP_SERVER_CONFIG     Configure http server
CISCO_SWITCH_LOGGING_SERVER_CONFIG  Configure logging server
CISCO_SWITCH_MGMT_VLAN_CONFIG       Configure management vlan parameters
CISCO_SWITCH_NAME_SERVER_CONFIG     Configure name server parameters
CISCO_SWITCH_NTP_SERVER_CONFIG      Configure NTP server
CISCO_SWITCH_RADIUS_SERVER_CONFIG   Configure radius server
CISCO_SWITCH_SETUP_SNMP_TRAPS       Configure SNMP trap parameters
CISCO_SWITCH_SETUP_USR_CONFIG       Configure the user parameters
CISCO_SWITCH_SNMP_SOURCE_CONFIG     Configure snmp source interface
CISCO_SWITCH_TACACS_SERVER_CONFIG   Configure tacacs server
CISCO_SWITCH_USER_PASS_CONFIG       Configure username and password
```

This example shows how to display the parameters for a specific macro:

```
Device# macro auto config CISCO_SWITCH_AUTO_IP_CONFIG ?
CISCO_SWITCH_DOMAIN_NAME_CONFIG     domain name parameters
CISCO_SWITCH_LOGGING_SERVER_CONFIG  logging host parameters
CISCO_SWITCH_NAME_SERVER_CONFIG     name server parameters
CISCO_SWITCH_NTP_SERVER_CONFIG      ntp server parameters
LINE                                Provide parameters of form [Parameters
                                    name=value]
<cr>


Device# macro auto config CISCO_SWITCH_AUTO_PCI_CONFIG ?
CISCO_SWITCH_AAA_ACCOUNTING         aaa accounting parameters
CISCO_SWITCH_AAA_AUTHENTICATION     aaa authentication parameters
CISCO_SWITCH_AAA_AUTHORIZATION      aaa authorization parameters
CISCO_SWITCH_HTTP_SERVER_CONFIG     http server parameters
CISCO_SWITCH_RADIUS_SERVER_CONFIG   radius server parameters
CISCO_SWITCH_TACACS_SERVER_CONFIG   tacacs server parameters
LINE                                Provide parameters of form [Parameters
                                    name=value]
<cr>


Device# macro auto config CISCO_SWITCH_SETUP_SNMP_TRAPS ?
CISCO_SWITCH_SNMP_SOURCE_CONFIG     snmp source parameters
LINE                                Provide parameters of form [Parameters
                                    name=value]
<cr>


Device# macro auto config CISCO_SWITCH_SETUP_USR_CONFIG ?CISCO_AUTO_TIMEZONE_CONFIG timezone
 parameters
CISCO_SWITCH_HOSTNAME_CONFIG        hostname parameter
LINE                                Provide parameters of form [Parameters
                                    name=value]
<cr>
```

This example shows how to set macro parameters and apply the macro using the CLI:

```
Device# macro auto config CISCO_SWITCH_ETHERCHANNEL_CONFIG
Enter the port channel id[1-48] for 3K & 2350,[1-6] for 2K: 2
Enter the port channel type, Layer:[2-3(L3 not supported on 2K)]: 2
Enter etherchannel mode for the interface[auto/desirable/on/active/passive]: active
Enter the channel protocol[lacp/none]: lacp
Enter the number of interfaces to join the etherchannel[8-PAGP/MODE:ON,16-LACP]: 7
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/1
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/2
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/3
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/4
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/5
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/6
Enter interface name[GigabitEthernet3/0/3]: gigabitethernet1/0/7
Do you want to apply the parameters? [yes/no]: yes
Enter configuration commands, one per line. End with CNTL/Z.
Enter configuration commands, one per line. End with CNTL/Z.
Enter configuration commands, one per line. End with CNTL/Z.
Enter configuration commands, one per line. End with CNTL/Z.
Enter configuration commands, one per line. End with CNTL/Z.
Enter configuration commands, one per line. End with CNTL/Z.
Enter configuration commands, one per line. End with CNTL/Z.
Device# macro auto apply CISCO_SWITCH_ETHERCHANNEL_CONFIG
Enter configuration commands, one per line. End with CNTL/Z.
Device#
```

macro auto apply (Cisco IOS shell scripting capability)

To configure and apply a global macro using the Cisco IOS shell scripting capability, use the **macro auto apply** command in privileged EXEC mode. Use the **no** form of this command to return to the default setting.

macro auto apply *macro-name*

Syntax Description

apply	Applies the macro.
macro-name	Specifies the macro name.

Command Default

No macros are applied to the switch.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

To remove the macro from the switch, enter the **no** forms of the macro commands.

Use the exact text string when entering the *macro-name*. The entries are case sensitive.

The user-defined values appear only in the **show macro auto** or **show running-config** command output.

You can also use the Cisco IOS shell scripting capability to set the parameters. For examples, see the

"Configuring and Applying Global Macros" section in the "Configuring Auto Smartports and Static Smartports Macros" chapter.

Example

This example shows how to display global macros:

```
Device# macro auto apply ?

CISCO_SWITCH_AAA_ACCOUNTING         Configure aaa accounting parameters
CISCO_SWITCH_AAA_AUTHENTICATION     Configure aaa authentication parameters
CISCO_SWITCH_AAA_AUTHORIZATION      Configure aaa authorization parameters
CISCO_SWITCH_AUTO_IP_CONFIG         Configure the ip parameters
CISCO_SWITCH_AUTO_PCI_CONFIG        Configure PCI compliant parameters
CISCO_SWITCH_DOMAIN_NAME_CONFIG     Configure domain name
CISCO_SWITCH_ETHERCHANNEL_CONFIG    Configure the etherchannel parameters
CISCO_SWITCH_HOSTNAME_CONFIG        Configure hostname
CISCO_SWITCH_HTTP_SERVER_CONFIG     Configure http server
CISCO_SWITCH_LOGGING_SERVER_CONFIG  Configure logging server
CISCO_SWITCH_MGMT_VLAN_CONFIG       Configure management vlan parameters
CISCO_SWITCH_NAME_SERVER_CONFIG     Configure name server parameters
CISCO_SWITCH_NTP_SERVER_CONFIG      Configure NTP server
CISCO_SWITCH_RADIUS_SERVER_CONFIG   Configure radius server
CISCO_SWITCH_SETUP_SNMP_TRAPS       Configure SNMP trap parameters
CISCO_SWITCH_SETUP_USR_CONFIG       Configure the user parameters
CISCO_SWITCH_SNMP_SOURCE_CONFIG     Configure snmp source interface
```

```
CISCO_SWITCH_TACACS_SERVER_CONFIG   Configure tacacs server
CISCO_SWITCH_USER_PASS_CONFIG       Configure username and password
```

macro auto config (Cisco IOS shell scripting capability)

To configure and apply a global macro, use the **macro auto config** command in privileged EXEC mode. Use the **no** form of this command to return to the default setting.

macro auto config *macro-name* [*parameter=value* [*parameter=value*]**...**]

Syntax Description

config	Enters the macro parameters.
macro-name	Specifies the macro name.
parameter=value [parameter=value] ...	*parameter=value*—Replaces values for global macro parameter values. Enter values in the form of name value pair separated by a space: <name1>=<value1> [<name2>=<value2>...]

Command Default

No macros are applied to the switch.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

To remove the macro from the switch, enter the **no** forms of the macro commands.

If you enter the **macro auto config** *macro-name* command, you are prompted to enter values for all the macro parameters.

Use the exact text string when entering the *macro-name* and *parameters*. The entries are case sensitive.

The user-defined values appear only in the **show macro auto** or **show running-config** command output.

You can also use the Cisco IOS shell scripting capability to set the parameters. For examples, see the "Configuring and Applying Global Macros" section in the "Configuring Auto Smartports and Static Smartports Macros" chapter.

macro auto control

To specify when the switch applies an Auto Smartports macro based on the detection method, device type, or trigger (referred to as event trigger control), use the **macro auto control** command in interface configuration mode. Use the **no** form of this command to disable trigger-to-macro mapping. The switch then does not apply macros based on event triggers.

macro auto control {**detection** [**cdp**] [**lldp**] [**mac-address**] | **device** [**ip-camera**] [**media-player**] [**phone**] [**lightweight-ap**] [**access-point**] [**router**] [**switch**] | **trigger** [**last-resort**]}
no macro auto control {**detection** [**cdp**] [**lldp**] [**mac-address**] | **device** [**ip-camera**] [**media-player**] [**phone**] [**lightweight-ap**] [**access-point**] [**router**] [**switch**] | **trigger** [**last-resort**]}

Syntax Description

detection [cdp] [lldp] [mac-address]	detection—Sets one or more of these as an event trigger: • (Optional) **cdp**—CDP messages • (Optional) **lldp**—LLDP messages • (Optional) **mac-address**—User-defined MAC address groups
device [access-point] [ip-camera] [lightweight-ap] [media-player] [phone] [router] [switch]	device—Sets one or more of these devices as an event trigger: • (Optional) **access-point**—Autonomous access point • (Optional) **ip-camera**—Cisco IP video surveillance camera • (Optional) **lightweight-ap**—Lightweight access point • (Optional) **media-player**—Digital media player • (Optional) **phone**—Cisco IP phone • (Optional) **router**—Cisco router • (Optional) **switch**—Cisco switch
trigger [last-resort]	trigger—Sets a specific event trigger. • (Optional) **last-resort**—Last-resort trigger.

Command Default

The switch uses the device type as the event trigger. If the switch cannot determine the device type, it uses MAC address groups, MAB messages, 802.1x authentication messages, and LLDP messages in random order.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

If you do not set event triggers, the switch uses the device type as the event trigger. If the switch cannot determine the device type, it uses MAC address groups, MAB messages, 802.1x authentication messages, and LLDP messages in random order.

To verify that a macro is applied to an interface, use the **show macro auto interface** command in user EXEC mode.

Example

This example shows how to set LLDP messages and MAC address groups as event triggers:

```
Device(config)# interface gigabitethernet 5/0/2
Device(config-if)# macro auto control detection lldp mac-address
Device(config-if)# exit
Device(config)# end
```

This example shows how to set access points, video surveillance cameras, and digital media players as event triggers:

Note The switch applies a built-in macro only when it detects an access point, video surveillance camera, or digital media player.

```
Device(config)# interface gigabitethernet 5/0/1
Device(config-if)# macro auto control device access-point ip-camera media-player
Device(config-if)# exit
Device(config)# end
```

macro auto execute

To replace built-in macro default values and to configure mapping from an event trigger to a built-in or user-defined macro, use the **macro auto execute** command in global configuration mode.

macro auto execute *event trigger* {**builtin** *built-in macro* | **remote** *url*} {*parameter=value*} {*function contents*}
no macro auto execute *event trigger* {**builtin** *built-in macro* | **remote** *url*} {*parameter=value*} {*function contents*}

Syntax Description

event trigger	Defines mapping from an event trigger to a built-in macro. Specifies an event trigger: • CISCO_CUSTOM_EVENT • CISCO_DMP_EVENT • CISCO_IPVSC_EVENT • CISCO_LAST_RESORT_EVENT • CISCO_PHONE_EVENT • CISCO_ROUTER_EVENT • CISCO_SWITCH_EVENT • CISCO_WIRELESS_AP_EVENT • CISCO_WIRELESS_LIGHTWEIGHT_AP_EVENT • WORD—Apply a user-defined event trigger such as a MAC address group

builtin *built-in macro name*	(Optional) Specifies a builtin built-in macro name: • CISCO_AP_AUTO_SMARTPORT Specify the parameter value: NATIVE_VLAN=1 • CISCO_DMP_AUTO_SMARTPORT Specify the parameter value: ACCESS_VLAN=1. • CISCO_IPVSC_AUTO_SMARTPORT Specify the parameter value: ACCESS_VLAN=1. • CISCO_LWAP_AUTO_SMARTPORT Specify the parameter value: ACCESS_VLAN=1. • CISCO_PHONE_AUTO_SMARTPORT Specify the parameter values: ACCESS_VLAN=1 and VOICE_VLAN=2. • CISCO_ROUTER_AUTO_SMARTPORT Specify the parameter value: NATIVE_VLAN=1. • CISCO_SWITCH_AUTO_SMARTPORT Specify the parameter value: NATIVE_VLAN=1.
parameter=value	(Optional) *parameter=value*—Replaces default values for parameter values shown for the *bultin-macro name*, for example, ACCESS_VLAN=1. Enter new values in the form of name value pair separated by a space: [<name1>=<value1> <name2>=<value2>...].
{function contents}	(Optional) *{function contents}*— Specifies a user-defined macro to associate with the trigger. Enter the macro contents within braces. Begin the Cisco IOS shell commands with the left brace and end the command grouping with the right brace.

remote *url*	(Optional) Specifies a remote server location: • The syntax for the local flash file system on the standalone switch or the stack's active switch: **flash**: The syntax for the local flash file system on a stack member: **flash** *member number*: The syntax for the FTP: **ftp**:[[//*username*[:*password*]@*location*]/*directory*]/*filename* The syntax for an HTTP server: **http**://[[*username*:*password*]@]{*hostname* | *host-ip*}[/*directory*]/*filename* The syntax for a secure HTTP server: **https**://[[*username*:*password*]@]{*hostname* | *host-ip*}[/*directory*]/*filename* The syntax for the NVRAM: **nvram**://[[*username*:*password*]@][/*directory*]/*filename* The syntax for the Remote Copy Protocol (RCP): **rcp**:[[//*username@location*]/*directory*]/*filename* The syntax for the Secure Copy Protocol (SCP): **scp**:[[//*username@location*]/*directory*]/*filename* The syntax for the TFTP: **tftp**:[[//*location*]/*directory*]/*filename*

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **macro auto execute** command to replace the built-in macro default values with values that are specific to your switch.

The switch automatically maps from event triggers to built-in macros. The built-in macros are system-defined macros in the software image. You can also create user-defined macros by using the Cisco IOS shell scripting capability.

You can create new event triggers by using the **shell trigger** commands in global configuration mode. Use the **show shell triggers** command in privileged EXEC to display the contents of the user-defined triggers and macros.

You can use the **macro auto mac-address-group** command in global configuration mode to create event triggers for devices that do not support Cisco Discovery Protocol (CDP) or Link Layer Discovery Protocol (LLDP).

You can use the remote macro feature to store macros in a central location for designated network switches to use. You can then maintain and update the macro files for use by multiple switches. Use **remote** *url* to configure the remote server location and macro path information. There are no specific file extension requirements for saved macro files.

Auto Smartports macros and antimacros (the antimacro is the portion of the applied macro that removes it at link down) have these guidelines and limitations:

- You can delete or change the built-in macros. However, you can override a built-in macro by creating a user-defined macro with the same name. To restore the original built-in macro, delete the user-defined macro.
- If you enable both the **macro auto device** and the **macro auto execute** commands, the parameters specified in the command last executed are applied to the switch. Only one command is active on the switch.
- To avoid system conflicts when macros are applied, remove all port configurations except for 802.1x authentication.
- Do not configure port security when enabling Auto SmartPorts on the switch.
- If the macro conflicts with the original configuration, either the macro does not apply some of the original configuration commands, or the antimacro does not remove them. (The antimacro is the portion of the applied macro that removes the macro at a link-down event.)
- For example, if 802.1x authentication is enabled, you cannot remove the switchport-mode access configuration. Remove the 802.1x authentication before removing the switchport mode configuration.
- A port cannot be a member of an EtherChannel when you apply Auto SmartPorts macros.
- The built-in-macro default data VLAN is VLAN 1. The default voice VLAN is VLAN 2. If your switch uses different access, native, or voice VLANs, use the **macro auto device** or the **macro auto execute** commands to configure the values.
- For 802.1x authentication or MAC authentication bypass (MAB), to detect non-Cisco devices, configure the RADIUS server to support the Cisco attribute-value pair **auto-smart-port=***event trigger*
- The switch supports Auto SmartPort macros only on directly connected devices. Multiple device connections, such as hubs, are not supported.
- If authentication is enabled on a port, the switch ignores a MAC address trigger if authentication fails.
- The order of CLI commands within the macro and the corresponding antimacro can be different.

.

Example

This example shows how to use two built-in macros for connecting Cisco switches and Cisco IP phones to the switch. This example modifies the default voice VLAN, access VLAN, and native VLAN for the trunk interface:

```
Device(config)# !!! the next command modifies the access and voice vlans
Device(config)# !!! for the built in Cisco IP phone auto smartport macro
Device(config)# macro auto execute CISCO_PHONE_EVENT builtin CISCO_PHONE_AUTO_SMARTPORT
ACCESS_VLAN=10 VOICE_VLAN=20
Device(config)# !!! the next command modifies the Native vlan used for inter switch trunks
```

```
Device(config)# macro auto execute CISCO_SWITCH_EVENT builtin CISCO_SWITCH_AUTO_SMARTPORT
NATIVE_VLAN=10
Device(config)# !!! the next command enables auto smart ports globally
Device(config)# macro auto global processing
Device(config)# exit
Device# !!! here is the running configuration of the interface connected
Device# !!! to another Cisco Switch after the Macro is applied
Device# show running-config interface gigabitethernet1/0/1
Building configuration...

Current configuration : 284 bytes
!
interface GigabitEthernet1/0/1
 switchport trunk encapsulation dot1q
 switchport trunk native vlan 10
 switchport mode trunk
 srr-queue bandwidth share 10 10 60 20
 queue-set 2
 priority-queue out
 mls qos trust cos
 auto qos voip trust
 macro description CISCO_SWITCH_EVENT
end
```

This example shows how to map a user-defined event trigger called media player to a user-defined macro

1. Connect the media player to an 802.1x- or MAB-enabled switch port.
2. On the RADIUS server, set the attribute-value pair to auto-smart-port=DMP_EVENT
3. On the switch, create the event trigger DMP_EVENT, and enter the user-defined macro commands.
4. The switch recognizes the attribute-value pair=DMP_EVENT response from the RADIUS server and applies the macro associated with this event trigger.

```
Device(config)# shell trigger DMP_EVENT mediaplayer
Device(config)# macro auto execute DMP_EVENT {
if [[ $LINKUP == YES ]]; then
conf t
 interface $INTERFACE
   macro description $TRIGGER
   switchport access vlan 1
   switchport mode access
   switchport port-security
   switchport port-security maximum 1
   switchport port-security violation restrict
   switchport port-security aging time 2
   switchport port-security aging type inactivity
   spanning-tree portfast
   spanning-tree bpduguard enable
   exit
fi
if [[ $LINKUP == NO ]]; then
conf t
interface $INTERFACE
     no macro description $TRIGGER
     no switchport access vlan 1
     if [[ $AUTH_ENABLED == NO ]]; then
        no switchport mode access
     fi
```

```
     no switchport port-security
     no switchport port-security maximum 1
     no switchport port-security violation restrict
     no switchport port-security aging time 2
     no switchport port-security aging type inactivity
     no spanning-tree portfast
     no spanning-tree bpduguard enable
     exit
fi
```

Table 1: Supported Cisco IOS Shell Keywords

Command	Description
{	Begin the command grouping.
}	End the command grouping.
[[	Use as a conditional construct.
]]	Use as a conditional construct.
else	Use as a conditional construct.
==	Use as a conditional construct.
fi	Use as a conditional construct.
if	Use as a conditional construct.
then	Use as a conditional construct.
-z	Use as a conditional construct.
$	Variables that begin with the $ character are replaced with a parameter value.
#	Use the # character to enter comment text.

Table 2: Unsupported Cisco IOS Shell Reserved Keywords

Command	Description
|	Pipeline.
case	Conditional construct.
esac	Conditional construct.
for	Looping construct.
function	Shell function.
in	Conditional construct.
select	Conditional construct.

Command	Description
time	Pipeline.
until	Looping construct.
while	Looping construct.

macro auto global control

To specify when the switch applies an Auto Smartports macro based on the device type or trigger (referred to as event trigger control), use the **macro auto global control** command in global configuration mode. Use the **no** form of this command to disable trigger-to-macro mapping.

macro auto global control {**detection** [**cdp**] [**lldp**][**mac-address**] | **device** [**access-point**] [**ip-camera**] [**lightweight-ap**] [**media-player**] [**phone**] [**router**] [**switch**] | **trigger** [**last-resort**]}
no macro auto global control {**detection** [**cdp**] [**lldp**] [**mac-address**] | **device** [**access-point**] [**ip-camera**] [**lightweight-ap**] [**media-player**] [**phone**] [**router**] [**switch**] | **trigger** [**last-resort**]}

Syntax Description

detection [cdp] [lldp] [mac-address]	detection—Sets one or more of these as an event trigger: • (Optional) **cdp**—CDP messages • (Optional) **lldp**—LLDP messages • (Optional) **mac-address**—User-defined MAC address groups
device [access-point] [ip-camera] [lightweight-ap] [media-player] [phone] [router] [switch]	device—Sets one or more of these devices as an event trigger: • (Optional) **access-point**—Autonomous access point • (Optional) **ip-camera**—Cisco IP video surveillance camera • (Optional) **lightweight-ap**—Lightweight access point • (Optional) **media-player**—Digital media player • (Optional) **phone**—Cisco IP phone • (Optional) **router**—Cisco router • (Optional) **switch**—Cisco switch
trigger [last-resort]	trigger—Sets a specific event trigger. • (Optional) **last-resort**—Last-resort trigger.

Command Default

The switch uses the device type as the event trigger. If the switch cannot determine the device type, it uses MAC address groups, MAB messages, 802.1x authentication messages, and LLDP messages in random order.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

If you do not set event triggers, the switch uses the device type as the event trigger. If the switch cannot determine the device type, it uses MAC address groups, MAB messages, 802.1x authentication messages, and LLDP messages in random order.

To verify that a macro is applied to a switch, use the **show macro auto global** command in user EXEC mode.

Example

This example shows how to set CDP messages, LLDP messages and MAC address groups as event triggers:

```
Device(config)# macro auto global control detection cdp lldp mac-address
Device(config)# end
```

This example shows how to set autonomous access points, lightweight access points, and IP phones:

```
Device(config)# macro auto global control device access-point lightweight-ap phone
Device(config)# end
```

macro auto global processing

To enable Auto SmartPorts macros on the switch, use the **macro auto global processing** command in global configuration mode. Use the **no** form of this command to disable the macros.

macro auto global processing

no macro auto global processing

Command Default

Auto Smartports is disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **macro auto global processing** command to globally enable macros on the switch. To disable macros on a specific port, use the **no macro auto processing** command in interface mode.

When using 802.1x or MAB authentication, you need to configure the RADIUS server to support the Cisco attribute-value pair **auto-smart-port**=*event trigger*. If authentication fails, the macro is not applied. If the 802.1x or MAB authentication fails on the interface, the switch does not use the fallback CDP event trigger.

When CDP-identified devices advertise multiple capabilities, the switch chooses a capability first by switch and then by router.

To verify that a macro is applied to an interface, use the **show macro auto interface**command in privileged EXEC mode.

Example

This example shows how to enable Auto SmartPorts on the switch and to disable the feature on a specific interface:

```
Device(config)# macro auto global processing
Device(config)# interface gigabitethernet 0/1
Device(config-if)# no macro auto processing
Device(config-if)# exit
Device(config)#
```

macro auto mac-address-group

To create an event trigger for devices that do not support Cisco Discovery Protocol (CDP) or Link Layer Discover Protocol (LLDP), use the **macro auto mac-address-group** command in global configuration mode. Use the **no** form of this command to delete the group.

macro auto mac-address-group *name* {**mac-address list** *list* | **oui** {**list** *list* | **range** *start-value* **size** *number*}}
no macro auto mac-address-group *name* {**mac-address list** *list* | **oui** {**list** *list* | **range** *start-value* **size** *number*}}

Syntax Description

name	Specifies the group name.
ui	(Optional) Specifies an operationally unique identifier (OUI) **list** or **range**. • **list**—Enter an OUI list in hexadecimal format separated by spaces. • **range**—Enter the starting OUI hexadecimal value (*start-value*). • **size**—Enter the length of the range (number) from 1 to 5 to create a list of sequential addresses.
mac-address list *list*	(Optional) Configures a list of MAC addresses separated by a space.

Command Default

No groups are defined.

Command Modes

Group configuration (config-addr-grp-mac)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **macro auto mac-address-group** command to create an event trigger for devices that do not support CDP or LLDP. Use the MAC address group as a trigger to map to a built-in or user-defined macro by using the **macro auto execute** command. At link-up the switch detects the device type and applies the specified macro.

The switch supports up to ten MAC address groups. Each group can have up to 32 OUI and 32 MAC configured addresses.

Example

This example shows how to create a MAC-address-group event trigger called *address_trigger* and how to verify your entries:

```
Device(config)# macro auto mac-address-group mac address_trigger
Device(config-addr-grp-mac)# mac-address list 2222.3333.3334 22.33.44 a.b.c
Device(config-addr-grp-mac)# oui list 455555 233244
```

```
Device(config-addr-grp-mac)# oui range 333333 size 2
Device(config-addr-grp-mac)# exit
Device(config)# end
Device# show running configuration
!
!macro auto mac-address-group address_trigger
 oui list 333334
 oui list 333333
 oui list 233244
 oui list 455555
 mac-address list 000A.000B.000C
 mac-address list 0022.0033.0044
 mac-address list 2222.3333.3334
!

<output truncated>
```

macro auto processing

To enable Auto SmartPorts macros on an interface, use the **macro auto processing** command in interface configuration mode. Use the no form of this command to disable the macros.

macro auto processing

no macro auto processing

Command Default

Auto SmartPorts is disabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **macro auto processing** command, in interface configuration mode, to enable macros on a specific interface. To disable macros on a specific interface, use the no macro auto processing command, in interface configuration mode.

A port cannot be a member of an EtherChannel when you apply Auto SmartPorts macros. If you use EtherChannels, disable Auto SmartPorts on the EtherChannel interface by using the **no macro auto processing** command. The EtherChannel interface applies the configuration to the member interfaces.

To verify that a macro is applied to an interface, use the **show macro auto interface** command in privileged EXEC mode.

Example

This example shows how to enable Auto SmartPorts on the switch and to disable the feature on a specific interface:

```
Device(config)# interface gigabitethernet 0/1
Device(config-if)# no macro auto processing
Device(config-if)# exit
Device(config)# macro auto global processing
```

macro auto sticky

To configure macros to remain active after a link-down event, referred to as macro persistence, use the **macro auto sticky** command in global configuration mode. Use the **no** form of this command to disable the macro persistence.

macro auto sticky
no macro auto sticky

Command Default

Macro persistence is disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **macro auto sticky** command so that macros remain active after a link-down event.

Example

This example shows how to enable macro persistence on an interface:

```
Device(config)# interface gigabitethernet 5/0/2
Device(config-if)# macro auto port sticky
Device(config-if)# exit
Device(config)# end
```

macro auto trigger

To enter the configure-macro-trigger mode and define a trigger for a device that has no built-in trigger and associate the trigger with a device or profile, use the **macro auto trigger** command in global configuration mode. To remove the user-defined trigger, use the **no** form of this command.

macro auto trigger *trigger_name* {**device** | **exit** | **no** | **profile**}
no macro auto trigger *trigger_name* {**device** | **exit** | **no** | **profile**}

Syntax Description

trigger_name	Specifies a trigger to be associated with the device type or profile name.
device	Specifies a device name to map to the named trigger.
exit	Exits device group configuration mode.
no	Removes any configured device.
profile	Specifies a profile name to map to the named trigger.

Command Default

No user-defined triggers are configured.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

If a device is classified by the Device Classifier, but does not have a built-in trigger defined, use the **macro auto trigger** command, in global configuration mode, to define a trigger based on a device name or a profile name. After you enter the command, the switch is in the configure-macro-trigger mode and the **device**, **exit**, **no**, and **profile** keywords are visible. In this mode, you can provide a device name or a profile name to map to the trigger. It is not necessary to map the trigger to both a device name and a profile name. If you map the trigger to both names, the trigger-to-profile name mapping has preference for macro application.

You must use this command to configure a trigger when you configure a user-defined macro. The trigger name is required for the custom macro configuration.

After the device is profiled, you must add the complete string to the device-group database.

Example

This example shows how to configure a user-defined trigger for a profile called DMP_EVENT mediaplayer for use with a media player that has no built-in trigger:

```
Device(config)# macro auto trigger DMP
Device(config-macro-trigger)# profile mediaplayer-DMP
Device(config-macro-trigger)# exit
```

macro description

To enter a description about which macros are applied to an interface, use the **macro description** command in interface configuration mode. Use the **no** form of this command to remove the description. This command is mandatory for Auto SmartPorts to work.

macro description *text*
no macro description *text*

Syntax Description

description *text*	Enters a description about the macros that are applied to the specified interface.

Command Default

This command has no default setting.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **description** keyword to associate comment text or the macro name with an interface. When multiple macros are applied on a single interface, the description text is from the last applied macro.

You can verify your settings by entering the **show parser macro description** command in privileged EXEC mode.

Example

This example shows how to add a description to an interface:

```
(config-if)# macro description duplex settings
```

macro global

To apply a macro to a switch or to apply and debug a macro on a switch, use the **macro global** command in global configuration mode.

macro global {**apply** | **trace**} *macro-name* [**parameter** {*value*}][**parameter** {*value*}][**parameter** {*value*}] parameter

Syntax Description

apply	Applies a macro to the switch.
trace	Applies a macro to a switch and debugs the macro.
macro-name	Specifies the name of the macro.
parameter *value*	(Optional) Specifies unique parameter values that are specific to the switch. You can enter up to three keyword-value pairs. Parameter keyword matching is case sensitive. All matching occurrences of the keyword are replaced with the corresponding value.

Command Default

This command has no default setting.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Note You can delete a global macro-applied configuration on a switch only by entering the no version of each command in the macro.

Use the **macro global apply** *macro-name* command to apply the macro to an interface.

Use the **macro global trace** *macro-name* command to apply and then debug the macro to find any syntax or configuration errors.

If a command fails when you apply a macro because of a syntax error or a configuration error, the macro continues to apply the remaining commands to the switch.

When creating a macro that requires the assignment of unique values, use the **parameter** *value* keywords to designate values specific to the switch.

Keyword matching is case sensitive. All matching occurrences of the keyword are replaced with the corresponding value. Any full match of a keyword, even if it is part of a larger string, is considered a match and is replaced by the corresponding value.

Some macros might contain keywords that require a parameter value. You can use the **macro global apply** *macro-name* ? command to display a list of any required values in the macro. If you apply a macro without entering the keyword values, the commands are invalid and are not applied.

There are Cisco-default Smartports macros embedded in the switch software. You can display these macros and the commands they contain by using the **show parser macro** command in user EXEC mode.

Follow these guidelines when you apply a Cisco-default Smartports macro on a switch:

- Display all macros on the switch by using the **show parser macro** command. Display the contents of a specific macro by using the **show parser macro name** *macro-name* command.
- Keywords that begin with $ mean that a unique parameter value is required. Append the Cisco-default macro with the required values by using the **parameter** *value* keywords.

  The Cisco-default macros use the $ character to help identify required keywords. There is no restriction on using the $ character to define keywords when you create a macro.

When you apply a macro to a switch, the macro name is automatically added to the switch. You can display the applied commands and macro names by using the **show running-config** command.

Example

After you have created a new macro by using the **macro auto execute** command, you can apply it to a switch. This example shows how to view the **snmp** macro, how to apply the macro, set the hostname to test-server, and set the IP precedence value to 7:

```
Device# show parser macro name snmp
Macro name : snmp
Macro type : customizable

#enable port security, linkup, and linkdown traps
snmp-server enable traps port-security
snmp-server enable traps linkup
snmp-server enable traps linkdown
#set snmp-server host
snmp-server host ADDRESS
#set SNMP trap notifications precedence
snmp-server ip precedence VALUE

----------------------------------------------------
Device(config)# macro global apply snmp ADDRESS test-server VALUE 7
```

To debug a macro, use the **macro global trace** command to find any syntax or configuration errors in the macro when you apply it to a switch. In this example, the **ADDRESS** parameter value was not entered, the **snmp-server host** command failed, and the remainder of the macro is applied to the switch:

```
Device(config)# macro global trace snmp VALUE 7
Applying command...'snmp-server enable traps port-security'
Applying command...'snmp-server enable traps linkup'
Applying command...'snmp-server enable traps linkdown'
Applying command...'snmp-server host'
%Error Unknown error.
Applying command...'snmp-server ip precedence 7'
```

macro global description

To enter a description about the macros that are applied to a switch, use the **macro global description** command in global configuration mode. Use the **no** form of this command to remove the description.

macro global description *text*

no macro global description *text*

Syntax Description

description *text*	Enters a description about the macros that are applied to the switch.

Command Default

This command has no default setting.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **description** keyword to associate comment text or the macro name with a switch. When multiple macros are applied on a switch, the description text is from the last applied macro.

You can verify your settings by entering the **show parser macro description** command in privileged EXEC mode.

Example

This example shows how to add a description to a switch:

```
Device(config)# macro global description udld aggressive mode enabled
```

mdix auto

To enable the automatic medium-dependent interface crossover (auto-MDIX) feature on the interface, use the **mdix auto** command in interface configuration mode. To disable auto-MDIX, use the **no** form of this command.

mdix auto
no mdix auto

Syntax Description

This command has no arguments or keywords.

Command Default

Auto-MDIX is enabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

When auto-MDIX is enabled, the interface automatically detects the required cable connection type (straight-through or crossover) and configures the connection appropriately.

When you enable auto-MDIX on an interface, you must also set the interface speed and duplex to **auto** so that the feature operates correctly.

When auto-MDIX (and autonegotiation of speed and duplex) is enabled on one or both of the connected interfaces, link up occurs, even if the cable type (straight-through or crossover) is incorrect.

Auto-MDIX is supported on all 10/100 and 10/100/1000 Mb/s interfaces and on 10/100/1000BASE-TX small form-factor pluggable (SFP) module interfaces. It is not supported on 1000BASE-SX or -LX SFP module interfaces.

You can verify the operational state of auto-MDIX on the interface by entering the **show controllers ethernet-controller** *interface-id* **phy** privileged EXEC command.

This example shows how to enable auto-MDIX on a port:

```
Device# configure terminal
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# speed auto
Device(config-if)# duplex auto
Device(config-if)# mdix auto
Device(config-if)# end
```

mode (power-stack configuration)

To configure power stack mode for the power stack, use the **mode** command in power-stack configuration mode. To return to the default settings, use the **no** form of the command.

mode {**power-shared** | **redundant**} [**strict**]
no mode

Syntax Description

power-shared	Sets the power stack to operate in power-shared mode. This is the default.
redundant	Sets the power stack to operate in redundant mode. The largest power supply is removed from the power pool to be used as backup power in case one of the other power supplies fails.
strict	(Optional) Configures the power stack mode to run a strict power budget. The stack power needs cannot exceed the available power.

Command Default

The default modes are **power-shared** and nonstrict.

Command Modes

Power-stack configuration (config-stackpower)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

This command is available only on switch stacks running the IP Base or IP Services feature set.

To access power-stack configuration mode, enter the **stack-power stack** *power stack name* global configuration command.

Entering the **no mode** command sets the switch to the defaults of **power-shared** and non-strict mode.

Note For stack power, available power is the total power available for PoE from all power supplies in the power stack, available power is the power allocated to all powered devices connected to PoE ports in the stack, and consumed power is the actual power consumed by the powered devices.

In **power-shared** mode, all of the input power can be used for loads, and the total available power appears as one large power supply. The power budget includes all power from all supplies. No power is set aside for power supply failures. If a power supply fails, load shedding (shutting down of powered devices or switches) might occur.

In **redundant** mode, the largest power supply is removed from the power pool to use as backup power in case one of the other power supplies fails. The available power budget is the total power minus the largest power supply. This reduces the available power in the pool for switches and powered devices, but in case of a failure or an extreme power load, there is less chance of having to shut down switches or powered devices.

In **strict** mode, when a power supply fails and the available power drops below the budgeted power, the system balances the budget through load shedding of powered devices, even if the actual power is less than the available power. In nonstrict mode, the power stack can run in an over-allocated state and is stable as long as

the actual power does not exceed the available power. In this mode, a powered device drawing more than normal power could cause the power stack to start shedding loads. This is normally not a problem because most devices do not run at full power. The chances of multiple powered devices in the stack requiring maximum power at the same time is small.

In both strict and nonstrict modes, power is denied when there is no power available in the power budget.

This is an example of setting the power stack mode for the stack named power1 to power-shared with strict power budgeting. All power in the stack is shared, but when the total available power is allotted, no more devices are allowed power.

```
Device(config)# stack-power stack power1
Device(config-stackpower)# mode power-shared strict
Device(config-stackpower)# exit
```

This is an example of setting the power stack mode for the stack named power2 to redundant. The largest power supply in the stack is removed from the power pool to provide redundancy in case one of the other supplies fails.

```
Device(config)# stack-power stack power2
Device(config-stackpower)# mode redundant
Device(config-stackpower)# exit
```

monitoring

To enable monitoring of all optical transceivers and to specify the time period for monitoring the transceivers, use the **monitoring** command in transceiver type configuration mode. To disable the monitoring, use the **no** form of this command.

monitoring [**interval** *seconds*]
no monitoring [**interval**]

Syntax Description

interval *seconds*	(Optional) Specifies the time interval for monitoring optical transceivers. The range is from 300 to 3600 seconds, and the default interval time is 600 seconds.

Command Default

The interval time is 600 seconds.

Command Modes

Transceiver type configuration (config-xcvr-type)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

You need digital optical monitoring (DOM) feature and transceiver module compatibility information to configure the **monitoring** command. Refer to the compatibility matrix to get the lists of Cisco platforms and minimum required software versions to support Gigabit Ethernet transceiver modules.

Gigabit Ethernet Transceivers transmit and receive Ethernet frames at a rate of a gigabit per second, as defined by the IEEE 802.3-2008 standard. Cisco's Gigabit Ethernet Transceiver modules support Ethernet applications across all Cisco switching and routing platforms. These pluggable transceivers offer a convenient and cost effective solution for the adoption in data center, campus, metropolitan area access and ring networks, and storage area networks.

The **interval** keyword enables you to change the default polling interval. For example, if you set the interval as 1500 seconds, polling happens at every 1500th second. During the polling period entSensorStatus of optical transceivers is set to *Unavailable*, and once the polling finishes entSensorStatus shows the actual status.

Examples

This example shows how to enable monitoring of optical transceivers and set the interval time for monitoring to 1500 seconds:

```
Device# configure terminal
Device(config)# transceiver type all
Device(config-xcvr-type)# monitoring interval 1500
```

This example shows how to disable monitoring for all transceiver types:

```
Device(config-xcvr-type)# no monitoring
```

Related Commands

Command	Description
transceiver type all	Enables monitoring on all transceivers.

network-policy

To apply a network-policy profile to an interface, use the **network-policy** command in interface configuration mode. To remove the policy, use the **no** form of this command.

network-policy *profile-number*
no network-policy

Syntax Description

profile-number	The network-policy profile number to apply to the interface.

Command Default

No network-policy profiles are applied.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **network-policy** *profile number* interface configuration command to apply a profile to an interface.

You cannot apply the **switchport voice vlan** command on an interface if you first configure a network-policy profile on it. However, if **switchport voice vlan** *vlan-id* is already configured on the interface, you can apply a network-policy profile on the interface. The interface then has the voice or voice-signaling VLAN network-policy profile applied.

This example shows how to apply network-policy profile 60 to an interface:

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# network-policy 60
```

network-policy profile (global configuration)

To create a network-policy profile and to enter network-policy configuration mode, use the **network-policy profile** command in global configuration mode. To delete the policy and to return to global configuration mode, use the **no** form of this command.

network-policy profile *profile-number*
no network-policy profile *profile-number*

Syntax Description

profile-number	Network-policy profile number. The range is 1 to 4294967295.

Command Default

No network-policy profiles are defined.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **network-policy profile** global configuration command to create a profile and to enter network-policy profile configuration mode.

To return to privileged EXEC mode from the network-policy profile configuration mode, enter the **exit** command.

When you are in network-policy profile configuration mode, you can create the profile for voice and voice signaling by specifying the values for VLAN, class of service (CoS), differentiated services code point (DSCP), and tagging mode.

These profile attributes are contained in the Link Layer Discovery Protocol for Media Endpoint Devices (LLDP-MED) network-policy time-length-value (TLV).

This example shows how to create network-policy profile 60:

```
Device(config)# network-policy profile 60
Device(config-network-policy)#
```

power efficient-ethernet auto

To enable Energy Efficient Ethernet (EEE) for an interface, use the **power efficient-ethernet auto** command in interface configuration mode. To disable EEE on an interface, use the **no** form of this command.

power efficient-ethernet auto
no power efficient-ethernet auto

Syntax Description

This command has no arguments or keywords.

Command Default

EEE is disabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

You can enable EEE on devices that support low power idle (LPI) mode. Such devices can save power by entering LPI mode during periods of low utilization. In LPI mode, systems on both ends of the link can save power by shutting down certain services. EEE provides the protocol needed to transition into and out of LPI mode in a way that is transparent to upper layer protocols and applications.

The **power efficient-ethernet auto** command is available only if the interface is EEE capable. To check if an interface is EEE capable, use the **show eee capabilities** EXEC command.

When EEE is enabled, the device advertises and autonegotiates EEE to its link partner. To view the current EEE status for an interface, use the **show eee status** EXEC command.

This command does not require a license.

This example shows how to enable EEE for an interface:

```
Device(config-if)# power efficient-ethernet auto
Device(config-if)#
```

This example shows how to disable EEE for an interface:

```
Device(config-if)# no power efficient-ethernet auto
Device(config-if)#
```

power-priority

To configure Cisco StackPower power-priority values for a switch in a power stack and for its high-priority and low-priority PoE ports, use the **power-priority** command in switch stack-power configuration mode. To return to the default setting, use the **no** form of the command.

power-priority {**high** *value* | **low** *value* | **switch** *value*}
no power-priority {**high** | **low** | **switch**}

Syntax Description

high *value*	Sets the power priority for the ports configured as high-priority ports. The range is 1 to 27, with 1 as the highest priority. The **high** value must be lower than the value set for the low-priority ports and higher than the value set for the switch.
low *value*	Sets the power priority for the ports configured as low-priority ports. The range is 1 to 27. The **low** value must be higher than the value set for the high-priority ports and the value set for the switch.
switch *value*	Sets the power priority for the switch. The range is 1 to 27. The **switch** value must be lower than the values set for the low and high-priority ports.

Command Default

If no values are configured, the power stack randomly determines a default priority.

The default ranges are 1 to 9 for switches, 10 to 18 for high-priority ports, 19 to 27 for low-priority ports.

On non-PoE switches, the high and low values (for port priority) have no effect.

Command Modes

Switch stack-power configuration (config-stack)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

To access switch stack-power configuration mode, enter the **stack-power switch** *switch-number* global configuration command.

Cisco StackPower power-priority values determine the order for shutting down switches and ports when power is lost and load shedding must occur. Priority values are from 1 to 27; the highest numbers are shut down first.

We recommend that you configure different priority values for each switch and for its high priority ports and low priority ports to limit the number of devices shut down at one time during a loss of power. If you try to configure the same priority value on different switches in a power stack, the configuration is allowed, but you receive a warning message.

Note This command is available only on switch stacks running the IP Base or IP Services feature set.

Examples

This is an example of setting the power priority for switch 1 in power stack a to 7, for the high-priority ports to 11, and for the low-priority ports to 20.

```
Device(config)# stack-power switch 1
Device(config-switch-stackpower)# stack-id power_stack_a
Device(config-switch-stackpower)# power-priority high 11
Device(config-switch-stackpower)# power-priority low 20
Device(config-switch-stackpower)# power-priority switch 7
Device(config-switch-stackpower)# exit
```

power inline

To configure the power management mode on Power over Ethernet (PoE) ports, use the **power inline** command in interface configuration mode. To return to the default settings, use the **no** form of this command.

power inline {**auto** [**max** *max-wattage*] | **four-pair forced** | **never** | **port priority** {**high** | **low**} | **static** [**max** *max-wattage*]}
no power inline {**auto** | **four-pair forced** | **never** | **port priority** {**high** | **low**} | **static** [**max** *max-wattage*]}

Syntax Description

auto	Enables powered-device detection. If enough power is available, automatically allocates power to the PoE port after device detection. Allocation is first-come, first-serve.
max *max-wattage*	(Optional) Limits the power allowed on the port. The range is 4000 to 30000 mW. If no value is specified, the maximum is allowed.
four-pair forced	(Optional) Enable Four-pair PoE without L2 negotiation (Cisco UPOE switches only).
never	Disables device detection, and disables power to the port.
port	Configures the power priority of the port. The default priority is low.
priority {**high** | **low**}	Sets the power priority of the port. In case of a power supply failure, ports configured as low priority are turned off first and ports configured as high priority are turned off last. The default priority is low.
static	Enables powered-device detection. Pre-allocates (reserves) power for a port before the switch discovers the powered device. This action guarantees that the device connected to the interface receives enough power.

Command Default

The default is **auto** (enabled).

The maximum wattage is 30,000 mW.

The default port priority is low.

Command Default

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

This command is supported only on PoE-capable ports. If you enter this command on a port that does not support PoE, this error message appears:

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# power inline auto
                   ^
% Invalid input detected at '^' marker.
```

In a switch stack, this command is supported on all ports in the stack that support PoE.

Cisco Universal Power Over Ethernet (Cisco UPOE) is a Cisco proprietary technology that extends the IEEE 802.at PoE standard to provide the capability to source up to 60 W of power over standard Ethernet cabling infrastructure (Class D or better) by using the spare pair of an RJ-45 cable (wires 4,5,7,8) with the signal pair (wires 1,2,3,6). Power on the spare pair is enabled when the switch port and end device mutually identify themselves as Cisco UPOE-capable using CDP or LLDP and the end device requests for power to be enabled on the spare pair. When the spare pair is powered, the end device can negotiate up to 60 W of power from the switch using CDP or LLDP. Use the **power inline four-pair forced** command when the end device is PoE-capable on both signal and spare pairs, but does not support the CDP or LLDP extensions required for Cisco UPOE.

Use the **max** *max-wattage* option to disallow higher-power powered devices. With this configuration, when the powered device sends Cisco Discovery Protocol (CDP) messages requesting more power than the maximum wattage, the switch removes power from the port. If the powered-device IEEE class maximum is greater than the maximum wattage, the switch does not power the device. The power is reclaimed into the global power budget.

Note The switch never powers any class 0 or class 3 device if the **power inline max max-wattage** command is configured for less than 30 W.

If the switch denies power to a powered device (the powered device requests more power through CDP messages or if the IEEE class maximum is greater than the maximum wattage), the PoE port is in a power-deny state. The switch generates a system message, and the Oper column in the **show power inline** privileged EXEC command output shows *power-deny*.

Use the **power inline static max** *max-wattage* command to give a port high priority. The switch allocates PoE to a port configured in static mode before allocating power to a port configured in auto mode. The switch reserves power for the static port when it is configured rather than upon device discovery. The switch reserves the power on a static port even when there is no connected device and whether or not the port is in a shutdown or in a no shutdown state. The switch allocates the configured maximum wattage to the port, and the amount is never adjusted through the IEEE class or by CDP messages from the powered device. Because power is pre-allocated, any powered device that uses less than or equal to the maximum wattage is guaranteed power when it is connected to a static port. However, if the powered device IEEE class is greater than the maximum wattage, the switch does not supply power to it. If the switch learns through CDP messages that the powered device needs more than the maximum wattage, the powered device is shut down.

If the switch cannot pre-allocate power when a port is in static mode (for example, because the entire power budget is already allocated to other auto or static ports), this message appears: Command rejected: power inline static: pwr not available. The port configuration remains unchanged.

When you configure a port by using the **power inline auto** or the **power inline static** interface configuration command, the port autonegotiates by using the configured speed and duplex settings. This is necessary to determine the power requirements of the connected device (whether or not it is a powered device). After the power requirements have been determined, the switch hardcodes the interface by using the configured speed and duplex settings without resetting the interface.

When you configure a port by using the **power inline never** command, the port reverts to the configured speed and duplex settings.

If a port has a Cisco powered device connected to it, you should not use the **power inline never** command to configure the port. A false link-up can occur, placing the port in an error-disabled state.

Use the **power inline port priority {high | low}** command to configure the power priority of a PoE port. Powered devices connected to ports with low port priority are shut down first in case of a power shortage.

You can verify your settings by entering the **show power inline** EXEC command.

Examples

This example shows how to enable detection of a powered device and to automatically power a PoE port on a switch:

```
Device(config)# interface gigabitethernet1/0/2
Device(config-if)# power inline auto
```

This example shows how to automatically enable power on both signal and spare pairs from switch port Gigabit Ethernet 1/0/1:

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# power inline four-pair forced
```

This example shows how to configure a PoE port on a switch to allow a class 1 or a class 2 powered device:

```
Device(config)# interface gigabitethernet1/0/2
Device(config-if)# power inline auto max 7000
```

This example shows how to disable powered-device detection and to not power a PoE port on a switch:

```
Device(config)# interface gigabitethernet1/0/2
Device(config-if)# power inline never
```

This example shows how to set the priority of a port to high, so that it would be one of the last ports to be shut down in case of power supply failure:

```
Device(config)# interface gigabitethernet1/0/2
Device(config-if)# power inline port priority high
```

power inline police

To enable policing of real-time power consumption on a powered device, use the **power inline police** command in interface configuration mode. To disable this feature, use the **no** form of this command

power inline police [**action** {**errdisable** | **log**}]
no power inline police

Syntax Description

action errdisable	(Optional) Configures the device to turn off power to the port if the real-time power consumption exceeds the maximum power allocation on the port. This is the default action.
action log	(Optional) Configures the device to generate a syslog message while still providing power to a connected device if the real-time power consumption exceeds the maximum power allocation on the port.

Command Default

Policing of the real-time power consumption of the powered device is disabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

This command is supported only on Power over Ethernet (PoE)-capable ports. If you enter this command on a device or port that does not support PoE, an error message appears.

In a switch stack, this command is supported on all switches or ports in the stack that support PoE and real-time power-consumption monitoring.

When policing of the real-time power consumption is enabled, the device takes action when a powered device consumes more power than the allocated maximum amount.

When PoE is enabled, the device senses the real-time power consumption of the powered device. This feature is called *power monitoring* or *power sensing*. The device also polices the power usage with the *power policing* feature.

When power policing is enabled, the device uses one of the these values as the cutoff power on the PoE port in this order:

1. The user-defined power level that limits the power allowed on the port when you enter the **power inline auto max** *max-wattage* or the **power inline static max** *max-wattage* interface configuration command
2. The device automatically sets the power usage of the device by using CDP power negotiation or by the IEEE classification and LLPD power negotiation.

If you do not manually configure the cutoff-power value, the device automatically determines it by using CDP power negotiation or the device IEEE classification and LLDP power negotiation. If CDP or LLDP are not enabled, the default value of 30 W is applied. However without CDP or LLDP, the device does not allow devices to consume more than 15.4 W of power because values from 15400 to 30000 mW are only allocated based on CDP or LLDP requests. If a powered device consumes more than 15.4 W without CDP or LLDP negotiation, the device might be in violation of the maximum current *Imax* limitation and might experience

an *Icut* fault for drawing more current than the maximum. The port remains in the fault state for a time before attempting to power on again. If the port continuously draws more than 15.4 W, the cycle repeats.

When a powered device connected to a PoE+ port restarts and sends a CDP or LLDP packet with a power TLV, the device locks to the power-negotiation protocol of that first packet and does not respond to power requests from the other protocol. For example, if the device is locked to CDP, it does not provide power to devices that send LLDP requests. If CDP is disabled after the device has locked on it, the device does not respond to LLDP power requests and can no longer power on any accessories. In this case, you should restart the powered device.

If power policing is enabled, the device polices power usage by comparing the real-time power consumption to the maximum power allocated on the PoE port. If the device uses more than the maximum power allocation (or *cutoff power*) on the port, the device either turns power off to the port, or the device generates a syslog message and updates the LEDs (the port LEDs are blinking amber) while still providing power to the device.

- To configure the device to turn off power to the port and put the port in the error-disabled state, use the **power inline police** interface configuration command.
- To configure the device to generate a syslog message while still providing power to the device, use the **power inline police action log** command.

If you do not enter the **action log** keywords, the default action is to shut down the port, turn off power to it, and put the port in the PoE error-disabled state. To configure the PoE port to automatically recover from the error-disabled state, use the **errdisable detect cause inline-power** global configuration command to enable error-disabled detection for the PoE cause and the **errdisable recovery cause inline-power interval** *interval* global configuration command to enable the recovery timer for the PoE error-disabled cause.

Caution If policing is disabled, no action occurs when the powered device consumes more than the maximum power allocation on the port, which could adversely affect the device.

You can verify your settings by entering the **show power inline police** privileged EXEC command.

Examples

This example shows how to enable policing of the power consumption and configuring the device to generate a syslog message on the PoE port on a device:

```
Device(config)# interface gigabitethernet1/0/2
Device(config-if)# power inline police action log
```

power supply

To configure and manage the internal power supplies on a switch, use the **power supply** command in privileged EXEC mode.

power supply *stack-member-number* **slot** {**A** | **B**} {**off** | **on**}

Syntax Description

stack-member-number	Stack member number for which to configure the internal power supplies. The range is 1 to 9, depending on the number of switches in the stack. This parameter is available only on stacking-capable switches.
slot	Selects the switch power supply to set.
A	Selects the power supply in slot A.
B	Selects the power supply in slot B. **Note** Power supply slot B is the closest slot to the outer edge of the switch.
off	Sets the switch power supply to off.
on	Sets the switch power supply to on.

Command Default

The switch power supply is on.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

The **power supply** command applies to a switch or to a switch stack where all switches are the same platform.

In a switch stack with the same platform switches, you must specify the stack member before entering the **slot** {**A** | **B**} **off** or **on** keywords.

To return to the default setting, use the **power supply** *stack-member-number* **on** command.

You can verify your settings by entering the **show env power** privileged EXEC command.

Examples

This example shows how to set the power supply in slot A to off:

```
Device> power supply 2 slot A off
Disabling Power supply A may result in a power loss to PoE devices and/or switches ...
Continue? (yes/[no]): yes
Device
Jun 10 04:52:54.389: %PLATFORM_ENV-6-FRU_PS_OIR: FRU Power Supply 1 powered off
Jun 10 04:52:56.717: %PLATFORM_ENV-1-FAN_NOT_PRESENT: Fan is not present
```

This example shows how to set the power supply in slot A to on:

```
Device> power supply 1 slot B on
Jun 10 04:54:39.600: %PLATFORM_ENV-6-FRU_PS_OIR: FRU Power Supply 1 powered on
```

This example shows the output of the show env power command:

```
Device> show env power
SW  PID                 Serial#     Status           Sys Pwr  PoE Pwr  Watts
--  ------------------  ----------  ---------------  -------  -------  -----
1A  PWR-1RUC2-640WAC    DCB1705B05B OK               Good     Good     250/390
1B  Not Present
```

shell trigger

To create an event trigger, use the **shell trigger** command in global configuration mode. Use the **no** form of this command to delete the trigger.

shell trigger *identifier description*

no shell trigger *identifier description*

Syntax Description

identifier	Specifies the event trigger identifier. The identifier should have no spaces or hyphens between words.
description	Specifies the event trigger description text.

Command Default

System-defined event triggers:

- CISCO_DMP_EVENT
- CISCO_IPVSC_AUTO_EVENT
- CISCO_PHONE_EVENT
- CISCO_SWITCH_EVENT
- CISCO_ROUTER_EVENT
- CISCO_WIRELESS_AP_EVENT
- CISCO_WIRELESS_LIGHTWEIGHT_AP_EVENT

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use this command to create user-defined event triggers for use with the **macro auto device** and the **macro auto execute** commands.

To support dynamic device discovery when using IEEE 802.1x authentication, you need to configure the RADIUS authentication server to support the Cisco attribute-value pair: **auto-smart-port**=*event trigger*.

Example

This example shows how to create a user-defined event trigger called RADIUS_MAB_EVENT:

```
Device(config)# shell trigger RADIUS_MAB_EVENT MAC_AuthBypass Event
Device(config)# end
```

show beacon all

To display the status of beacon LED on the device, use the **show beacon all** command in privileged EXEC mode.

show beacon {**rp** {**active** | **standby**} | **slot** *slot-number* } | **all**}

Syntax Description

rp {**active**	**standby**}	Specifies the active or the standby Switch whose beacon LED status is to be displayed.
slot *slot-num*	Specifies the slot whose beacon LED status is to be displayed.
all	Displays the status of all beacon LEDs.

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.1	This command was introduced.

Command Default

This command has no default settings.

Command Modes

Privileged EXEC (#)

Usage Guidelines

Use the command **show beacon all** to know the status of all beacon LEDs.

Sample output of *show beacon all* command.

```
Device#show beacon all
Switch#   Beacon Status
-----------------------
*1        OFF
```

Sample output of *show beacon rp* command.

```
Device#show beacon rp active
Switch#   Beacon Status
-----------------------
*1        OFF
```

```
Device#show beacon slot 1
Switch#   Beacon Status
-----------------------
*1        OFF
```

show device classifier attached

To display the devices connected to a switch and their associated properties, use the **show device classifier attached** command in user EXEC mode.

show device classifier attached [{**detail** | **interface** *interface_id* | **mac-address** *mac_address*}]

Syntax Description

detail	Displays detailed device classifier information.
interface *interface_id*	Displays information about devices attached to the specified interface.
mac *mac_address*	Displays device information for the specified endpoint.

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use this command to display the devices connected to a switch. Use the **show device classifier attached** command in privileged EXEC mode to display the configurable parameters for a device.

Example

This example shows how to use the **show device classifier attached** command with no optional keywords to view the devices connected to the switch:

```
Device# show device classifier attached
MAC_Address       Port_Id     Profile Name
==============    =======     ============================
000a.b8c6.1e07    Gi1/0/2    Cisco-Device
001f.9e90.1250    Gi1/0/4    Cisco-AP-Aironet-1130
=====================================================
```

This example shows how to use the **show device classifier attached** command in privileged EXEC mode with the optional **mac-address** keyword to view summary information about the connected device with the specified MAC address:

```
Device# show device classifier attached mac-address 001f.9e90.1250
MAC_Address       Port_Id     Profile Name
==============    =======     ============================
001f.9e90.1250    Gi1/0/4    Cisco-AP-Aironet-1130
=============================================================
```

This example shows how to use the **show device classifier attached** command in privileged EXEC mode with the optional **mac-address** and **detail** keywords to view detailed information about the connected device with the specified MAC address:

```
Device# show device classifier attached mac-address 001f.9e90.1250 detail
MAC_Address       Port_Id     Certainty Parent    ProfileType      Profile Name
     Device_Name
==============    =======     ========= ======    ===========  ============================
    ============
001f.9e90.1250    Gi1/0/4      40       2         Built-in       Cisco-AP-Aironet-1130
    cisco AIR-LAP1131AG-E-K9
=================================================================================================
```

This example shows how to use the **show device classifier attached** command in privileged EXEC mode with the optional **interface** keyword to view summary information about the device connected to the specified interface:

```
Device# show device classifier attached interface gi 1/0/2
MAC_Address       Port_Id          Profile Name
==============    =======     ============================
000a.b8c6.1e07    Gi1/0/2    Cisco-Device
=====================================================
```

This example shows how to use the **show device classifier attached** command in privileged EXEC mode with the optional **interface** and **detail** keywords to view detailed information about the device connected to the specified interface:

```
Device# show device classifier attached interface gi 1/0/2 detail
MAC_Address       Port_Id     Certainty Parent    ProfileType  Profile Name
     Device_Name
==============    =======     ========= ======    ===========  ============================
    ============
000a.b8c6.1e07    Gi1/0/2      10       0        Default       Cisco-Device        cisco
WS-C2960-48TT-L
=================================================================================================
```

show device classifier clients

To display the clients using the device classifier facility on the switch, use the **show device classifier clients** command in user EXEC mode.

show device classifier clients

Command Default

This command has no arguments or keywords.

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Device classifier (DC) is enabled by default when you enable a client application (for example, Auto SmartPorts) that uses its functionality. Use the **show device classifier clients** command to display the clients that are using the DC feature on the switch.

As long as any clients are using the DC, you cannot disable it by using the **no device classifier** command. If you attempt to disable the DC while a client is using it, an error message appears.

Example

This example shows how to use the **show device classifier clients** command to view the clients using the DC on the switch:

```
Device# show device classifier clients
Client Name
====================
Auto Smart Ports

This example shows the error message that appears when you attempt to disable DC while a
client is using it:
Switch(config)# no device classifier
These subsystems should be disabled before disabling Device classifier
Auto Smart Ports

% Error - device classifier is not disabled
```

show device classifier profile type

To display all the device types recognized by the device classifier, use the **show device classifier profile type** command in user EXEC mode.

show device classifier profile type [{**table** [{*built-in default*}] | **string** *filter_string*}]

Syntax Description

table	Displays device classification in a table.
built-in	Displays device classification information from the built-in device table.
default	Displays device classification information from the default device table.
filter *string*	Displays information for devices that match the filter.

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

This command displays all the device types recognized by the device classification engine. The number of available device types is the number of profiles stored on the switch. Because the number of profiles can be very large, you can use the **filter** keyword to limit the command output.

Example

This example shows how to use the **show device classifier profile type** command in privileged EXEC mode with no optional keywords to view the devices recognized by the device classifier:

```
Device# show device classifier profile type table
  Valid         Type       Profile Name                          min Conf   ID
==========  =========  ==================                        ========  ====
  Valid        Default      Apple-Device                             10        0
  Valid        Default      Aruba-Device                             10        1
  Valid        Default      Avaya-Device                             10        2
  Valid        Default      Avaya-IP-Phone                           20        3
  Valid        Default      BlackBerry                               20        4
  Valid        Default      Cisco-Device                             10        5
  Valid        Default      Cisco-IP-Phone                           20        6
  Valid        Default      Cisco-IP-Phone-7902                      70        7
  Valid        Default      Cisco-IP-Phone-7905                      70        8
  Valid        Default      Cisco-IP-Phone-7906                      70        9
  Valid        Default      Cisco-IP-Phone-7910                      70        10
  Valid        Default      Cisco-IP-Phone-7911                      70        11
  Valid        Default      Cisco-IP-Phone-7912                      70        12
  Valid        Default      Cisco-IP-Phone-7940                      70        13
  Valid        Default      Cisco-IP-Phone-7941                      70        14
  Valid        Default      Cisco-IP-Phone-7942                      70        15
```

```
Valid        Default      Cisco-IP-Phone-7945                    70        16
Valid        Default      Cisco-IP-Phone-7945G                   70        17
Valid        Default      Cisco-IP-Phone-7960                    70        18
Valid        Default      Cisco-IP-Phone-7961                    70        19
Valid        Default      Cisco-IP-Phone-7962                    70        20
Valid        Default      Cisco-IP-Phone-7965                    70        21
Valid        Default      Cisco-IP-Phone-7970                    70        22
Valid        Default      Cisco-IP-Phone-7971                    70        23
Valid        Default      Cisco-IP-Phone-7975                    70        24
Valid        Default      Cisco-IP-Phone-7985                    70        25
Valid        Default      Cisco-IP-Phone-9971                    70        26
Valid        Default      Cisco-WLC-2100-Series                  40        27
Valid        Default      DLink-Device                           10        28
Valid        Default      Enterasys-Device                       10        29
Valid        Default      HP-Device                              10        30
Valid        Default      HP-JetDirect-Printer                   30        31
Valid        Default      Lexmark-Device                         10        32
Valid        Default      Lexmark-Printer-E260dn                 30        33
Valid        Default      Microsoft-Device                       10        34
Valid        Default      Netgear-Device                         10        35
Valid        Default      NintendoWII                            10        36
Valid        Default      Nortel-Device                          10        37
Valid        Default      Nortel-IP-Phone-2000-Series            20        38
Valid        Default      SonyPS3                                10        39
Valid        Default      XBOX360                                20        40
Valid        Default      Xerox-Device                           10        41
Valid        Default      Xerox-Printer-Phaser3250               30        42
Valid        Default      Aruba-AP                               20        43
Valid        Default      Cisco-Access-Point                     10        44
Valid        Default      Cisco-IP-Conference-Station-7935       70        45
Valid        Default      Cisco-IP-Conference-Station-7936       70        46
Valid        Default      Cisco-IP-Conference-Station-7937       70        47
Valid        Default      DLink-DAP-1522                         20        48
Valid        Default      Cisco-AP-Aironet-1130                  30        49
Valid        Default      Cisco-AP-Aironet-1240                  30        50
Valid        Default      Cisco-AP-Aironet-1250                  30        51
Valid        Default      Cisco-AIR-LAP                          25        52
Valid        Default      Cisco-AIR-LAP-1130                     30        53
Valid        Default      Cisco-AIR-LAP-1240                     50        54
Valid        Default      Cisco-AIR-LAP-1250                     50        55
Valid        Default      Cisco-AIR-AP                           25        56
Valid        Default      Cisco-AIR-AP-1130                      30        57
Valid        Default      Cisco-AIR-AP-1240                      50        58
Valid        Default      Cisco-AIR-AP-1250                      50        59
Invalid      Default      Sun-Workstation                        10        60
Valid        Default      Linksys-Device                         20        61
Valid        Default      LinksysWAP54G-Device                   30        62
Valid        Default      HTC-Device                             10        63
Valid        Default      MotorolaMobile-Device                  10        64
Valid        Default      VMWare-Device                          10        65
Valid        Default      ISE-Appliance                          10        66
Valid        Built-in     Cisco-Device                           10        0
Valid        Built-in     Cisco-Router                           10        1
Valid        Built-in     Router                                 10        2
Valid        Built-in     Cisco-IP-Camera                        10        3
Valid        Built-in     Cisco-IP-Camera-2xxx                   30        4
Valid        Built-in     Cisco-IP-Camera-2421                   50        5
Valid        Built-in     Cisco-IP-Camera-2500                   50        6
Valid        Built-in     Cisco-IP-Camera-2520                   50        7
Valid        Built-in     Cisco-IP-Camera-2530                   50        8
Valid        Built-in     Cisco-IP-Camera-4xxx                   50        9
Valid        Built-in     Cisco-Transparent-Bridge               8         10
Valid        Built-in     Transparent-Bridge                     8         11
Valid        Built-in     Cisco-Source-Bridge                    10        12
```

```
Valid        Built-in     Cisco-Switch                    10        13
Valid        Built-in     Cisco-IP-Phone                  20        14
Valid        Built-in     IP-Phone                        20        15
Valid        Built-in     Cisco-DMP                       10        16
Valid        Built-in     Cisco-DMP-4305G                 70        17
Valid        Built-in     Cisco-DMP-4310G                 70        18
Valid        Built-in     Cisco-DMP-4400G                 70        19
Valid        Built-in     Cisco-WLC-2100-Series           40        20
Valid        Built-in     Cisco-Access-Point              10        21
Valid        Built-in     Cisco-AIR-LAP                   30        22
Valid        Built-in     Cisco-AIR-AP                    30        23
Valid        Built-in     Linksys-Device                  20        24
```

show eee

To display Energy Efficient Ethernet (EEE) information for an interface, use the **show eee** command in EXEC mode.

show eee {**capabilities**| **counters**| **status**} **interface** *interface-id*

Syntax Description

capabilities	Displays EEE capabilities for the specified interface.
counters	Displays EEE counters for the specified interface.
status	Displays EEE status information for the specified interface.
interface *interface-id*	Specifies the interface for which to display EEE capabilities or status information.

Command Default

None

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

You can enable EEE on devices that support low power idle (LPI) mode. Such devices can save power by entering LPI mode during periods of low power utilization. In LPI mode, systems on both ends of the link can save power by shutting down certain services. EEE provides the protocol needed to transition into and out of LPI mode in a way that is transparent to upper layer protocols and applications.

To check if an interface is EEE capable, use the **show eee capabilities** command. You can enable EEE on an interface that is EEE capable by using the **power efficient-ethernet auto** interface configuration command.

To view the EEE status, LPI status, and wake error count information for an interface, use the **show eee status** command.

To view the EEE counters for an interface, use the **show eee counters** command.

Note Starting from Cisco IOS XE Gibraltar 16.12.1, the **show eee counters interface** *interface-id* command is not supported on switch models with Multigigabit (mGig) Ethernet ports.

This is an example of output from the **show eee capabilities** command on an interface where EEE is enabled:

```
Device# show eee capabilities interface gigabitethernet1/0/1
Gi1/0/1
        EEE(efficient-ethernet):  yes (100-Tx and 1000T auto)
```

```
        Link Partner           :  yes (100-Tx and 1000T auto)
```

This is an example of output from the **show eee capabilities** command on an interface where EEE is not enabled:

```
Device# show eee capabilities interface gigabitethernet2/0/1
Gi2/0/1
        EEE(efficient-ethernet):  not enabled
        Link Partner           :  not enabled
```

This is an example of output from the **show eee status** command on an interface where EEE is enabled and operational. The table that follows describes the fields in the display.

```
Device# show eee status interface gigabitethernet1/0/4
Gi1/0/4 is up
        EEE(efficient-ethernet):  Operational
        Rx LPI Status          :  Received
        Tx LPI Status          :  Received
```

This is an example of output from the **show eee status** command on an interface where EEE is operational and the ports are in low power save mode:

```
Device# show eee status interface gigabitethernet1/0/3
Gi1/0/3 is up
        EEE(efficient-ethernet):  Operational
        Rx LPI Status          :  Low Power
        Tx LPI Status          :  Low Power
        Wake Error Count       :  0
```

This is an example of output from the **show eee status** command on an interface where EEE is not enabled because a remote link partner is incompatible with EEE:

```
Device# show eee status interface gigabitethernet1/0/3
Gi1/0/3 is down
        EEE(efficient-ethernet):  Disagreed
        Rx LPI Status          :  None
        Tx LPI Status          :  None
        Wake Error Count       :  0
```

This is an example of output from the **show eee counters** command:

```
Device# show eee counters interface gigabitEthernet 2/0/1
LP Active Tx Time (10us) : 66649648
LP Transitioning Tx : 462
LP Active Rx Time (10us) : 64911682
LP Transitioning Rx : 153
```

Table 3: show eee status Field Descriptions

Field	Description
EEE (efficient-ethernet)	The EEE status for the interface. This field can have any of the following values: • N/A—The port is not capable of EEE. • Disabled—The port EEE is disabled. • Disagreed—The port EEE is not set because a remote link partner might be incompatible with EEE; either it is not EEE capable, or its EEE setting is incompatible. • Operational—The port EEE is enabled and operating. If the interface speed is configured as 10 Mbps, EEE is disabled internally. When the interface speed moves back to auto, 100 Mbps or 1000 Mbps, EEE becomes active again.
Rx/Tx LPI Status	The Low Power Idle (LPI) status for the link partner. These fields can have any of the following values: • N/A—The port is not capable of EEE. • Interrupted—The link partner is in the process of moving to low power mode. • Low Power—The link partner is in low power mode. • None— EEE is disabled or not capable at the link partner side. • Received—The link partner is in low power mode and there is traffic activity. If an interface is configured as half-duplex, the LPI status is None, which means the interface cannot be in low power mode until it is configured as full-duplex.
Wake Error Count	The number of PHY wake-up faults that have occurred. A wake-up fault can occur when EEE is enabled and the connection to the link partner is broken. This information is useful for PHY debugging.

show environment

To display fan, temperature, and power information, use the **show environment** command in EXEC mode.

show environment { **all** | **fan** | **power** | **stack** | **temperature** | **xps** }

Syntax Description

all	Displays the fan and temperature environmental status and the status of the internal power supplies.
fan	Displays the switch fan status.
power	Displays the internal power status of the active switch.
stack	Displays all environmental status for each switch in the stack or for the specified switch. This keyword is available only on stacking-capable switches.
temperature	Displays the switch temperature status.
xps	Displays the status of the Cisco eXpandable Power System (XPS) 2200.

Command Default

None

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **show environment** EXEC command to display the information for the switch being accessed—a standalone switch or the active switch. Use this command with the **stack** keyword to display all information for the stack or for the specified stack member.

If you enter the **show environment temperature status** command, the command output shows the switch temperature state and the threshold level.

You can also use the **show environment temperature** command to display the switch temperature status. The command output shows the green and yellow states as *OK* and the red state as *FAULTY*.

Examples

This example shows a sample output of the **show environment all** command:

```
Device> show environment all

Switch 1 FAN 1 is OK
Switch 1 FAN 2 is OK
Switch 1 FAN 3 is OK
FAN PS-1 is NOT PRESENT
FAN PS-2 is OK
Switch 1: SYSTEM TEMPERATURE is OK
Inlet Temperature Value: 25 Degree Celsius
```

```
Temperature State: GREEN
Yellow Threshold : 46 Degree Celsius
Red Threshold    : 56 Degree Celsius

Hotspot Temperature Value: 35 Degree Celsius
Temperature State: GREEN
Yellow Threshold : 105 Degree Celsius
Red Threshold    : 125 Degree Celsius
SW  PID                 Serial#     Status           Sys Pwr  PoE Pwr  Watts
--  ------------------  ----------  ---------------  -------  -------  -----
1A  Unknown             Unknown      No Input Power  Bad      Bad      235
1B  PWR-C1-350WAC       DCB2137H04P  OK              Good     Good     350
```

This example shows a sample output of the **show environment power** command:

```
Device> show environment power

SW  PID                 Serial#     Status           Sys Pwr  PoE Pwr  Watts
--  ------------------  ----------  ---------------  -------  -------  -----
1A  Unknown             Unknown      No Input Power  Bad      Bad      235
1B  PWR-C1-350WAC       DCB2137H04P  OK              Good     Good     350
```

This example shows a sample output of the **show environment stack** command:

```
Device# show environment stack

System Temperature Value: 41 Degree Celsius
System Temperature State: GREEN
Yellow Threshold : 66 Degree Celsius
Red Threshold    : 76 Degree Celsius
```

This example shows a sample output of the **show environment temperature** command:

```
Device> show environment temperature

Switch 1: SYSTEM TEMPERATURE is OK
Inlet Temperature Value: 25 Degree Celsius
Temperature State: GREEN
Yellow Threshold : 46 Degree Celsius
Red Threshold    : 56 Degree Celsius

Hotspot Temperature Value: 35 Degree Celsius
Temperature State: GREEN
Yellow Threshold : 105 Degree Celsius
Red Threshold    : 125 Degree Celsius
```

Table 4: States in the show environment temperature status Command Output

State	Description
Green	The switch temperature is in the *normal* operating range.
Yellow	The temperature is in the *warning* range. You should check the external temperature around the switch.
Red	The temperature is in the *critical* range. The switch might not run properly if the temperature is in this range.

show errdisable detect

To display error-disabled detection status, use the **show errdisable detect** command in EXEC mode.

show errdisable detect

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

A gbic-invalid error reason refers to an invalid small form-factor pluggable (SFP) module.

The error-disable reasons in the command output are listed in alphabetical order. The mode column shows how error-disable is configured for each feature.

You can configure error-disabled detection in these modes:

- port mode—The entire physical port is error-disabled if a violation occurs.
- vlan mode—The VLAN is error-disabled if a violation occurs.
- port/vlan mode—The entire physical port is error-disabled on some ports and is per-VLAN error-disabled on other ports.

This is an example of output from the **show errdisable detect** command:

```
Device> show errdisable detect
ErrDisable Reason    Detection    Mode
-----------------    ---------    ----
arp-inspection       Enabled      port
bpduguard            Enabled      vlan
channel-misconfig    Enabled      port
community-limit      Enabled      port
dhcp-rate-limit      Enabled      port
dtp-flap             Enabled      port
gbic-invalid         Enabled      port
inline-power         Enabled      port
invalid-policy       Enabled      port
l2ptguard            Enabled      port
link-flap            Enabled      port
loopback             Enabled      port
lsgroup              Enabled      port
pagp-flap            Enabled      port
psecure-violation    Enabled      port/vlan
security-violatio    Enabled      port
sfp-config-mismat    Enabled      port
storm-control        Enabled      port
```

```
udld                Enabled      port
vmps                Enabled      port
```

show errdisable recovery

To display the error-disabled recovery timer information, use the **show errdisable recovery** command in EXEC mode.

show errdisable recovery

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines A gbic-invalid error-disable reason refers to an invalid small form-factor pluggable (SFP) module interface.

Note Though visible in the output, the unicast-flood field is not valid.

show ip interface

To display the usability status of interfaces configured for IP, use the **show ip interface** command in privileged EXEC mode.

show ip interface [*type number*] [**brief**]

Syntax Description

type	(Optional) Interface type.
number	(Optional) Interface number.
brief	(Optional) Displays a summary of the usability status information for each interface. **Note** The output of the **show ip interface brief** command displays information of all the available interfaces whether or not the corresponding network module for these interfaces are connected. These interfaces can be configured if the network module is connected. Run the **show interface status** command to see which network modules are connected.

Command Default

The full usability status is displayed for all interfaces configured for IP.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

The Cisco IOS software automatically enters a directly connected route in the routing table if the interface is usable (which means that it can send and receive packets). If an interface is not usable, the directly connected routing entry is removed from the routing table. Removing the entry lets the software use dynamic routing protocols to determine backup routes to the network, if any.

If the interface can provide two-way communication, the line protocol is marked "up." If the interface hardware is usable, the interface is marked "up."

If you specify an optional interface type, information for that specific interface is displayed. If you specify no optional arguments, information on all the interfaces is displayed.

When an asynchronous interface is encapsulated with PPP or Serial Line Internet Protocol (SLIP), IP fast switching is enabled. A **show ip interface** command on an asynchronous interface encapsulated with PPP or SLIP displays a message indicating that IP fast switching is enabled.

You can use the **show ip interface brief** command to display a summary of the device interfaces. This command displays the IP address, the interface status, and other information.

The **show ip interface brief** command does not display any information related to Unicast RPF.

Examples

The following example shows interface information on Gigabit Ethernet interface 1/0/1:

```
Device# show ip interface gigabitethernet 1/0/1
```

```
GigabitEthernet1/0/1 is up, line protocol is up
  Internet address is 10.1.1.1/16
  Broadcast address is 255.255.255.255
  Address determined by setup command
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound access list is not set
  Proxy ARP is enabled
  Local Proxy ARP is disabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachables are always sent
  ICMP mask replies are never sent
  IP fast switching is enabled
  IP fast switching on the same interface is disabled
  IP Flow switching is disabled
  IP CEF switching is enabled
  IP Feature Fast switching turbo vector
  IP VPN Flow CEF switching turbo vector
  IP multicast fast switching is enabled
  IP multicast distributed fast switching is disabled
  IP route-cache flags are Fast, CEF
  Router Discovery is disabled
  IP output packet accounting is disabled
  IP access violation accounting is disabled
  TCP/IP header compression is disabled
  RTP/IP header compression is disabled
  Policy routing is enabled, using route map PBR
  Network address translation is disabled
  BGP Policy Mapping is disabled
  IP Multi-Processor Forwarding is enabled
     IP Input features, "PBR",
         are not supported by MPF and are IGNORED
     IP Output features, "NetFlow",
         are not supported by MPF and are IGNORED
```

The following example shows how to display the usability status for a specific VLAN:

```
Device# show ip interface vlan 1

Vlan1 is up, line protocol is up
  Internet address is 10.0.0.4/24
  Broadcast address is 255.255.255.255
Address determined by non-volatile memory
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound  access list is not set
  Proxy ARP is enabled
  Local Proxy ARP is disabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachables are always sent
  ICMP mask replies are never sent
  IP fast switching is enabled
  IP fast switching on the same interface is disabled
  IP Flow switching is disabled
  IP CEF switching is enabled
```

```
IP Fast switching turbo vector
IP Normal CEF switching turbo vector
IP multicast fast switching is enabled
IP multicast distributed fast switching is disabled
IP route-cache flags are Fast, CEF
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect inbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Sampled Netflow is disabled
IP multicast multilayer switching is disabled
Netflow Data Export (hardware) is enabled
```

The table below describes the significant fields shown in the display.

Table 5: show ip interface Field Descriptions

Field	Description
Broadcast address is	Broadcast address.
Peer address is	Peer address.
MTU is	MTU value set on the interface, in bytes.
Helper address	Helper address, if one is set.
Directed broadcast forwarding	Shows whether directed broadcast forwarding is enabled.
Outgoing access list	Shows whether the interface has an outgoing access list set.
Inbound access list	Shows whether the interface has an incoming access list set.
Proxy ARP	Shows whether Proxy Address Resolution Protocol (ARP) is enabled for the interface.
Security level	IP Security Option (IPSO) security level set for this interface.
Split horizon	Shows whether split horizon is enabled.
ICMP redirects	Shows whether redirect messages will be sent on this interface.
ICMP unreachables	Shows whether unreachable messages will be sent on this interface.
ICMP mask replies	Shows whether mask replies will be sent on this interface.
IP fast switching	Shows whether fast switching is enabled for this interface. It is generally enabled on serial interfaces, such as this one.
IP Flow switching	Shows whether Flow switching is enabled for this interface.

Field	Description
IP CEF switching	Shows whether Cisco Express Forwarding switching is enabled for the interface.
IP multicast fast switching	Shows whether multicast fast switching is enabled for the interface.
IP route-cache flags are Fast	Shows whether NetFlow is enabled on an interface. Displays "Flow init" to specify that NetFlow is enabled on the interface. Displays "Ingress Flow" to specify that NetFlow is enabled on a subinterface using the **ip flow ingress**command. Shows "Flow" to specify that NetFlow is enabled on a main interface using the **ip route-cache flow** command.
Router Discovery	Shows whether the discovery process is enabled for this interface. It is generally disabled on serial interfaces.
IP output packet accounting	Shows whether IP accounting is enabled for this interface and what the threshold (maximum number of entries) is.
TCP/IP header compression	Shows whether compression is enabled.
WCCP Redirect outbound is disabled	Shows the status of whether packets received on an interface are redirected to a cache engine. Displays "enabled" or "disabled."
WCCP Redirect exclude is disabled	Shows the status of whether packets targeted for an interface will be excluded from being redirected to a cache engine. Displays "enabled" or "disabled."
Netflow Data Export (hardware) is enabled	NetFlow Data Expert (NDE) hardware flow status on the interface.

The following example shows how to display a summary of the usability status information for each interface:

```
Device# show ip interface brief

Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES NVRAM  administratively down down
GigabitEthernet0/0     unassigned      YES NVRAM  down                  down
GigabitEthernet1/0/1   unassigned      YES NVRAM  down                  down
GigabitEthernet1/0/2   unassigned      YES unset  down                  down
GigabitEthernet1/0/3   unassigned      YES unset  down                  down
GigabitEthernet1/0/4   unassigned      YES unset  down                  down
GigabitEthernet1/0/5   unassigned      YES unset  down                  down
GigabitEthernet1/0/6   unassigned      YES unset  down                  down
GigabitEthernet1/0/7   unassigned      YES unset  down                  down

<output truncated>
```

Table 6: show ip interface brief Field Descriptions

Field	Description
Interface	Type of interface.

Field	Description
IP-Address	IP address assigned to the interface.
OK?	"Yes" means that the IP Address is valid. "No" means that the IP Address is not valid.
Method	The Method field has the following possible values: • RARP or SLARP: Reverse Address Resolution Protocol (RARP) or Serial Line Address Resolution Protocol (SLARP) request. • BOOTP: Bootstrap protocol. • TFTP: Configuration file obtained from the TFTP server. • manual: Manually changed by the command-line interface. • NVRAM: Configuration file in NVRAM. • IPCP: **ip address negotiated** command. • DHCP: **ip address dhcp** command. • unset: Unset. • other: Unknown.
Status	Shows the status of the interface. Valid values and their meanings are: • up: Interface is up. • down: Interface is down. • administratively down: Interface is administratively down.
Protocol	Shows the operational status of the routing protocol on this interface.

Related Commands

Command	Description
ip interface	Configures a virtual gateway IP interface on a Secure Socket Layer Virtual Private Network (SSL VPN) gateway
show interface status	Displays the status of the interface.

show interfaces

To display the administrative and operational status of all interfaces or for a specified interface, use the **show interfaces** command in the EXEC mode.

show interfaces [{ *interface-id* | **vlan** *vlan-id* }] [{ **accounting** | **capabilities** [**module** *number*] | **description** | **etherchannel** | **flowcontrol** | **link** [**module** *number*] | **private-vlan mapping** | **pruning** | **stats** | **status** [{ **err-disabled** | **inactive** }] | **trunk** }]

Syntax Description

interface-id	(Optional) ID of the interface. Valid interfaces include physical ports (including type, stack member for stacking-capable switches, module, and port number) and port channels. The port channel range is 1 to 128.
vlan *vlan-id*	(Optional) VLAN identification. The range is 1 to 4094.
accounting	(Optional) Displays accounting information on the interface, including active protocols and input and output packets and octets. **Note** The display shows only packets processed in software; hardware-switched packets do not appear.
capabilities	(Optional) Displays the capabilities of all interfaces or the specified interface, including the features and options that you can configure on the interface. Though visible in the command line help, this option is not available for VLAN IDs.
module *number*	(Optional) Displays capabilities of all interfaces on the switch or specified stack member. The range is 1 to 9. This option is not available if you entered a specific interface ID.
description	(Optional) Displays the administrative status and description set for interfaces. **Note** The output of the **show interfaces description** command displays information of all the available interfaces whether or not the corresponding network module for these interfaces are connected. These interfaces can be configured if the network module is connected. Run the **show interface status** command to see which network modules are connected.
etherchannel	(Optional) Displays interface EtherChannel information.
flowcontrol	(Optional) Displays interface flow control information.
link [**module***number*]	(Optional) Displays the up time and down time of the interface.

private-vlan mapping	(Optional) Displays private-VLAN mapping information for the VLAN switch virtual interfaces (SVIs). This keyword is not available if the switch is running the LAN base feature set.
pruning	(Optional) Displays trunk VTP pruning information for the interface.
stats	(Optional) Displays the input and output packets by switching the path for the interface.
status	(Optional) Displays the status of the interface. A status of unsupported in the Type field means that a non-Cisco small form-factor pluggable (SFP) module is inserted in the module slot.
err-disabled	(Optional) Displays interfaces in an error-disabled state.
inactive	(Optional) Displays interfaces in an inactive state.
trunk	(Optional) Displays interface trunk information. If you do not specify an interface, only information for active trunking ports appears.

Note Though visible in the command-line help strings, the **crb**, **fair-queue**, **irb**, **mac-accounting**, **precedence**, **random-detect**, **rate-limit**, and **shape** keywords are not supported.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.
Cisco IOS XE Gibraltar 16.12.1	The **link** keyword was introduced.

Usage Guidelines

The **show interfaces capabilities** command with different keywords has these results:

- Use the **show interface capabilities module** *number* command to display the capabilities of all interfaces on that switch in the stack. If there is no switch with that module number in the stack, there is no output.
- Use the **show interfaces** *interface-id* **capabilities** to display the capabilities of the specified interface.
- Use the **show interfaces capabilities** (with no module number or interface ID) to display the capabilities of all interfaces in the stack.

Note The field **Last Input** displayed in the command output indicates the number of hours, minutes, and seconds since the last packet was successfully received by an interface and processed by the CPU on the device. This information can be used to know when a dead interface failed.

Last Input is not updated by fast-switched traffic.

The field **output** displayed in the command output indicates the number of hours, minutes, and seconds since the last packet was successfully transmitted by the interface. The information provided by this field can useful for knowing when a dead interface failed.

The **show interfaces link** command with different keywords has these results:

- Use the **show interface link module** *number* command to display the up time and down time of all interfaces on that switch in the stack. If there is no switch with that module number in the stack, there is no output.

Note On a standalone switch, the **module** *number* refers to the slot number.

- Use the **show interfaces** *interface-id* **link** to display the up time and down time of the specified interface.
- Use the **show interfaces link** (with no module number or interface ID) to display the up time and down time of all interfaces in the stack.
- If the interface is up, the up time displays the time (hours, minutes, and seconds) and the down time displays 00:00:00.
- If the interface is down, only the down time displays the time (hours, minutes, and seconds).

Examples

This is an example of output from the **show interfaces** command for an interface on stack member 3:

```
Device# show interfaces gigabitethernet3/0/2

GigabitEthernet3/0/2 is down, line protocol is down (notconnect)
  Hardware is Gigabit Ethernet, address is 2037.064d.4381 (bia 2037.064d.4381)
  MTU 1500 bytes, BW 1000000 Kbit/sec, DLY 10 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Auto-duplex, Auto-speed, media type is 10/100/1000BaseTX
  input flow-control is off, output flow-control is unsupported
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/2000/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts (0 multicasts)
     0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 watchdog, 0 multicast, 0 pause input
```

```
     0 input packets with dribble condition detected
     0 packets output, 0 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets
     0 unknown protocol drops
     0 babbles, 0 late collision, 0 deferred
     0 lost carrier, 0 no carrier, 0 pause output
     0 output buffer failures, 0 output buffers swapped out
```

```
Device# show interfaces accounting

Vlan1
                Protocol    Pkts In   Chars In   Pkts Out  Chars Out
                      IP          0          0          6        378
Vlan200
                Protocol    Pkts In   Chars In   Pkts Out  Chars Out
No traffic sent or received on this interface.
GigabitEthernet0/0
                Protocol    Pkts In   Chars In   Pkts Out  Chars Out
                   Other     165476   11417844          0          0
           Spanning Tree    1240284   64494768          0          0
                     ARP       7096     425760          0          0
                     CDP      41368   18781072      82908   35318808
GigabitEthernet1/0/1
                Protocol    Pkts In   Chars In   Pkts Out  Chars Out
No traffic sent or received on this interface.
GigabitEthernet1/0/2
                Protocol    Pkts In   Chars In   Pkts Out  Chars Out
No traffic sent or received on this interface.

<output truncated>
```

This is an example of output from the **show interfaces** *interface* **description** command when the interface has been described as *Connects to Marketing* by using the **description** interface configuration command:

```
Device# show interfaces gigabitethernet1/0/2 description

Interface                      Status         Protocol Description
Gi1/0/2                        up             down     Connects to Marketing
```

```
Device# show interfaces etherchannel
----
Port-channel34:
Age of the Port-channel   = 28d:18h:51m:46s
Logical slot/port   = 12/34          Number of ports = 0
GC                  = 0x00000000      HotStandBy port = null
Passive port list   =
Port state          = Port-channel L3-Ag Ag-Not-Inuse
Protocol            =    -
Port security       = Disabled
```

This is an example of output from the **show interfaces** *interface-id* **pruning** command when pruning is enabled in the VTP domain:

```
Device# show interfaces gigabitethernet1/0/2 pruning

Port      Vlans pruned for lack of request by neighbor
Gi1/0/2   3,4

Port      Vlans traffic requested of neighbor
```

```
Gi1/0/2   1-3
```

This is an example of output from the **show interfaces stats** command for a specified VLAN interface:

```
Device# show interfaces vlan 1 stats

Switching path    Pkts In    Chars In    Pkts Out    Chars Out
     Processor    1165354   136205310      570800     91731594
   Route cache          0           0           0            0
         Total    1165354   136205310      570800     91731594
```

This is an example of output from the **show interfaces status err-disabled** command. It displays the status of interfaces in the error-disabled state:

```
Device# show interfaces status err-disabled

Port      Name       Status         Reason
Gi1/0/2              err-disabled   gbic-invalid
Gi2/0/3              err-disabled   dtp-flap
```

This is an example of output from the **show interfaces** *interface-id* **pruning** command:

```
Device# show interfaces gigabitethernet1/0/2 pruning

Port Vlans pruned for lack of request by neighbor


Device# show interfaces gigabitethernet1/0/1 trunk

Port        Mode             Encapsulation  Status        Native vlan
Gi1/0/1     on               802.1q         other         10

Port        Vlans allowed on trunk
Gi1/0/1     none

Port        Vlans allowed and active in management domain
Gi1/0/1     none

Port        Vlans in spanning tree forwarding state and not pruned
Gi1/0/1     none
```

This is an example of output from the **show interfaces description** command:

```
Device# show interfaces description

Interface                      Status         Protocol Description
Vl1                            admin down     down
Gi0/0                          down           down
Gi1/0/1                        down           down
Gi1/0/2                        down           down
Gi1/0/3                        down           down
Gi1/0/4                        down           down
Gi1/0/5                        down           down
Gi1/0/6                        down           down
Gi1/0/7                        down           down

<output truncated>
```

The following is a sample output of the **show interfaces link** command:

```
Device> enable
Device# show interfaces link
Port           Name               Down Time      Up Time
Gi1/0/1                           6w0d
Gi1/0/2                           6w0d
Gi1/0/3                           00:00:00       5w3d
Gi1/0/4                           6w0d
Gi1/0/5                           6w0d
Gi1/0/6                           6w0d
Gi1/0/7                           6w0d
Gi1/0/8                           6w0d
Gi1/0/9                           6w0d
Gi1/0/10                          6w0d
Gi1/0/11                          2d17h
Gi1/0/12                          6w0d
Gi1/0/13                          6w0d
Gi1/0/14                          6w0d
Gi1/0/15                          6w0d
Gi1/0/16                          6w0d
Gi1/0/17                          6w0d
Gi1/0/18                          6w0d
Gi1/0/19                          6w0d
Gi1/0/20                          6w0d
Gi1/0/21                          6w0d
```

show interfaces counters

To display various counters for the switch or for a specific interface, use the **show interfaces counters** command in privileged EXEC mode.

show interfaces [*interface-id*] **counters** [{**errors** | **etherchannel** | **module** *member-number* | **protocol status** | **trunk**}]

Syntax Description

interface-id	(Optional) ID of the physical interface, including type, stack member (stacking-capable switches only) module, and port number.
errors	(Optional) Displays error counters.
etherchannel	(Optional) Displays EtherChannel counters, including octets, broadcast packets, multicast packets, and unicast packets received and sent.
module *member-number*	(Optional) Displays counters for the specified member. The range is 1 to 9. **Note** In this command, the **module** keyword refers to the stack member number. The module number that is part of the interface ID is always zero.
protocol status	(Optional) Displays the status of protocols enabled on interfaces.
trunk	(Optional) Displays trunk counters.

Note Though visible in the command-line help string, the **vlan** *vlan-id* keyword is not supported.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

If you do not enter any keywords, all counters for all interfaces are included.

This is an example of partial output from the **show interfaces counters** command. It displays all counters for the switch.

```
Device# show interfaces counters
Port            InOctets    InUcastPkts    InMcastPkts    InBcastPkts
Gi1/0/1                0              0              0              0
Gi1/0/2                0              0              0              0
Gi1/0/3         95285341          43115        1178430           1950
Gi1/0/4                0              0              0              0
```

```
<output truncated>
```

This is an example of partial output from the **show interfaces counters module** command for module 2. It displays all counters for the specified switch in the module.

```
Device# show interfaces counters module 2
Port            InOctets    InUcastPkts    InMcastPkts    InBcastPkts
Gi1/0/1              520              2              0              0
Gi1/0/2              520              2              0              0
Gi1/0/3              520              2              0              0
Gi1/0/4              520              2              0              0

<output truncated>
```

This is an example of partial output from the **show interfaces counters protocol status** command for all interfaces:

```
Device# show interfaces counters protocol status
Protocols allocated:
Vlan1: Other, IP
Vlan20: Other, IP, ARP
Vlan30: Other, IP, ARP
Vlan40: Other, IP, ARP
Vlan50: Other, IP, ARP
Vlan60: Other, IP, ARP
Vlan70: Other, IP, ARP
Vlan80: Other, IP, ARP
Vlan90: Other, IP, ARP
Vlan900: Other, IP, ARP
Vlan3000: Other, IP
Vlan3500: Other, IP
GigabitEthernet1/0/1: Other, IP, ARP, CDP
GigabitEthernet1/0/2: Other, IP
GigabitEthernet1/0/3: Other, IP
GigabitEthernet1/0/4: Other, IP
GigabitEthernet1/0/5: Other, IP
GigabitEthernet1/0/6: Other, IP
GigabitEthernet1/0/7: Other, IP
GigabitEthernet1/0/8: Other, IP
GigabitEthernet1/0/9: Other, IP
GigabitEthernet1/0/10: Other, IP, CDP

<output truncated>
```

This is an example of output from the **show interfaces counters trunk** command. It displays trunk counters for all interfaces.

```
Device# show interfaces counters trunk
Port        TrunkFramesTx   TrunkFramesRx   WrongEncap
Gi1/0/1                 0               0            0
Gi1/0/2                 0               0            0
Gi1/0/3             80678               0            0
Gi1/0/4             82320               0            0
Gi1/0/5                 0               0            0

<output truncated>
```

show interfaces switchport

To display the administrative and operational status of a switching (nonrouting) port, including port blocking and port protection settings, use the **show interfaces switchport** command in privileged EXEC mode.

show interfaces [*interface-id*] **switchport** [{**module** *number*}]

Syntax Description

interface-id	(Optional) ID of the interface. Valid interfaces include physical ports (including type, stack member for stacking-capable switches, module, and port number) and port channels. The port channel range is 1 to 48.
module *number*	(Optional) Displays switchport configuration of all interfaces on the switch or specified stack member. The range is 1 to 9. This option is not available if you entered a specific interface ID.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **show interface switchport module** *number* command to display the switch port characteristics of all interfaces on that switch in the stack. If there is no switch with that module number in the stack, there is no output.

This is an example of output from the **show interfaces switchport** command for a port. The table that follows describes the fields in the display.

```
Device# show interfaces gigabitethernet1/0/1 switchport
Name: Gi1/0/1
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: down
Administrative Trunking Encapsulation: dot1q
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 10 (VLAN0010)
Administrative Native VLAN tagging: enabled
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk Native VLAN tagging: enabled
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk associations: none
Administrative private-vlan trunk mappings: none
Operational private-vlan: none
Trunking VLANs Enabled: 11-20
```

```
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL

Protected: false
Unknown unicast blocked: disabled
Unknown multicast blocked: disabled
Appliance trust: none
```

Field	Description
Name	Displays the port name.
Switchport	Displays the administrative and operational status of the port. In this display, the port is in switchport mode.
Administrative Mode Operational Mode	Displays the administrative and operational modes.
Administrative Trunking Encapsulation Operational Trunking Encapsulation Negotiation of Trunking	Displays the administrative and operational encapsulation method and whether trunking negotiation is enabled.
Access Mode VLAN	Displays the VLAN ID to which the port is configured.
Trunking Native Mode VLAN Trunking VLANs Enabled Trunking VLANs Active	Lists the VLAN ID of the trunk that is in native mode. Lists the allowed VLANs on the trunk. Lists the active VLANs on the trunk.
Pruning VLANs Enabled	Lists the VLANs that are pruning-eligible.
Protected	Displays whether or not protected port is enabled (True) or disabled (False) on the interface.
Unknown unicast blocked Unknown multicast blocked	Displays whether or not unknown multicast and unknown unicast traffic is blocked on the interface.
Voice VLAN	Displays the VLAN ID on which voice VLAN is enabled.
Appliance trust	Displays the class of service (CoS) setting of the data packets of the IP phone.

show interfaces transceiver

To display the physical properties of a small form-factor pluggable (SFP) module interface, use the **show interfaces transceiver** command in EXEC mode.

show interfaces [*interface-id*] **transceiver** [{**detail** | **module** *number* | **properties** | **supported-list** | **threshold-table**}]

Syntax Description

interface-id	(Optional) ID of the physical interface, including type, stack member (stacking-capable switches only) module, and port number.
detail	(Optional) Displays calibration properties, including high and low numbers and any alarm information for any Digital Optical Monitoring (DoM)-capable transceiver if one is installed in the switch.
module *number*	(Optional) Limits display to interfaces on module on the switch. This option is not available if you entered a specific interface ID.
properties	(Optional) Displays speed, duplex, and inline power settings on an interface.
supported-list	(Optional) Lists all supported transceivers.
threshold-table	(Optional) Displays alarm and warning threshold table.

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Examples

This is an example of output from the **show interfaces** *interface-id* **transceiver properties** command:

```
Device# show interfaces transceiver

If device is externally calibrated, only calibrated values are printed.
++ : high alarm, +  : high warning, -  : low warning, -- : low alarm.
NA or N/A: not applicable, Tx: transmit, Rx: receive.
mA: milliamperes, dBm: decibels (milliwatts).

                                          Optical   Optical
           Temperature  Voltage  Current   Tx Power  Rx Power
Port       (Celsius)    (Volts)  (mA)      (dBm)     (dBm)
---------  -----------  -------  --------  --------  --------
Gi5/1/2      42.9       3.28      22.1      -5.4      -8.1
Te5/1/3      32.0       3.28      19.8       2.4      -4.2


Device# show interfaces gigabitethernet1/1/1 transceiver properties
  Name : Gi1/1/1
  Administrative Speed: auto
```

```
  Operational Speed: auto
  Administrative Duplex: auto
  Administrative Power Inline: enable
  Operational Duplex: auto
  Administrative Auto-MDIX: off
  Operational Auto-MDIX: off
```

This is an example of output from the **show interfaces** *interface-id* **transceiver detail** command:

```
Device# show interfaces gigabitethernet1/1/1 transceiver detail
  ITU Channel not available (Wavelength not available),
  Transceiver is internally calibrated.
  mA:milliamperes, dBm:decibels (milliwatts), N/A:not applicable.
  ++:high alarm, +:high warning, -:low warning, -- :low alarm.
  A2D readouts (if they differ), are reported in parentheses.
  The threshold values are uncalibrated.

                            High Alarm  High Warn  Low Warn   Low Alarm
           Temperature      Threshold   Threshold  Threshold  Threshold
  Port     (Celsius)       (Celsius)   (Celsius)  (Celsius)  (Celsius)
  -------  ---------------  ----------  ---------  ---------  ---------
  Gi1/1/1  29.9             74.0        70.0       0.0        -4.0
                            High Alarm  High Warn  Low Warn   Low Alarm
           Voltage          Threshold   Threshold  Threshold  Threshold
  Port     (Volts)          (Volts)     (Volts)    (Volts)    (Volts)
  -------  ---------------  ----------  ---------  ---------  ---------
  Gi1/1/1  3.28             3.60        3.50       3.10       3.00

           Optical          High Alarm  High Warn  Low Warn   Low Alarm
           Transmit Power   Threshold   Threshold  Threshold  Threshold
  Port     (dBm)            (dBm)       (dBm)      (dBm)      (dBm)
  -------  ---------------  ----------  ---------  ---------  ---------
  Gi1/1/1  1.8              7.9         3.9        0.0        -4.0

           Optical          High Alarm  High Warn  Low Warn   Low Alarm
           Receive Power    Threshold   Threshold  Threshold  Threshold
  Port     (dBm)            (dBm)       (dBm)      (dBm)      (dBm)
  -------  ---------------  ----------  ---------  ---------  ---------
  Gi1/1/1  -23.5            -5.0        -9.0       -28.2      -32.2

Device# show interfaces transceiver supported-list
Transceiver Type          Cisco p/n min version
                               supporting DOM
------------------       -------------------------

   DWDM GBIC               ALL
   DWDM SFP                ALL
   RX only WDM GBIC        ALL
   DWDM XENPAK             ALL
   DWDM X2                 ALL
   DWDM XFP                ALL
   CWDM GBIC               NONE
   CWDM X2                 ALL
   CWDM XFP                ALL
   XENPAK ZR               ALL
   X2 ZR                   ALL
   XFP ZR                  ALL
   Rx_only_WDM_XENPAK      ALL
   XENPAK_ER               10-1888-04
   X2_ER                   ALL
   XFP_ER                  ALL
   XENPAK_LR               10-1838-04
```

```
  X2_LR                    ALL
  XFP_LR                   ALL
  XENPAK_LW                ALL
  X2_LW                    ALL
  XFP_LW                   NONE
  XENPAK SR                NONE
  X2 SR                    ALL
  XFP SR                   ALL
  XENPAK LX4               NONE
  X2 LX4                   NONE
  XFP LX4                  NONE
  XENPAK CX4               NONE
  X2 CX4                   NONE
  XFP CX4                  NONE
  SX GBIC                  NONE
  LX GBIC                  NONE
  ZX GBIC                  NONE
  CWDM_SFP                 ALL
  Rx_only_WDM_SFP          NONE
  SX_SFP                   ALL
  LX_SFP                   ALL
  ZX_SFP                   ALL
  EX_SFP                   ALL
  SX SFP                   NONE
  LX SFP                   NONE
  ZX SFP                   NONE
  GIgE BX U SFP            NONE
  GigE BX D SFP            ALL
  X2 LRM                   ALL
  SR_SFPP                  ALL
  LR_SFPP                  ALL
  LRM_SFPP                 ALL
  ER_SFPP                  ALL
  ZR_SFPP                  ALL
  DWDM_SFPP                ALL
  GIgE BX 40U SFP          ALL
  GigE BX 40D SFP          ALL
  GigE BX 40DA SFP         ALL
  GIgE BX 80U SFP          ALL
  GigE BX 80D SFP          ALL
  GIG BXU_SFPP             ALL
  GIG BXD_SFPP             ALL
  GIG BX40U_SFPP           ALL
  GIG BX40D_SFPP           ALL
  GigE Dual Rate LX SFP    ALL
  CWDM_SFPP                ALL
  CPAK_SR10                ALL
  CPAK_LR4                 ALL
  QSFP_LR                  ALL
  QSFP_SR                  ALL
```

This is an example of output from the **show interfaces transceiver threshold-table** command:

```
Device# show interfaces transceiver threshold-table
             Optical Tx     Optical Rx    Temp     Laser Bias    Voltage
                                                    current
            -------------  -------------  ------   ------------  ---------

 DWDM GBIC
Min1             -4.00        -32.00        -4           N/A          4.65
Min2              0.00        -28.00        0            N/A          4.75
Max2              4.00         -9.00        70           N/A          5.25
Max1              7.00         -5.00        74           N/A          5.40
 DWDM SFP
```

```
Min1             -4.00        -32.00        -4            N/A           3.00
Min2              0.00        -28.00        0             N/A           3.10
Max2              4.00         -9.00        70            N/A           3.50
Max1              8.00         -5.00        74            N/A           3.60
 RX only WDM GBIC
Min1              N/A         -32.00        -4            N/A           4.65
Min2              N/A         -28.30        0             N/A           4.75
Max2              N/A          -9.00        70            N/A           5.25
Max1              N/A          -5.00        74            N/A           5.40
 DWDM XENPAK
Min1             -5.00        -28.00        -4            N/A           N/A
Min2             -1.00        -24.00        0             N/A           N/A
Max2              3.00         -7.00        70            N/A           N/A
Max1              7.00         -3.00        74            N/A           N/A
 DWDM X2
Min1             -5.00        -28.00        -4            N/A           N/A
Min2             -1.00        -24.00        0             N/A           N/A
Max2              3.00         -7.00        70            N/A           N/A
Max1              7.00         -3.00        74            N/A           N/A
 DWDM XFP
Min1             -5.00        -28.00        -4            N/A           N/A
Min2             -1.00        -24.00        0             N/A           N/A
Max2              3.00         -7.00        70            N/A           N/A
Max1              7.00         -3.00        74            N/A           N/A
 CWDM X2
Min1              N/A           N/A         0             N/A           N/A
Min2              N/A           N/A         0             N/A           N/A
Max2              N/A           N/A         0             N/A           N/A
Max1              N/A           N/A         0             N/A           N/A

<output truncated>
```

Related Commands

Command	Description
transceiver type all	Enters the transceiver type configuration mode.
monitoring	Enables digital optical monitoring.

show inventory

To display the product inventory listing of all Cisco products installed in the networking device, use the **show inventory** command in user EXEC or privileged EXEC mode.

show inventory {**fru** | **oid** | **raw**} [**entity**]

fru	(Optional) Retrieves information about all Field Replaceable Units (FRUs) installed in the Cisco networking device.
oid	(Optional) Retrieves information about the vendor specific hardware registration identifier referred to as object identifier (OID). The OID identifies the MIB object's location in the MIB hierarchy, and provides a means of accessing the MIB object in a network of managed devices
raw	(Optional) Retrieves information about all Cisco products referred to as entities installed in the Cisco networking device, even if the entities do not have a product ID (PID) value, a unique device identifier (UDI), or other physical identification.
entity	(Optional) Name of a Cisco entity (for example, chassis, backplane, module, or slot). A quoted string may be used to display very specific UDI information; for example "sfslot 1" will display the UDI information for slot 1 of an entity named sfslot.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	This command was introduced.
Cisco IOS XE Everest 16.6.3	This command was enhanced to display the serial number for the chassis.

Usage Guidelines

The **show inventory** command retrieves and displays inventory information about each Cisco product in the form of a UDI. The UDI is a combination of three separate data elements: a product identifier (PID), a version identifier (VID), and the serial number (SN).

The PID is the name by which the product can be ordered; it has been historically called the "Product Name" or "Part Number." This is the identifier that one would use to order an exact replacement part.

The VID is the version of the product. Whenever a product has been revised, the VID will be incremented. The VID is incremented according to a rigorous process derived from Telcordia GR-209-CORE, an industry guideline that governs product change notices.

The SN is the vendor-unique serialization of the product. Each manufactured product will carry a unique serial number assigned at the factory, which cannot be changed in the field. This is the means by which to identify an individual, specific instance of a product.

The UDI refers to each product as an entity. Some entities, such as a chassis, will have subentities like slots. Each entity will display on a separate line in a logically ordered presentation that is arranged hierarchically by Cisco entities.

Use the **show inventory** command without options to display a list of Cisco entities installed in the networking device that are assigned a PID.

The following is sample output from the **show inventory** command:

```
Device#show inventory
NAME: "c93xx Stack", DESCR: "c93xx Stack"
PID: C9300-48UXM       , VID: P2B  , SN: FCW2117G00C

NAME: "Switch 2", DESCR: "C9300-48UXM"
PID: C9300-48UXM       , VID: P2B  , SN: FCW2117G00C

NAME: "Switch 2 - Power Supply A", DESCR: "Switch 2 - Power Supply A"
PID: PWR-C1-1100WAC    , VID: V02  , SN: LIT211227NZ

NAME: "Switch 2 FRU Uplink Module 1", DESCR: "8x10G Uplink Module"
PID: C3850-NM-8-10G    , VID: V01  , SN: FOC20153M58

NAME: "Te2/1/1", DESCR: "SFP-10GBase-CX1"
PID: SFP-H10GB-CU2M      , VID: V02  , SN: TED2132H0SU

NAME: "Te2/1/3", DESCR: "SFP-10GBase-CX1"
PID: SFP-H10GB-CU2M      , VID: V02  , SN: TED2132H0A8

NAME: "Te2/1/5", DESCR: "SFP-10GBase-CX1"
PID: SFP-H10GB-CU2M      , VID: V02  , SN: TED2132H1G8

NAME: "usbflash1", DESCR: "usbflash1"
PID: SSD-120G          , VID: STP21460FNA, SN: V01
```

Table 7: show inventory Field Descriptions

Field	Description
NAME	Physical name (text string) assigned to the Cisco entity. For example, console or a simple component number (port or module number), such as “1,” depending on the physical component naming syntax of the device.
DESCR	Physical description of the Cisco entity that characterizes the object. The physical description includes the hardware serial number and the hardware revision.
PID	Entity product identifier. Equivalent to the entPhysicalModelName MIB variable in RFC 2737.
VID	Entity version identifier. Equivalent to the entPhysicalHardwareRev MIB variable in RFC 2737.
SN	Entity serial number. Equivalent to the entPhysicalSerialNum MIB variable in RFC 2737.

For diagnostic purposes, the **show inventory**command can be used with the **raw** keyword to display every RFC 2737 entity including those without a PID, UDI, or other physical identification.

Note The **raw** keyword option is primarily intended for troubleshooting problems with the **show inventory** command itself.

Enter the **show inventory** command with an *entity* argument value to display the UDI information for a specific type of Cisco entity installed in the networking device. In this example, a list of Cisco entities that match the sfslot argument string is displayed.

```
Device#show inventory "c93xx Stack"
NAME: "c93xx Stack", DESCR: "c93xx Stack"
PID: C9300-48UXM       , VID: P2B  , SN: FCW2117G00C

NAME: "Switch 2", DESCR: "C9300-48UXM"
PID: C9300-48UXM       , VID: P2B  , SN: FCW2117G00C

NAME: "Switch 2 - Power Supply A", DESCR: "Switch 2 - Power Supply A"
PID: PWR-C1-1100WAC    , VID: V02  , SN: LIT211227NZ

NAME: "Switch 2 FRU Uplink Module 1", DESCR: "8x10G Uplink Module"
PID: C3850-NM-8-10G    , VID: V01  , SN: FOC20153M58

NAME: "Te2/1/1", DESCR: "SFP-10GBase-CX1"
PID: SFP-H10GB-CU2M      , VID: V02  , SN: TED2132H0SU

NAME: "Te2/1/3", DESCR: "SFP-10GBase-CX1"
PID: SFP-H10GB-CU2M      , VID: V02  , SN: TED2132H0A8

NAME: "Te2/1/5", DESCR: "SFP-10GBase-CX1"
PID: SFP-H10GB-CU2M      , VID: V02  , SN: TED2132H1G8

NAME: "usbflash1", DESCR: "usbflash1"
PID: SSD-120G          , VID: STP21460FNA, SN: V01
```

You can request even more specific UDI information with the *entity* argument value enclosed in quotation marks.

show macro auto

To display Auto Smartports macro information, use the **show macro auto** command in user EXEC mode.

show macro auto {**address-group** *address-group-name* | **device** [**access-point**] [**ip-camera**] [**lightweight-ap**] [**media-player**] [**phone**] [**router**] [**switch**] | **global** [*event_trigger*] | **interface** [*interface_id*]}

Syntax Description

address-group [*address-group-name*]	Displays address-group information. (Optional) *address-group-name*—Displays information for the specified address group.
device [*access-point*] [*ip-camera*] [*lightweight-ap*] [*media-player*] [*phone*] [*router*] [*switch*]	Displays device information about one or more devices. • (Optional) **access-point**—Autonomous access point • (Optional) **ip-camera**—Cisco IP video surveillance camera • (Optional) **lightweight-ap**—Lightweight access point • (Optional) **media-player**—Digital media player • (Optional) phone—Cisco IP phone • (Optional) **router**—Cisco router • (Optional) **switch**—Cisco switch
global [*event_trigger*]	Displays Auto Smartports information about the switch. (Optional) *event_trigger*—Displays information about the specified event trigger.
interface [*interface_id*]	Displays interface status. (Optional) *interface_id*—isplays information about the specified interface.

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use this command to display the Auto SmartPorts information for the switch. Use the **show macro auto device** command to display the configurable parameters for a device.

Example

This example shows how to use the **show macro auto device** to view the configuration on the switch:

```
Device# show macro auto device
Device:lightweight-ap
Default Macro:CISCO_LWAP_AUTO_SMARTPORT
Current Macro:CISCO_LWAP_AUTO_SMARTPORT
Configurable Parameters:ACCESS_VLAN
Defaults Parameters:ACCESS_VLAN=1
Current Parameters:ACCESS_VLAN=1

Device:access-point
Default Macro:CISCO_AP_AUTO_SMARTPORT
Current Macro:CISCO_AP_AUTO_SMARTPORT
Configurable Parameters:NATIVE_VLAN
Defaults Parameters:NATIVE_VLAN=1
Current Parameters:NATIVE_VLAN=1

Device:phone
Default Macro:CISCO_PHONE_AUTO_SMARTPORT
Current Macro:CISCO_PHONE_AUTO_SMARTPORT
Configurable Parameters:ACCESS_VLAN VOICE_VLAN
Defaults Parameters:ACCESS_VLAN=1 VOICE_VLAN=2
Current Parameters:ACCESS_VLAN=1 VOICE_VLAN=2

Device:router
Default Macro:CISCO_ROUTER_AUTO_SMARTPORT
Current Macro:CISCO_ROUTER_AUTO_SMARTPORT
Configurable Parameters:NATIVE_VLAN
Defaults Parameters:NATIVE_VLAN=1
Current Parameters:NATIVE_VLAN=1

Device:switch
Default Macro:CISCO_SWITCH_AUTO_SMARTPORT
Current Macro:CISCO_SWITCH_AUTO_SMARTPORT
Configurable Parameters:NATIVE_VLAN
Defaults Parameters:NATIVE_VLAN=1
Current Parameters:NATIVE_VLAN=1

Device:ip-camera
Default Macro:CISCO_IP_CAMERA_AUTO_SMARTPORT
Current Macro:CISCO_IP_CAMERA_AUTO_SMARTPORT
Configurable Parameters:ACCESS_VLAN
Defaults Parameters:ACCESS_VLAN=1
Current Parameters:ACCESS_VLAN=1

Device:media-player
Default Macro:CISCO_DMP_AUTO_SMARTPORT
Current Macro:CISCO_DMP_AUTO_SMARTPORT
Configurable Parameters:ACCESS_VLAN
Defaults Parameters:ACCESS_VLAN=1
Current Parameters:ACCESS_VLAN=1
```

This example shows how to use the **show macro auto address-group name** command to view the TEST3 address group configuration on the switch:

```
Device# show macro auto address-group TEST3MAC Address Group Configuration:
```

```
Group Name OUI  MAC ADDRESS
------------------------------------------------------------
TEST3 2233.33     0022.0022.0022
2233.34
```

show memory platform

To display memory statistics of a platform, use the **show memory platform** command in privileged EXEC mode.

show memory platform [{**compressed-swap** | **information** | **page-merging**}]

Syntax Description

compressed-swap	(Optional) Displays platform memory compressed-swap information.
information	(Optional) Displays general information about the platform.
page-merging	(Optional) Displays platform memory page-merging information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Free memory is accurately computed and displayed in the Free Memory field of the command output.

Examples

The following is sample output from the **show memory platform** command:

```
Switch# show memory platform

 Virtual memory   : 12874653696
  Pages resident   : 627041
  Major page faults: 2220
  Minor page faults: 2348631

  Architecture     : mips64
  Memory (kB)
    Physical       : 3976852
    Total          : 3976852
    Used           : 2761276
    Free           : 1215576
    Active         : 2128196
    Inactive       : 1581856
    Inact-dirty    : 0
    Inact-clean    : 0
    Dirty          : 0
    AnonPages      : 1294984
    Bounce         : 0
    Cached         : 1978168
    Commit Limit   : 1988424
    Committed As   : 3343324
    High Total     : 0
    High Free      : 0
    Low Total      : 3976852
    Low Free       : 1215576
    Mapped         : 516316
    NFS Unstable   : 0
    Page Tables    : 17124
    Slab           : 0
```

```
  VMmalloc Chunk : 1069542588
  VMmalloc Total : 1069547512
  VMmalloc Used  : 2588
  Writeback      : 0
  HugePages Total: 0
  HugePages Free : 0
  HugePages Rsvd : 0
  HugePage Size  : 2048

Swap (kB)
  Total          : 0
  Used           : 0
  Free           : 0
  Cached         : 0

Buffers (kB)     : 437136

Load Average
  1-Min          : 1.04
  5-Min          : 1.16
  15-Min         : 0.94
```

The following is sample output from the **show memory platform information** command:

```
Device# show memory platform information

Virtual memory   : 12870438912
 Pages resident   : 626833
 Major page faults: 2222
 Minor page faults: 2362455

 Architecture     : mips64
 Memory (kB)
   Physical       : 3976852
   Total          : 3976852
   Used           : 2761224
   Free           : 1215628
   Active         : 2128060
   Inactive       : 1584444
   Inact-dirty    : 0
   Inact-clean    : 0
   Dirty          : 284
   AnonPages      : 1294656
   Bounce         : 0
   Cached         : 1979644
   Commit Limit   : 1988424
   Committed As   : 3342184
   High Total     : 0
   High Free      : 0
   Low Total      : 3976852
   Low Free       : 1215628
   Mapped         : 516212
   NFS Unstable   : 0
   Page Tables    : 17096
   Slab           : 0
   VMmalloc Chunk : 1069542588
   VMmalloc Total : 1069547512
   VMmalloc Used  : 2588
   Writeback      : 0
   HugePages Total: 0
   HugePages Free : 0
   HugePages Rsvd : 0
   HugePage Size  : 2048
```

```
Swap (kB)
  Total          : 0
  Used           : 0
  Free           : 0
  Cached         : 0

Buffers (kB)     : 438228

Load Average
  1-Min          : 1.54
  5-Min          : 1.27
  15-Min         : 0.99
```

show module

To display module information such as switch number, model number, serial number, hardware revision number, software version, MAC address and so on, use this command in user EXEC or privileged EXEC mode.

```
show module [{switch-num}]
```

Syntax Description

switch-num	(Optional) Number of the switch.

Command Default

None

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Entering the **show module** command without the *switch-num* argument is the same as entering the show module all command.

The following example displays information for all modules on a Cisco Catalyst 9300 Series Switch:

```
Device# show module
Switch  Ports    Model              Serial No.   MAC address     Hw Ver.       Sw Ver.
------  -----   ---------          -----------  --------------  -------       --------
 1       40     C9300-24T          FOC2147Q02D  b4a8.b9c1.4100  V01           16.10.1
```

show mgmt-infra trace messages ilpower

To display inline power messages within a trace buffer, use the **show mgmt-infra trace messages ilpower** command in privileged EXEC mode.

show mgmt-infra trace messages ilpower [**switch** *stack-member-number*]

Syntax Description

switch *stack-member-number*	(Optional) Specifies the stack member number for which to display inline power messages within a trace buffer.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

This is an output example from the **show mgmt-infra trace messages ilpower** command:

```
Device# show mgmt-infra trace messages ilpower
[10/23/12 14:05:10.984 UTC 1 3] Initialized inline power system configuration fo
r slot 1.
[10/23/12 14:05:10.984 UTC 2 3] Initialized inline power system configuration fo
r slot 2.
[10/23/12 14:05:10.984 UTC 3 3] Initialized inline power system configuration fo
r slot 3.
[10/23/12 14:05:10.984 UTC 4 3] Initialized inline power system configuration fo
r slot 4.
[10/23/12 14:05:10.984 UTC 5 3] Initialized inline power system configuration fo
r slot 5.
[10/23/12 14:05:10.984 UTC 6 3] Initialized inline power system configuration fo
r slot 6.
[10/23/12 14:05:10.984 UTC 7 3] Initialized inline power system configuration fo
r slot 7.
[10/23/12 14:05:10.984 UTC 8 3] Initialized inline power system configuration fo
r slot 8.
[10/23/12 14:05:10.984 UTC 9 3] Initialized inline power system configuration fo
r slot 9.
[10/23/12 14:05:10.984 UTC a 3] Inline power subsystem initialized.
[10/23/12 14:05:18.908 UTC b 264] Create new power pool for slot 1
[10/23/12 14:05:18.909 UTC c 264] Set total inline power to 450 for slot 1
[10/23/12 14:05:20.273 UTC d 3] PoE is not supported on .
[10/23/12 14:05:20.288 UTC e 3] PoE is not supported on .
[10/23/12 14:05:20.299 UTC f 3] PoE is not supported on .
[10/23/12 14:05:20.311 UTC 10 3] PoE is not supported on .
[10/23/12 14:05:20.373 UTC 11 98] Inline power process post for switch 1
[10/23/12 14:05:20.373 UTC 12 98] PoE post passed on switch 1
[10/23/12 14:05:20.379 UTC 13 3] Slot #1: PoE initialization for board id 16387
[10/23/12 14:05:20.379 UTC 14 3] Set total inline power to 450 for slot 1
[10/23/12 14:05:20.379 UTC 15 3] Gi1/0/1 port config Initialized
[10/23/12 14:05:20.379 UTC 16 3] Interface Gi1/0/1 initialization done.
[10/23/12 14:05:20.380 UTC 17 3] Gi1/0/24 port config Initialized
[10/23/12 14:05:20.380 UTC 18 3] Interface Gi1/0/24 initialization done.
[10/23/12 14:05:20.380 UTC 19 3] Slot #1: initialization done.
```

```
[10/23/12 14:05:50.440 UTC 1a 3] Slot #1: PoE initialization for board id 16387
[10/23/12 14:05:50.440 UTC 1b 3] Duplicate init event
```

show mgmt-infra trace messages ilpower-ha

To display inline power high availability messages within a trace buffer, use the **show mgmt-infra trace messages ilpower-ha** command in privileged EXEC mode.

show mgmt-infra trace messages ilpower-ha [**switch** *stack-member-number*]

Syntax Description

switch *stack-member-number*	(Optional) Specifies the stack member number for which to display inline power messages within a trace buffer.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

This is an output example from the **show mgmt-infra trace messages ilpower-ha** command:

```
Device# show mgmt-infra trace messages ilpower-ha
[10/23/12 14:04:48.087 UTC 1 3] NG3K_ILPOWER_HA: Created NGWC ILP CF client succ
essfully.
```

show mgmt-infra trace messages platform-mgr-poe

To display platform manager Power over Ethernet (PoE) messages within a trace buffer, use the **show mgmt-infra trace messages platform-mgr-poe** privileged EXEC command.

show mgmt-infra trace messages platform-mgr-poe [**switch** *stack-member-number*]

Syntax Description

switch *stack-member-number*	(Optional) Specifies the stack member number for which to display messages within a trace buffer.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

This is an example of partial output from the **show mgmt-infra trace messages platform-mgr-poe** command:

```
Device# show mgmt-infra trace messages platform-mgr-poe
[10/23/12 14:04:06.431 UTC 1 5495] PoE Info: get power controller param sent:
[10/23/12 14:04:06.431 UTC 2 5495] PoE Info: POE_SHUT sent for port 1 (0:0)
[10/23/12 14:04:06.431 UTC 3 5495] PoE Info: POE_SHUT sent for port 2 (0:1)
[10/23/12 14:04:06.431 UTC 4 5495] PoE Info: POE_SHUT sent for port 3 (0:2)
[10/23/12 14:04:06.431 UTC 5 5495] PoE Info: POE_SHUT sent for port 4 (0:3)
[10/23/12 14:04:06.431 UTC 6 5495] PoE Info: POE_SHUT sent for port 5 (0:4)
[10/23/12 14:04:06.431 UTC 7 5495] PoE Info: POE_SHUT sent for port 6 (0:5)
[10/23/12 14:04:06.431 UTC 8 5495] PoE Info: POE_SHUT sent for port 7 (0:6)
[10/23/12 14:04:06.431 UTC 9 5495] PoE Info: POE_SHUT sent for port 8 (0:7)
[10/23/12 14:04:06.431 UTC a 5495] PoE Info: POE_SHUT sent for port 9 (0:8)
[10/23/12 14:04:06.431 UTC b 5495] PoE Info: POE_SHUT sent for port 10 (0:9)
[10/23/12 14:04:06.431 UTC c 5495] PoE Info: POE_SHUT sent for port 11 (0:10)
[10/23/12 14:04:06.431 UTC d 5495] PoE Info: POE_SHUT sent for port 12 (0:11)
[10/23/12 14:04:06.431 UTC e 5495] PoE Info: POE_SHUT sent for port 13 (e:0)
[10/23/12 14:04:06.431 UTC f 5495] PoE Info: POE_SHUT sent for port 14 (e:1)
[10/23/12 14:04:06.431 UTC 10 5495] PoE Info: POE_SHUT sent for port 15 (e:2)
[10/23/12 14:04:06.431 UTC 11 5495] PoE Info: POE_SHUT sent for port 16 (e:3)
[10/23/12 14:04:06.431 UTC 12 5495] PoE Info: POE_SHUT sent for port 17 (e:4)
[10/23/12 14:04:06.431 UTC 13 5495] PoE Info: POE_SHUT sent for port 18 (e:5)
[10/23/12 14:04:06.431 UTC 14 5495] PoE Info: POE_SHUT sent for port 19 (e:6)
[10/23/12 14:04:06.431 UTC 15 5495] PoE Info: POE_SHUT sent for port 20 (e:7)
[10/23/12 14:04:06.431 UTC 16 5495] PoE Info: POE_SHUT sent for port 21 (e:8)
[10/23/12 14:04:06.431 UTC 17 5495] PoE Info: POE_SHUT sent for port 22 (e:9)
[10/23/12 14:04:06.431 UTC 18 5495] PoE Info: POE_SHUT sent for port 23 (e:10)
```

show network-policy profile

To display the network-policy profiles, use the **show network policy profile** command in privileged EXEC mode.

show network-policy profile [*profile-number*] [**detail**]

Syntax Description

profile-number	(Optional) Displays the network-policy profile number. If no profile is entered, all network-policy profiles appear.
detail	(Optional) Displays detailed status and statistics information.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

This is an example of output from the **show network-policy profile** command:

```
Device# show network-policy profile
Network Policy Profile 10
   voice vlan 17 cos 4
  Interface:
   none
Network Policy Profile 30
   voice vlan 30 cos 5
  Interface:
   none
Network Policy Profile 36
   voice vlan 4 cos 3
  Interface:
   Interface_id
```

show parser macro

To display the parameters for all configured macros or for one macro on the switch, use the **show parser macro** command in user EXEC mode.

show parser macro {**brief** | **description** [**interface** *interface-id*] | **name** *macro-name*}

Syntax Description

brief	(Optional) Displays the name of each macro.
description [**interface** *interface-id*]	(Optional) Displays all macro descriptions or the description of a specific interface.
name *macro-name*	(Optional) Displays information about a single macro identified by the macro name.

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Example

This is a partial output example from the **show parser macro** command. The output for the Cisco-default macros varies depending on the switch platform and the software image running on the switch:

```
Device# show parser macro
Total number of macros = 6
------------------------------------------------------------------
Macro name : cisco-global
Macro type : default global
# Enable dynamic port error recovery for link state
# failures
errdisable recovery cause link-flap
errdisable recovery interval 60

<output truncated>

------------------------------------------------------------------
Macro name : cisco-desktop
Macro type : default interface
# macro keywords $AVID
# Basic interface - Enable data VLAN only
# Recommended value for access vlan (AVID) should not be 1
switchport access vlan $AVID
switchport mode access

<output truncated>

------------------------------------------------------------------
Macro name : cisco-phone
```

```
Macro type : default interface
# Cisco IP phone + desktop template
# macro keywords $AVID $VVID
# VoIP enabled interface - Enable data VLAN
# and voice VLAN (VVID)
# Recommended value for access vlan (AVID) should not be 1
switchport access vlan $AVID
switchport mode access

<output truncated>

------------------------------------------------------------------
Macro name : cisco-switch
Macro type : default interface
# macro keywords $NVID
# Access Uplink to Distribution
# Do not apply to EtherChannel/Port Group
# Define unique Native VLAN on trunk ports
# Recommended value for native vlan (NVID) should not be 1
switchport trunk native vlan $NVID

<output truncated>

------------------------------------------------------------------
Macro name : cisco-router
Macro type : default interface
# macro keywords $NVID
# Access Uplink to Distribution
# Define unique Native VLAN on trunk ports
# Recommended value for native vlan (NVID) should not be 1
switchport trunk native vlan $NVID

<output truncated>

------------------------------------------------------------------
Macro name : snmp
Macro type : customizable

#enable port security, linkup, and linkdown traps
snmp-server enable traps port-security
snmp-server enable traps linkup
snmp-server enable traps linkdown
#set snmp-server host
snmp-server host ADDRESS
#set SNMP trap notifications precedence
snmp-server ip precedence VALUE

------------------------------------------------------------------
```

This example shows the output from the **show parser macro name** command:

```
Device# show parser macro name standard-switch10
Macro name : standard-switch10
Macro type : customizable
macro description standard-switch10
# Trust QoS settings on VOIP packets
auto qos voip trust
# Allow port channels to be automatically formed
channel-protocol pagp
```

This example shows the output from the **show parser macro brief** command:

```
Device# show parser macro brief
    default global   : cisco-global
    default interface: cisco-desktop
    default interface: cisco-phone
    default interface: cisco-switch
    default interface: cisco-router
    customizable     : snmp
```

This exampe shows the output from the **show parser macro description** command:

```
Device# show parser macro description
Global Macro(s): cisco-global
Interface    Macro Description(s)
---------------------------------------------------------------
Gi1/0/1        standard-switch10
Gi1/0/2       this is test macro
---------------------------------------------------------------
```

This example shows the output from the **show parser macro description interface** command:

```
Device# show parser macro description interface gigabitethernet1/0/2
Interface    Macro Description
---------------------------------------------------------------
Gi1/0/2      this is test macro
---------------------------------------------------------------
```

show platform hardware bluetooth

To display information about Bluetooth interface, use the **show platform hardware bluetooth** command in privileged EXEC mode.

show platform hardware bluetooth

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.

Usage Guidelines

The **show platform hardware bluetooth** command is to be used when an external USB Bluetooth dongle is connected on the device.

Examples

This example shows how to display the information of the Bluetooth interface using the **show platform hardware bluetooth** command.

```
Device> enable
Device# show platform hardware bluetooth
Controller: 0:1a:7d:da:71:13
Type: Primary
Bus: USB
State: DOWN
Name:
HCI Version:
```

show platform hardware capacity

Note The existing **show platform hardware capacity** command is currently supported, but is going to be deprecated. Use the **show tech-support resource** command instead.

To determine system hardware capacity, use the **show platform hardware capacity** command in privileged EXEC mode.

show platform hardware capacity

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default settings.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Fuji 16.8.1a	This command was introduced.

Example

This example shows how to determine the system hardware capacity

```
Device# show platform hardware capacity

Module        Model                Operational Status
------------- -------------------- ------------------------
subslot 1/0   C9500H-32QC          ok

Load Average
 Slot  Status  1-Min  5-Min 15-Min
  RP0 Healthy   0.07   0.16   0.13

Memory (kB)
 Slot  Status    Total     Used (Pct)     Free (Pct) Committed (Pct)
  RP0 Healthy 15958108  3060492 (19%) 12897616 (81%)  25941080 (163%)

CPU Utilization
 Slot  CPU   User System   Nice   Idle    IRQ   SIRQ IOwait
  RP0    0   0.70   0.20   0.00  99.10   0.00   0.00   0.00
         1   0.39   0.09   0.00  99.50   0.00   0.00   0.00
         2   0.80   0.40   0.00  98.80   0.00   0.00   0.00
         3   1.10   0.20   0.00  98.69   0.00   0.00   0.00
         4   0.00   0.00   0.00 100.00   0.00   0.00   0.00
         5   2.20   0.00   0.00  97.80   0.00   0.00   0.00
         6   0.10   3.20   0.00  96.70   0.00   0.00   0.00
         7   0.00   0.00   0.00 100.00   0.00   0.00   0.00


 *: interface is up
 IHQ: pkts in input hold queue     IQD: pkts dropped from input queue
```

```
 OHQ: pkts in output hold queue    OQD: pkts dropped from output queue
 RXBS: rx rate (bits/sec)          RXPS: rx rate (pkts/sec)
 TXBS: tx rate (bits/sec)          TXPS: tx rate (pkts/sec)
 TRTL: throttle count

  Interface                   IHQ       IQD       OHQ       OQD       RXBS       RXPS
TXBS      TXPS      TRTL
------------------------------------------------------------------------------------------------------------------

  Vlan1                         0         0         0         0          0          0
  0         0         0
* GigabitEthernet0/0            0         0         0         0          0          0
  0         0         0
  Fo1/0/1                       0         0         0         0          0          0
  0         0         0
  Fo1/0/2                       0         0         0         0          0          0
  0         0         0
  Fo1/0/3                       0         0         0         0          0          0
  0         0         0
  Fo1/0/4                       0         0         0         0          0          0
  0         0         0
  Fo1/0/5                       0         0         0         0          0          0
  0         0         0
  Fo1/0/6                       0         0         0         0          0          0
  0         0         0
  Fo1/0/7                       0         0         0         0          0          0
  0         0         0
  Fo1/0/8                       0         0         0         0          0          0
  0         0         0
  Fo1/0/9                       0         0         0         0          0          0
  0         0         0
  Fo1/0/10                      0         0         0         0          0          0
  0         0         0
  Fo1/0/11                      0         0         0         0          0          0
  0         0         0
  Fo1/0/12                      0         0         0         0          0          0
  0         0         0
  Fo1/0/13                      0         0         0         0          0          0
  0         0         0
  Fo1/0/14                      0         0         0         0          0          0
  0         0         0
  Fo1/0/15                      0         0         0         0          0          0
  0         0         0
  Fo1/0/16                      0         0         0         0          0          0
  0         0         0
  Fo1/0/17                      0         0         0         0          0          0
  0         0         0
  Fo1/0/18                      0         0         0         0          0          0
  0         0         0
  Fo1/0/19                      0         0         0         0          0          0
  0         0         0
  Fo1/0/20                      0         0         0         0          0          0
  0         0         0
  Fo1/0/21                      0         0         0         0          0          0
  0         0         0
  Fo1/0/22                      0         0         0         0          0          0
  0         0         0
  Fo1/0/23                      0         0         0         0          0          0
  0         0         0
* Fo1/0/24                      0         0         0         0          0          0
  0         0         0
* Fo1/0/25                      0         0         0         0          0          0
  0         0         0
* Fo1/0/26                      0         0         0         0          0          0
```

```
  0         0         0
* Fo1/0/27                      0         0         0         0         0         0
  0         0         0
* Fo1/0/28                      0         0         0         0         0         0
  0         0         0
* Fo1/0/29                      0         0         0         0         0         0
  0         0         0
* Fo1/0/30                      0         0         0         0         0         0
  0         0         0
* Fo1/0/31                      0         0         0         0         0         0
  0         0         0
  Fo1/0/32                      0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/33             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/34             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/35             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/36             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/37             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/38             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/39             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/40             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/41             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/42             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/43             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/44             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/45             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/46             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/47             0         0         0         0         0         0
  0         0         0
  HundredGigE1/0/48             0         0         0         0         0         0
  0         0         0
ASIC 0 Info
------------
ASIC 0 HSN Table 0 Software info:       FSE 255
        TILE 0: (null)          srip
        TILE 1: (null)          srip
ASIC 0 HSN Table 1 Software info:       FSE 255
        TILE 0: (null)          srip
        TILE 1: (null)          srip
ASIC 0 HSN Table 2 Software info:       FSE 0
        TILE 0: Unicast MAC addresses srip 0 1 2 3
        TILE 1: Unicast MAC addresses srip 0 1 2 3
ASIC 0 HSN Table 3 Software info:       FSE 0
        TILE 0: Unicast MAC addresses srip 0 1 2 3
        TILE 1: Unicast MAC addresses srip 0 1 2 3
ASIC 0 HSN Table 4 Software info:       FSE 255
        TILE 0: (null)          srip
        TILE 1: (null)          srip
ASIC 0 HSN Table 5 Software info:       FSE 255
        TILE 0: (null)          srip
```

```
        TILE 1: (null)          srip
ASIC 0 HSN Table 6 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
ASIC 0 HSN Table 7 Software info:       FSE 2
        TILE 0: SGT_DGT         srip 0 1 2 3
        TILE 1: SGT_DGT         srip 0 1 2 3
ASIC 0 HSF Table 0 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
        TILE 2: Directly or indirectly connected routes srip 0 1 2 3
        TILE 3: Directly or indirectly connected routes srip 0 1 2 3
        TILE 4: Directly or indirectly connected routes srip 0 1 2 3
        TILE 5: Directly or indirectly connected routes srip 0 1 2 3
        TILE 6: Directly or indirectly connected routes srip 0 1 2 3
        TILE 7: Directly or indirectly connected routes srip 0 1 2 3
ASIC 0 HSF Table 1 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
        TILE 2: Directly or indirectly connected routes srip 0 1 2 3
        TILE 3: Directly or indirectly connected routes srip 0 1 2 3
        TILE 4: Directly or indirectly connected routes srip 0 1 2 3
        TILE 5: Directly or indirectly connected routes srip 0 1 2 3
        TILE 6: Directly or indirectly connected routes srip 0 1 2 3
        TILE 7: Directly or indirectly connected routes srip 0 1 2 3
ASIC 0 HSF Table 2 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
        TILE 2: Directly or indirectly connected routes srip 0 1 2 3
        TILE 3: Directly or indirectly connected routes srip 0 1 2 3
        TILE 4: Directly or indirectly connected routes srip 0 1 2 3
        TILE 5: Directly or indirectly connected routes srip 0 1 2 3
        TILE 6: Directly or indirectly connected routes srip 0 1 2 3
        TILE 7: Directly or indirectly connected routes srip 0 1 2 3
ASIC 0 HSF Table 3 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
        TILE 2: Directly or indirectly connected routes srip 0 1 2 3
        TILE 3: Directly or indirectly connected routes srip 0 1 2 3
        TILE 4: Directly or indirectly connected routes srip 0 1 2 3
        TILE 5: Directly or indirectly connected routes srip 0 1 2 3
        TILE 6: Directly or indirectly connected routes srip 0 1 2 3
        TILE 7: Directly or indirectly connected routes srip 0 1 2 3
ASIC 0 HSF Table 4 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
        TILE 2: Directly or indirectly connected routes srip 0 1 2 3
        TILE 3: Directly or indirectly connected routes srip 0 1 2 3
        TILE 4: Directly or indirectly connected routes srip 0 1 2 3
        TILE 5: Directly or indirectly connected routes srip 0 1 2 3
        TILE 6: Directly or indirectly connected routes srip 0 1 2 3
        TILE 7: Directly or indirectly connected routes srip 0 1 2 3
OVF Info
--------
Table 0 info:   FSE0: 0, FSE1: 255      #hwmabs: 24, #swmabs: 24
        MAB  0: Unicast MAC addresses srip 0 1 2 3      MAB  1: Unicast MAC addresses srip
 0 1 2 3
        MAB  2: Unicast MAC addresses srip 0 1 2 3      MAB  3: Unicast MAC addresses srip
 0 1 2 3
        MAB  4: Unicast MAC addresses srip 0 1 2 3      MAB  5: Unicast MAC addresses srip
 0 1 2 3
        MAB  6: Unicast MAC addresses srip 0 1 2 3      MAB  7: Unicast MAC addresses srip
 0 1 2 3
        MAB  8: Unicast MAC addresses srip 0 1 2 3      MAB  9: Unicast MAC addresses srip
```

```
 0 1 2 3
       MAB 10: Unicast MAC addresses srip 0 1 2 3      MAB 11: Unicast MAC addresses srip
 0 1 2 3
       MAB 12: Unicast MAC addresses srip 0 1 2 3      MAB 13: Unicast MAC addresses srip
 0 1 2 3
       MAB 14: Unicast MAC addresses srip 0 1 2 3      MAB 15: Unicast MAC addresses srip
 0 1 2 3
       MAB 16: Unicast MAC addresses srip 0 1 2 3      MAB 17: Unicast MAC addresses srip
 0 1 2 3
       MAB 18: Unicast MAC addresses srip 0 1 2 3      MAB 19: Unicast MAC addresses srip
 0 1 2 3
       MAB 20: Unicast MAC addresses srip 0 1 2 3      MAB 21: Unicast MAC addresses srip
 0 1 2 3
       MAB 22: Unicast MAC addresses srip 0 1 2 3      MAB 23: Unicast MAC addresses srip
 0 1 2 3
Table 1 info:   FSE0: 1, FSE1: 255      #hwmabs: 24, #swmabs: 24
       MAB  0: Directly or indirectly connected routes srip 0 1 2 3    MAB  1: Directly
or indirectly connected routes srip 0 1 2 3
       MAB  2: Directly or indirectly connected routes srip 0 1 2 3    MAB  3: Directly
or indirectly connected routes srip 0 1 2 3
       MAB  4: Directly or indirectly connected routes srip 0 1 2 3    MAB  5: Directly
or indirectly connected routes srip 0 1 2 3
       MAB  6: Directly or indirectly connected routes srip 0 1 2 3    MAB  7: Directly
or indirectly connected routes srip 0 1 2 3
       MAB  8: Directly or indirectly connected routes srip 0 1 2 3    MAB  9: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 10: Directly or indirectly connected routes srip 0 1 2 3    MAB 11: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 12: Directly or indirectly connected routes srip 0 1 2 3    MAB 13: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 14: Directly or indirectly connected routes srip 0 1 2 3    MAB 15: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 16: Directly or indirectly connected routes srip 0 1 2 3    MAB 17: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 18: Directly or indirectly connected routes srip 0 1 2 3    MAB 19: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 20: Directly or indirectly connected routes srip 0 1 2 3    MAB 21: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 22: Directly or indirectly connected routes srip 0 1 2 3    MAB 23: Directly
or indirectly connected routes srip 0 1 2 3
Table 2 info:   FSE0: 1, FSE1: 255      #hwmabs: 24, #swmabs: 24
       MAB  0: Directly or indirectly connected routes srip 0 1 2 3    MAB  1: Directly
or indirectly connected routes srip 0 1 2 3
       MAB  2: Directly or indirectly connected routes srip 0 1 2 3    MAB  3: Directly
or indirectly connected routes srip 0 1 2 3
       MAB  4: Directly or indirectly connected routes srip 0 1 2 3    MAB  5: Directly
or indirectly connected routes srip 0 1 2 3
       MAB  6: Directly or indirectly connected routes srip 0 1 2 3    MAB  7: Directly
or indirectly connected routes srip 0 1 2 3
       MAB  8: Directly or indirectly connected routes srip 0 1 2 3    MAB  9: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 10: Directly or indirectly connected routes srip 0 1 2 3    MAB 11: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 12: Directly or indirectly connected routes srip 0 1 2 3    MAB 13: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 14: Directly or indirectly connected routes srip 0 1 2 3    MAB 15: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 16: Directly or indirectly connected routes srip 0 1 2 3    MAB 17: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 18: Directly or indirectly connected routes srip 0 1 2 3    MAB 19: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 20: Directly or indirectly connected routes srip 0 1 2 3    MAB 21: Directly
or indirectly connected routes srip 0 1 2 3
       MAB 22: Directly or indirectly connected routes srip 0 1 2 3    MAB 23: Directly
```

```
or indirectly connected routes srip 0 1 2 3
Table 3 info:   FSE0: 2, FSE1: 255      #hwmabs: 24, #swmabs: 24
        MAB  0: SGT_DGT         srip 0 1 2 3    MAB  1: SGT_DGT         srip 0 1 2 3
        MAB  2: SGT_DGT         srip 0 1 2 3    MAB  3: SGT_DGT         srip 0 1 2 3
        MAB  4: SGT_DGT         srip 0 1 2 3    MAB  5: SGT_DGT         srip 0 1 2 3
        MAB  6: SGT_DGT         srip 0 1 2 3    MAB  7: SGT_DGT         srip 0 1 2 3
        MAB  8: SGT_DGT         srip 0 1 2 3    MAB  9: SGT_DGT         srip 0 1 2 3
        MAB 10: SGT_DGT         srip 0 1 2 3    MAB 11: SGT_DGT         srip 0 1 2 3
        MAB 12: SGT_DGT         srip 0 1 2 3    MAB 13: SGT_DGT         srip 0 1 2 3
        MAB 14: SGT_DGT         srip 0 1 2 3    MAB 15: SGT_DGT         srip 0 1 2 3
        MAB 16: SGT_DGT         srip 0 1 2 3    MAB 17: SGT_DGT         srip 0 1 2 3
        MAB 18: SGT_DGT         srip 0 1 2 3    MAB 19: SGT_DGT         srip 0 1 2 3
        MAB 20: SGT_DGT         srip 0 1 2 3    MAB 21: SGT_DGT         srip 0 1 2 3
        MAB 22: SGT_DGT         srip 0 1 2 3    MAB 23: SGT_DGT         srip 0 1 2 3
TLQ Info
--------
Table 0 info:   FSE0: 255, FSE1: 255    #hwmabs: 4, #swmabs: 4
        MAB  0: (null)          srip    MAB  1: (null)          srip
        MAB  2: (null)          srip    MAB  3: (null)          srip
Table 1 info:   FSE0: 255, FSE1: 255    #hwmabs: 4, #swmabs: 4
        MAB  0: (null)          srip    MAB  1: (null)          srip
        MAB  2: (null)          srip    MAB  3: (null)          srip
TAQ Info
--------
Table 0 (TAQ) info:     ASE: 0  #hwmabs: 4
        MAB 0: Input Ipv4 Security Access Control Entries srip 0 2      MAB 1: Input Ipv4
Security Access Control Entries srip 0 2
        MAB 2: Input Ipv4 Security Access Control Entries srip 0 2      MAB 3: Input Ipv4
Security Access Control Entries srip 0 2
Table 1 (TAQ) info:     ASE: 0  #hwmabs: 4
        MAB 0: Input Ipv4 Security Access Control Entries srip 0 2      MAB 1: Input Ipv4
Security Access Control Entries srip 0 2
        MAB 2: Input Ipv4 Security Access Control Entries srip 0 2      MAB 3: Input Ipv4
Security Access Control Entries srip 0 2
Table 2 (TAQ) info:     ASE: 0  #hwmabs: 4
        MAB 0: Output Ipv4 Security Access Control Entries srip 1 3     MAB 1: Output Ipv4
 Security Access Control Entries srip 1 3
        MAB 2: Output Ipv4 Security Access Control Entries srip 1 3     MAB 3: Output Ipv4
 Security Access Control Entries srip 1 3
Table 3 (TAQ) info:     ASE: 0  #hwmabs: 4
        MAB 0: Output Ipv4 Security Access Control Entries srip 1 3     MAB 1: Output Ipv4
 Security Access Control Entries srip 1 3
        MAB 2: Output Ipv4 Security Access Control Entries srip 1 3     MAB 3: Output Ipv4
 Security Access Control Entries srip 1 3
Table 4 (TAQ) info:     ASE: 0  #hwmabs: 4
        MAB 0: Output Ipv4 Security Access Control Entries srip 1 3     MAB 1: Output Ipv4
 Security Access Control Entries srip 1 3
        MAB 2: Output Ipv4 Security Access Control Entries srip 1 3     MAB 3: Output Ipv4
 Security Access Control Entries srip 1 3
Table 5 (TAQ) info:     ASE: 0  #hwmabs: 4
        MAB 0: Output Non Ipv4 Security Access Control Entries srip 1 3         MAB 1:
Output Non Ipv4 Security Access Control Entries srip 1 3
        MAB 2: Output Non Ipv4 Security Access Control Entries srip 1 3         MAB 3:
Output Non Ipv4 Security Access Control Entries srip 1 3
Table 6 (TAQ) info:     ASE: 0  #hwmabs: 4
        MAB 0: Output Non Ipv4 Security Access Control Entries srip 1 3         MAB 1:
Output Non Ipv4 Security Access Control Entries srip 1 3
        MAB 2: Output Non Ipv4 Security Access Control Entries srip 1 3         MAB 3:
Output Non Ipv4 Security Access Control Entries srip 1 3
Table 7 (TAQ) info:     ASE: 0  #hwmabs: 4
        MAB 0: Output Non Ipv4 Security Access Control Entries srip 1 3         MAB 1:
Output Non Ipv4 Security Access Control Entries srip 1 3
        MAB 2: Output Non Ipv4 Security Access Control Entries srip 1 3         MAB 3:
Output Non Ipv4 Security Access Control Entries srip 1 3
```

```
Table 8 (TAQ) info:     ASE: 0  #hwmabs: 4
        MAB 0: Output Non Ipv4 Security Access Control Entries srip 1 3         MAB 1:
Output Non Ipv4 Security Access Control Entries srip 1 3
        MAB 2: Output Non Ipv4 Security Access Control Entries srip 1 3         MAB 3:
Output Non Ipv4 Security Access Control Entries srip 1 3
Table 9 (TAQ) info:     ASE: 0  #hwmabs: 32
        MAB 0: Input Ipv4 Security Access Control Entries srip 0 2      MAB 1: Input Ipv4
Security Access Control Entries srip 0 2
        MAB 2: Input Ipv4 Security Access Control Entries srip 0 2      MAB 3: Input Ipv4
Security Access Control Entries srip 0 2
        MAB 4: Input Ipv4 Security Access Control Entries srip 0 2      MAB 5: Input Ipv4
Security Access Control Entries srip 0 2
        MAB 6: Input Ipv4 Security Access Control Entries srip 0 2      MAB 7: Input Ipv4
Security Access Control Entries srip 0 2
        MAB 8: Input Ipv4 Security Access Control Entries srip 0 2      MAB 9: Input Ipv4
Security Access Control Entries srip 0 2
        MAB 10: Input Ipv4 Security Access Control Entries srip 0 2     MAB 11: Input Ipv4
 Security Access Control Entries srip 0 2
        MAB 12: Input Ipv4 Security Access Control Entries srip 0 2     MAB 13: Input Ipv4
 Security Access Control Entries srip 0 2
        MAB 14: Input Ipv4 Security Access Control Entries srip 0 2     MAB 15: Input Ipv4
 Security Access Control Entries srip 0 2
        MAB 16: Input Ipv4 Security Access Control Entries srip 0 2     MAB 17: Input Ipv4
 Security Access Control Entries srip 0 2
        MAB 18: Input Non Ipv4 Security Access Control Entries srip 0 2         MAB 19:
Input Non Ipv4 Security Access Control Entries srip 0 2
        MAB 20: Input Non Ipv4 Security Access Control Entries srip 0 2         MAB 21:
Input Non Ipv4 Security Access Control Entries srip 0 2
        MAB 22: Input Non Ipv4 Security Access Control Entries srip 0 2         MAB 23:
Input Non Ipv4 Security Access Control Entries srip 0 2
        MAB 24: Input Non Ipv4 Security Access Control Entries srip 0 2         MAB 25:
Input Non Ipv4 Security Access Control Entries srip 0 2
        MAB 26: Input Non Ipv4 Security Access Control Entries srip 0 2         MAB 27:
Input Non Ipv4 Security Access Control Entries srip 0 2
        MAB 28: Input Non Ipv4 Security Access Control Entries srip 0 2         MAB 29:
Input Non Ipv4 Security Access Control Entries srip 0 2
        MAB 30: Input Non Ipv4 Security Access Control Entries srip 0 2         MAB 31:
Input Non Ipv4 Security Access Control Entries srip 0 2
Table 10 (TAQ) info:    ASE: 0  #hwmabs: 32
        MAB 0: Output Ipv4 Security Access Control Entries srip 1 3     MAB 1: Output Ipv4
 Security Access Control Entries srip 1 3
        MAB 2: Output Ipv4 Security Access Control Entries srip 1 3     MAB 3: Output Ipv4
 Security Access Control Entries srip 1 3
        MAB 4: Output Ipv4 Security Access Control Entries srip 1 3     MAB 5: Output Ipv4
 Security Access Control Entries srip 1 3
        MAB 6: Output Ipv4 Security Access Control Entries srip 1 3     MAB 7: Output Ipv4
 Security Access Control Entries srip 1 3
        MAB 8: Output Ipv4 Security Access Control Entries srip 1 3     MAB 9: Output Ipv4
 Security Access Control Entries srip 1 3
       MAB 10: Output Ipv4 Security Access Control Entries srip 1 3    MAB 11: Output Ipv4
 Security Access Control Entries srip 1 3
       MAB 12: Output Ipv4 Security Access Control Entries srip 1 3    MAB 13: Output Ipv4
 Security Access Control Entries srip 1 3
        MAB 14: Output Non Ipv4 Security Access Control Entries srip 1 3        MAB 15:
Output Non Ipv4 Security Access Control Entries srip 1 3
        MAB 16: Output Non Ipv4 Security Access Control Entries srip 1 3        MAB 17:
Output Non Ipv4 Security Access Control Entries srip 1 3
        MAB 18: Output Non Ipv4 Security Access Control Entries srip 1 3        MAB 19:
Output Non Ipv4 Security Access Control Entries srip 1 3
        MAB 20: Output Non Ipv4 Security Access Control Entries srip 1 3        MAB 21:
Output Non Ipv4 Security Access Control Entries srip 1 3
        MAB 22: Output Non Ipv4 Security Access Control Entries srip 1 3        MAB 23:
Output Non Ipv4 Security Access Control Entries srip 1 3
        MAB 24: Output Non Ipv4 Security Access Control Entries srip 1 3        MAB 25:
```

```
Output Non Ipv4 Security Access Control Entries srip 1 3
        MAB 26: Output Non Ipv4 Security Access Control Entries srip 1 3        MAB 27:
Output Non Ipv4 Security Access Control Entries srip 1 3
        MAB 28: Output Non Ipv4 Security Access Control Entries srip 1 3        MAB 29:
Output Non Ipv4 Security Access Control Entries srip 1 3
        MAB 30: Output Non Ipv4 Security Access Control Entries srip 1 3        MAB 31:
Output Non Ipv4 Security Access Control Entries srip 1 3
Table 11 (TAQ) info:    ASE: 0  #hwmabs: 4
        MAB 0: Input Non Ipv4 Security Access Control Entries srip 0 2  MAB 1: Input Non
Ipv4 Security Access Control Entries srip 0 2
        MAB 2: Input Non Ipv4 Security Access Control Entries srip 0 2  MAB 3: Input Non
Ipv4 Security Access Control Entries srip 0 2
Table 12 (TAQ) info:    ASE: 0  #hwmabs: 4
        MAB 0: Input Non Ipv4 Security Access Control Entries srip 0 2  MAB 1: Input Non
Ipv4 Security Access Control Entries srip 0 2
        MAB 2: Input Non Ipv4 Security Access Control Entries srip 0 2  MAB 3: Input Non
Ipv4 Security Access Control Entries srip 0 2
ASIC 1 Info
------------
ASIC 1 HSN Table 0 Software info:       FSE 255
        TILE 0: (null)          srip
        TILE 1: (null)          srip
ASIC 1 HSN Table 1 Software info:       FSE 255
        TILE 0: (null)          srip
        TILE 1: (null)          srip
ASIC 1 HSN Table 2 Software info:       FSE 2
        TILE 0: L3 Multicast entries srip 0 1 2 3
        TILE 1: L3 Multicast entries srip 0 1 2 3
ASIC 1 HSN Table 3 Software info:       FSE 2
        TILE 0: L3 Multicast entries srip 0 1 2 3
        TILE 1: L3 Multicast entries srip 0 1 2 3
ASIC 1 HSN Table 4 Software info:       FSE 255
        TILE 0: (null)          srip
        TILE 1: (null)          srip
ASIC 1 HSN Table 5 Software info:       FSE 255
        TILE 0: (null)          srip
        TILE 1: (null)          srip
ASIC 1 HSN Table 6 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
ASIC 1 HSN Table 7 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
ASIC 1 HSF Table 0 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
        TILE 2: Directly or indirectly connected routes srip 0 1 2 3
        TILE 3: Directly or indirectly connected routes srip 0 1 2 3
        TILE 4: Directly or indirectly connected routes srip 0 1 2 3
        TILE 5: Directly or indirectly connected routes srip 0 1 2 3
        TILE 6: Directly or indirectly connected routes srip 0 1 2 3
        TILE 7: Directly or indirectly connected routes srip 0 1 2 3
ASIC 1 HSF Table 1 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
        TILE 2: Directly or indirectly connected routes srip 0 1 2 3
        TILE 3: Directly or indirectly connected routes srip 0 1 2 3
        TILE 4: Directly or indirectly connected routes srip 0 1 2 3
        TILE 5: Directly or indirectly connected routes srip 0 1 2 3
        TILE 6: Directly or indirectly connected routes srip 0 1 2 3
        TILE 7: Directly or indirectly connected routes srip 0 1 2 3
ASIC 1 HSF Table 2 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
```

```
        TILE 2: Directly or indirectly connected routes srip 0 1 2 3
        TILE 3: Directly or indirectly connected routes srip 0 1 2 3
        TILE 4: Directly or indirectly connected routes srip 0 1 2 3
        TILE 5: Directly or indirectly connected routes srip 0 1 2 3
        TILE 6: Directly or indirectly connected routes srip 0 1 2 3
        TILE 7: Directly or indirectly connected routes srip 0 1 2 3
ASIC 1 HSF Table 3 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
        TILE 2: Directly or indirectly connected routes srip 0 1 2 3
        TILE 3: Directly or indirectly connected routes srip 0 1 2 3
        TILE 4: Directly or indirectly connected routes srip 0 1 2 3
        TILE 5: Directly or indirectly connected routes srip 0 1 2 3
        TILE 6: Directly or indirectly connected routes srip 0 1 2 3
        TILE 7: Directly or indirectly connected routes srip 0 1 2 3
ASIC 1 HSF Table 4 Software info:       FSE 1
        TILE 0: Directly or indirectly connected routes srip 0 1 2 3
        TILE 1: Directly or indirectly connected routes srip 0 1 2 3
        TILE 2: Directly or indirectly connected routes srip 0 1 2 3
        TILE 3: Directly or indirectly connected routes srip 0 1 2 3
        TILE 4: Directly or indirectly connected routes srip 0 1 2 3
        TILE 5: Directly or indirectly connected routes srip 0 1 2 3
        TILE 6: Directly or indirectly connected routes srip 0 1 2 3
        TILE 7: Directly or indirectly connected routes srip 0 1 2 3
OVF Info
--------
Table 0 info:   FSE0: 2, FSE1: 255      #hwmabs: 24, #swmabs: 24
        MAB  0: L3 Multicast entries srip 0 1 2 3       MAB  1: L3 Multicast entries srip
0 1 2 3
        MAB  2: L3 Multicast entries srip 0 1 2 3       MAB  3: L3 Multicast entries srip
0 1 2 3
        MAB  4: L3 Multicast entries srip 0 1 2 3       MAB  5: L3 Multicast entries srip
0 1 2 3
        MAB  6: L3 Multicast entries srip 0 1 2 3       MAB  7: L3 Multicast entries srip
0 1 2 3
        MAB  8: L3 Multicast entries srip 0 1 2 3       MAB  9: L3 Multicast entries srip
0 1 2 3
        MAB 10: L3 Multicast entries srip 0 1 2 3       MAB 11: L3 Multicast entries srip
0 1 2 3
        MAB 12: L3 Multicast entries srip 0 1 2 3       MAB 13: L3 Multicast entries srip
0 1 2 3
        MAB 14: L3 Multicast entries srip 0 1 2 3       MAB 15: L3 Multicast entries srip
0 1 2 3
        MAB 16: L3 Multicast entries srip 0 1 2 3       MAB 17: L3 Multicast entries srip
0 1 2 3
        MAB 18: L3 Multicast entries srip 0 1 2 3       MAB 19: L3 Multicast entries srip
0 1 2 3
        MAB 20: L3 Multicast entries srip 0 1 2 3       MAB 21: L3 Multicast entries srip
0 1 2 3
        MAB 22: L3 Multicast entries srip 0 1 2 3       MAB 23: L3 Multicast entries srip
0 1 2 3
Table 1 info:   FSE0: 1, FSE1: 255      #hwmabs: 24, #swmabs: 24
        MAB  0: L2 Multicast entries srip 1 3   MAB  1: L2 Multicast entries srip 1 3
        MAB  2: L2 Multicast entries srip 1 3   MAB  3: L2 Multicast entries srip 1 3
        MAB  4: L2 Multicast entries srip 1 3   MAB  5: L2 Multicast entries srip 1 3
        MAB  6: L2 Multicast entries srip 1 3   MAB  7: L2 Multicast entries srip 1 3
        MAB  8: L2 Multicast entries srip 1 3   MAB  9: L2 Multicast entries srip 1 3
        MAB 10: L2 Multicast entries srip 1 3   MAB 11: L2 Multicast entries srip 1 3
        MAB 12: L2 Multicast entries srip 1 3   MAB 13: L2 Multicast entries srip 1 3
        MAB 14: L2 Multicast entries srip 1 3   MAB 15: L2 Multicast entries srip 1 3
        MAB 16: L2 Multicast entries srip 1 3   MAB 17: L2 Multicast entries srip 1 3
        MAB 18: L2 Multicast entries srip 1 3   MAB 19: L2 Multicast entries srip 1 3
        MAB 20: L2 Multicast entries srip 1 3   MAB 21: L2 Multicast entries srip 1 3
        MAB 22: L2 Multicast entries srip 1 3   MAB 23: L2 Multicast entries srip 1 3
```

```
Table 2 info:   FSE0: 1, FSE1: 255      #hwmabs: 24, #swmabs: 24
        MAB  0: L2 Multicast entries srip 1 3   MAB  1: L2 Multicast entries srip 1 3
        MAB  2: L2 Multicast entries srip 1 3   MAB  3: L2 Multicast entries srip 1 3
        MAB  4: L2 Multicast entries srip 1 3   MAB  5: L2 Multicast entries srip 1 3
        MAB  6: L2 Multicast entries srip 1 3   MAB  7: L2 Multicast entries srip 1 3
        MAB  8: L2 Multicast entries srip 1 3   MAB  9: L2 Multicast entries srip 1 3
        MAB 10: L2 Multicast entries srip 1 3   MAB 11: L2 Multicast entries srip 1 3
        MAB 12: L2 Multicast entries srip 1 3   MAB 13: L2 Multicast entries srip 1 3
        MAB 14: L2 Multicast entries srip 1 3   MAB 15: L2 Multicast entries srip 1 3
        MAB 16: L2 Multicast entries srip 1 3   MAB 17: L2 Multicast entries srip 1 3
        MAB 18: L2 Multicast entries srip 1 3   MAB 19: L2 Multicast entries srip 1 3
        MAB 20: L2 Multicast entries srip 1 3   MAB 21: L2 Multicast entries srip 1 3
        MAB 22: L2 Multicast entries srip 1 3   MAB 23: L2 Multicast entries srip 1 3
Table 3 info:   FSE0: 1, FSE1: 255      #hwmabs: 24, #swmabs: 24
        MAB  0: L2 Multicast entries srip 1 3   MAB  1: L2 Multicast entries srip 1 3
        MAB  2: L2 Multicast entries srip 1 3   MAB  3: L2 Multicast entries srip 1 3
        MAB  4: L2 Multicast entries srip 1 3   MAB  5: L2 Multicast entries srip 1 3
        MAB  6: L2 Multicast entries srip 1 3   MAB  7: L2 Multicast entries srip 1 3
        MAB  8: L2 Multicast entries srip 1 3   MAB  9: L2 Multicast entries srip 1 3
        MAB 10: L2 Multicast entries srip 1 3   MAB 11: L2 Multicast entries srip 1 3
        MAB 12: L2 Multicast entries srip 1 3   MAB 13: L2 Multicast entries srip 1 3
        MAB 14: L2 Multicast entries srip 1 3   MAB 15: L2 Multicast entries srip 1 3
        MAB 16: L2 Multicast entries srip 1 3   MAB 17: L2 Multicast entries srip 1 3
        MAB 18: L2 Multicast entries srip 1 3   MAB 19: L2 Multicast entries srip 1 3
        MAB 20: L2 Multicast entries srip 1 3   MAB 21: L2 Multicast entries srip 1 3
        MAB 22: L2 Multicast entries srip 1 3   MAB 23: L2 Multicast entries srip 1 3
TLQ Info
--------
Table 0 info:   FSE0: 255, FSE1: 255    #hwmabs: 4, #swmabs: 4
        MAB  0: (null)          srip    MAB  1: (null)          srip
        MAB  2: (null)          srip    MAB  3: (null)          srip
Table 1 info:   FSE0: 255, FSE1: 255    #hwmabs: 4, #swmabs: 4
        MAB  0: (null)          srip    MAB  1: (null)          srip
        MAB  2: (null)          srip    MAB  3: (null)          srip
TAQ Info
--------
Table 0 (TAQ) info:     ASE: 1  #hwmabs: 4
        MAB 0: Ingress Netflow ACEs srip 0 2    MAB 1: Ingress Netflow ACEs srip 0 2
        MAB 2: Ingress Netflow ACEs srip 0 2    MAB 3: Ingress Netflow ACEs srip 0 2
Table 1 (TAQ) info:     ASE: 0  #hwmabs: 4
        MAB 0: Policy Based Routing ACEs srip 0 2       MAB 1: Policy Based Routing ACEs
srip 0 2
        MAB 2: Policy Based Routing ACEs srip 0 2       MAB 3: Policy Based Routing ACEs
srip 0 2
Table 2 (TAQ) info:     ASE: 0  #hwmabs: 4
        MAB 0: Policy Based Routing ACEs srip 0 2       MAB 1: Policy Based Routing ACEs
srip 0 2
        MAB 2: Policy Based Routing ACEs srip 0 2       MAB 3: Policy Based Routing ACEs
srip 0 2
Table 3 (TAQ) info:     ASE: 0  #hwmabs: 4
        MAB 0: Policy Based Routing ACEs srip 0 2       MAB 1: Policy Based Routing ACEs
srip 0 2
        MAB 2: Policy Based Routing ACEs srip 0 2       MAB 3: Policy Based Routing ACEs
srip 0 2
Table 4 (TAQ) info:     ASE: 1  #hwmabs: 4
        MAB 0: Egress Netflow ACEs srip 1 3     MAB 1: Egress Netflow ACEs srip 1 3
        MAB 2: Egress Netflow ACEs srip 1 3     MAB 3: Egress Netflow ACEs srip 1 3
Table 5 (TAQ) info:     ASE: 2  #hwmabs: 4
        MAB 0: Flow SPAN ACEs  srip 0 2         MAB 1: Flow SPAN ACEs  srip 0 2
        MAB 2: Flow Egress SPAN ACEs srip 1 3   MAB 3: Flow Egress SPAN ACEs srip 1 3
Table 6 (TAQ) info:     ASE: 7  #hwmabs: 4
        MAB 0: Control Plane Entries srip 1 3   MAB 1: Control Plane Entries srip 1 3
        MAB 2: Control Plane Entries srip 1 3   MAB 3: Control Plane Entries srip 1 3
Table 7 (TAQ) info:     ASE: 6  #hwmabs: 4
```

```
        MAB 0: Tunnels         srip 0 2         MAB 1: Tunnels         srip 0 2
        MAB 2: Tunnels         srip 0 2         MAB 3: Tunnels         srip 0 2
Table 8 (TAQ) info:     ASE: 6  #hwmabs: 4
        MAB 0: Tunnels         srip 0 2         MAB 1: Tunnels         srip 0 2
        MAB 2: Tunnels         srip 0 2         MAB 3: Tunnels         srip 0 2
Table 9 (TAQ) info:     ASE: 3  #hwmabs: 32
       MAB 0: Input Ipv4 QoS Access Control Entries srip 0 2   MAB 1: Input Ipv4 QoS Access
 Control Entries srip 0 2
       MAB 2: Input Ipv4 QoS Access Control Entries srip 0 2   MAB 3: Input Ipv4 QoS Access
 Control Entries srip 0 2
       MAB 4: Input Ipv4 QoS Access Control Entries srip 0 2   MAB 5: Input Ipv4 QoS Access
 Control Entries srip 0 2
       MAB 6: Input Ipv4 QoS Access Control Entries srip 0 2   MAB 7: Input Ipv4 QoS Access
 Control Entries srip 0 2
       MAB 8: Input Ipv4 QoS Access Control Entries srip 0 2   MAB 9: Input Ipv4 QoS Access
 Control Entries srip 0 2
        MAB 10: Input Ipv4 QoS Access Control Entries srip 0 2  MAB 11: Input Ipv4 QoS
Access Control Entries srip 0 2
        MAB 12: Input Ipv4 QoS Access Control Entries srip 0 2  MAB 13: Input Ipv4 QoS
Access Control Entries srip 0 2
        MAB 14: Input Ipv4 QoS Access Control Entries srip 0 2  MAB 15: Input Ipv4 QoS
Access Control Entries srip 0 2
        MAB 16: Input Ipv4 QoS Access Control Entries srip 0 2  MAB 17: Input Ipv4 QoS
Access Control Entries srip 0 2
        MAB 18: Input Non Ipv4 QoS Access Control Entries srip 0 2      MAB 19: Input Non
Ipv4 QoS Access Control Entries srip 0 2
        MAB 20: Input Non Ipv4 QoS Access Control Entries srip 0 2      MAB 21: Input Non
Ipv4 QoS Access Control Entries srip 0 2
        MAB 22: Input Non Ipv4 QoS Access Control Entries srip 0 2      MAB 23: Input Non
Ipv4 QoS Access Control Entries srip 0 2
        MAB 24: Input Non Ipv4 QoS Access Control Entries srip 0 2      MAB 25: Input Non
Ipv4 QoS Access Control Entries srip 0 2
        MAB 26: Input Non Ipv4 QoS Access Control Entries srip 0 2      MAB 27: Input Non
Ipv4 QoS Access Control Entries srip 0 2
        MAB 28: Input Non Ipv4 QoS Access Control Entries srip 0 2      MAB 29: Input Non
Ipv4 QoS Access Control Entries srip 0 2
        MAB 30: Input Non Ipv4 QoS Access Control Entries srip 0 2      MAB 31: Input Non
Ipv4 QoS Access Control Entries srip 0 2
Table 10 (TAQ) info:    ASE: 3  #hwmabs: 32
        MAB 0: Output Ipv4 QoS Access Control Entries srip 1 3  MAB 1: Output Ipv4 QoS
Access Control Entries srip 1 3
        MAB 2: Output Ipv4 QoS Access Control Entries srip 1 3  MAB 3: Output Ipv4 QoS
Access Control Entries srip 1 3
        MAB 4: Output Ipv4 QoS Access Control Entries srip 1 3  MAB 5: Output Ipv4 QoS
Access Control Entries srip 1 3
        MAB 6: Output Ipv4 QoS Access Control Entries srip 1 3  MAB 7: Output Ipv4 QoS
Access Control Entries srip 1 3
        MAB 8: Output Ipv4 QoS Access Control Entries srip 1 3  MAB 9: Output Ipv4 QoS
Access Control Entries srip 1 3
        MAB 10: Output Ipv4 QoS Access Control Entries srip 1 3         MAB 11: Output Ipv4
 QoS Access Control Entries srip 1 3
        MAB 12: Output Ipv4 QoS Access Control Entries srip 1 3         MAB 13: Output Ipv4
 QoS Access Control Entries srip 1 3
        MAB 14: Output Ipv4 QoS Access Control Entries srip 1 3         MAB 15: Output Ipv4
 QoS Access Control Entries srip 1 3
        MAB 16: Output Ipv4 QoS Access Control Entries srip 1 3         MAB 17: Output Ipv4
 QoS Access Control Entries srip 1 3
        MAB 18: Output Non Ipv4 QoS Access Control Entries srip 1 3     MAB 19: Output Non
 Ipv4 QoS Access Control Entries srip 1 3
        MAB 20: Output Non Ipv4 QoS Access Control Entries srip 1 3     MAB 21: Output Non
 Ipv4 QoS Access Control Entries srip 1 3
        MAB 22: Output Non Ipv4 QoS Access Control Entries srip 1 3     MAB 23: Output Non
 Ipv4 QoS Access Control Entries srip 1 3
        MAB 24: Output Non Ipv4 QoS Access Control Entries srip 1 3     MAB 25: Output Non
```

```
 Ipv4 QoS Access Control Entries srip 1 3
        MAB 26: Output Non Ipv4 QoS Access Control Entries srip 1 3     MAB 27: Output Non
 Ipv4 QoS Access Control Entries srip 1 3
        MAB 28: Output Non Ipv4 QoS Access Control Entries srip 1 3     MAB 29: Output Non
 Ipv4 QoS Access Control Entries srip 1 3
        MAB 30: Output Non Ipv4 QoS Access Control Entries srip 1 3     MAB 31: Output Non
 Ipv4 QoS Access Control Entries srip 1 3
Table 11 (TAQ) info:    ASE: 6  #hwmabs: 4
        MAB 0: Tunnels          srip 0 2         MAB 1: Tunnels          srip 0 2
        MAB 2: Tunnels          srip 0 2         MAB 3: Macsec SPD       srip 1 3
Table 12 (TAQ) info:    ASE: 5  #hwmabs: 4
       MAB 0: Lisp Instance Mapping Entries srip 0 2   MAB 1: Lisp Instance Mapping Entries
 srip 0 2
       MAB 2: Lisp Instance Mapping Entries srip 0 2   MAB 3: Lisp Instance Mapping Entries
 srip 0 2
```

show platform hardware fed switch forward

To display device-specific hardware information, use the **show platform hardware fed switch** *switch_number* command.

This topic elaborates only the forwarding-specific options, that is, the options available with the **show platform hardware fed switch** {*switch_num* | **active** | **standby** } **forward summary** command.

The output of the **show platform hardware fed switch** *switch_number* **forward summary** displays all the details about the forwarding decision taken for the packet.

show platform hardware fed switch {*switch_num* | **active** | **standby**} **forward summary**

Syntax Description

switch {*switch_num* | **active** | **standby** }	The switch for which you want to display information. You have the following options : • *switch_num*—ID of the switch. • **active**—Displays information relating to the active switch. • **standby**—Displays information relating to the standby switch, if available.
forward summary	Displays packet forwarding information. **Note** Support for the keyword **summary** has been discontinued in the Cisco IOS XE Everest 16.6.1 release and later releases.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.
Cisco IOS XE Everest 16.6.1 and later releases	Supprort for the keyword **summary** was discontinued.

Usage Guidelines

Do not use this command unless a technical support representative asks you to. Use this command only when you are working directly with a technical support representative while troubleshooting a problem.

Fields displayed in the command output are explained below.

- Station Index : The Station Index is the result of the layer 2 lookup and points to a station descriptor which provides the following:
  - Destination Index : Determines the egress port(s) to which the packets should be sent to. Global Port Number(GPN) can be used as the destination index. A destination index with15 down to 12 bits set indicates the GPN to be used. For example, destination index - 0xF04E corresponds to GPN - 78 (0x4e).
  - Rewrite Index : Determines what needs to be done with the packets. For layer 2 switching, this is typically a bridging action

- Flexible Lookup Pipeline Stages(FPS) : Indicates the forwarding decision that was taken for the packet - routing or bridging
- Replication Bit Map : Determines if the packets should be sent to CPU or stack
  - Local Data Copy = 1
  - Remote Data copy = 0
  - Local CPU Copy = 0
  - Remote CPU Copy = 0

Example

This is an example of output from the **show platform hardware fed switch** {*switch_num* | **active** | **standby** } **forward summary** command.

```
Device#show platform hardware fed switch 1 forward summary
Time: Fri Sep 16 08:25:00 PDT 2016

Incomming Packet Details:

###[ Ethernet ]###
  dst       = 00:51:0f:f2:0e:11
  src       = 00:1d:01:85:ba:22
  type      = ARP
###[ ARP ]###
     hwtype    = 0x1
     ptype     = IPv4
     hwlen     = 6
     plen      = 4
     op        = is-at
     hwsrc     = 00:1d:01:85:ba:22
     psrc      = 10.10.1.33
     hwdst     = 00:51:0f:f2:0e:11
     pdst      = 10.10.1.1

Ingress:
Switch             : 1
Port               : GigabitEthernet1/0/1
Global Port Number : 1
Local Port Number  : 1
Asic Port Number   : 21
ASIC Number        : 0
STP state          :
                     blkLrn31to0: 0xffdfffdf
                     blkFwd31to0: 0xffdfffdf
Vlan               : 1
Station Descriptor : 170
DestIndex          : 0xF009
DestModIndex       : 2
RewriteIndex       : 2
Forwarding Decision: FPS 2A L2 Destination

Replication Bitmap:
Local CPU copy     : 0
Local Data copy    : 1
Remote CPU copy    : 0
Remote Data copy   : 0
```

```
Egress:
Switch             : 1
Outgoing Port      : GigabitEthernet1/0/9
Global Port Number : 9
ASIC Number        : 0
Vlan               : 1
```

show platform hardware fed switch forward interface

To debug forwarding information and to trace the packet path in the hardware forwarding plane, use the **show platform hardware fed switch** *switch_number* **forward interface** command. This command simulates a user-defined packet and retrieves the forwarding information from the hardware forwarding plane. A packet is generated on the ingress port based on the packet parameters that you have specified in this command. You can also provide a complete packet from the captured packets stored in a PCAP file.

This topic elaborates only the interface forwarding-specific options, that is, the options available with the **show platform hardware fed switch** {*switch_num* | **active** | **standby** } **forward interface** command.

show platform hardware fed switch {*switch_num* | **active** | **standby**} **forward interface** *interface-type interface-number* **source-mac-address** *destination-mac-address*{*protocol-number* | **arp** | **cos** | **ipv4** | **ipv6** | **mpls**}

show platform hardware fed switch {*switch_num* | **active** | **standby**} **forward interface** *interface-type interface-number* **pcap** *pcap-file-name* **number** *packet-number* **data**

show platform hardware fed switch {*switch_num* | **active** | **standby**} **forward interface** *interface-type interface-number* **vlan** *vlan-id source-mac-address destination-mac-address*{*protocol-number* | **arp** | **cos** | **ipv4** | **ipv6** | **mpls**}

Syntax Description

switch {*switch_num* | **active** | **standby** }	The switch on which packet tracing has to be scheduled. The input port should be available on this switch. You have the following options : • *switch_num*—ID of the switch on which the ingress port is present. • **active**—indicates the active switch on which the the ingress port is present. • **standby**—indicates the standby switch on which the ingress port is present. **Note** This keyword is not supported.
interface *interface-type interface-number*	The input interface on which packet trace is simulated.
source-mac-address	The source MAC address of the packet you want to simulate.
destination-mac-address	The MAC address of the destination interface in hexadecimal format.
protocol-number	The number assigned to any L3 protocol.
arp	The Address Resolution Protocol (ARP) parameters.
ipv4	The IPv4 packet parameters.
ipv6	The IPv6 packet parameters.
mpls	The Multiprotocol Label Switching (MPLS) label parameters.

cos	The class of service (CoS) number from 0 to 7 to set priority.
pcap *pcap-file-name*	Name of the pcap file in internal flash (flash:). Ensure that the file already exists in flash:.
number *packet-number*	Specifies the packet number in the pcap file.
vlan *vlan-id*	VLAN id of the dot1q header in the simulated packet. The range is 1 to 4096.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.
Cisco IOS XE Fuji 16.9.1	The command was enhanced to support MPLS/ARP/VxLAN packet parameters and trace packets captured in a PCAP file.
Cisco IOS XE Gibraltar 16.10.1	The command was enhanced to support data capture across a stack.

Usage Guidelines

Do not use this command unless a technical support representative asks you to. Use this command only when you are working directly with a technical support representative while troubleshooting a problem.

This command supports the following packet types:

- Non-IP packets with any L3 protocol
- ARP packets
- IPv4 packets with any L4 protocol
- IPv4 packets with TCP/UDP/IGMP/ICMP/SCTP payload
- VxLAN packets
- MPLS packets with up to 3 Labels and meta data
- MPLS packets with IPv4/IPv6 payload
- IPv6 packets with TCP/UDP/IGMP/ICMP/SCTP payload

In a stack environment, you can trace packets across the stack irrespective of the number of stack members and topology. The **show platform hardware fed switch** *switch-number* **forward interface** *interface-type interface-number* command consolidates packet-forwarding information of all the stack members on the ingress switch. To achieve this, ensure that the switch number specified in the *switch_num* and *interface-number* arguments are of the input switch and that the number matches.

To trace any particular packet from the captured packets stored in a PCAP file, use the **show platform hardware fed switch forward interface** *interface-type interface-number* **pcap** *pcap-file-name number packet-number* **data** command.

Example

This is an example of output from the **show platform hardware fed switch** {*switch_num* | **active** | **standby** } **forward interface** command.

```
Device#show platform hardware fed switch active forward interface gigabitEthernet 1/0/35
0000.0022.0055 0000.0055.0066 ipv4 44.44.0.2 55.55.0.2 udp 1222 3333

Show forward is running in the background. After completion, syslog will be generated.

*Sep 24 05:57:36.614: %SHFWD-6-PACKET_TRACE_DONE: Switch 1 R0/0: fed: Packet Trace Complete:
  Execute (show platform hardware fed switch <> forward last summary|detail)
*Sep 24 05:57:36.614: %SHFWD-6-PACKET_TRACE_FLOW_ID: Switch 1 R0/0: fed: Packet Trace Flow
 id is 150323855361
```

Related Commands

Command	Description
monitor capture interface	Configures monitor capture points specifying an attachment point and the packet flow direction.
monitor capture start	Starts the capture of packet data at a traffic trace point into a buffer.
monitor capture stop	Stops the capture of packet data at a traffic trace point.
monitor capture export	Saves the captured packets in the buffer. Use this command to export the monitor capture buffer to a pcap file in flash: that you can use as an input in the **show forward** with **pcap**.

show platform hardware fed switch forward last summary

To display a summary of packet tracing data from a switch or switches in a stack, use the **show platform hardware fed switch** *switch_number* **forward last summary** command.

The output of the **show platform hardware fed switch** *switch_number* **forward last summary** command displays all the details about the forwarding decision taken for the packet from the last time the **show forward** command was run.

show platform hardware fed switch {*switch_number* | **active** | **standby**} **forward last summary**

Syntax Description

switch {*switch_number* | **active** | **standby** }	The switch on which you want to schedule a packet capture for a port. You have the following options : • *switch_num*—ID of the switch on which the ingress port is present. • **active**—indicates the active switch on which the the ingress port is present. • **standby**—indicates the standby switch on which the ingress port is present. **Note** This keyword is not supported.
forward last summary	Displays packet forwarding information.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.
Cisco IOS XE Everest 16.6.1 and later releases	Support for the keyword **summary** was discontinued.
Cisco IOS XE Fuji 16.9.1	Support for keywords **last** and **summary** is introduced.
Cisco IOS XE Gibraltar 16.10.1	The output of the command was enhanced to display the details about all the copies of the packets and the corresponding outgoing ports.

Usage Guidelines

Do not use this command unless a technical support representative asks you to. Use this command only when you are working directly with a technical support representative while troubleshooting a problem.

With Cisco IOS XE Gibraltar 16.10.1, **show platform hardware fed switch forward last summary** command is enhanced to:

- Inject the debug packets from the CPU to simulate the incoming port and packets

- Use the debug packets to trace the packet in hardware data-path to provide forwarding details such as lookup, adjacency, rewrite information, drop decision, outgoing port and so on
- Drop the original packets at egress so as not to transmit the packet to the outgoing port
- Send a copy of all the packets to the CPU and display the details in the packet tracing output

Example

This is an example of output from the **show platform hardware fed switch** {*switch_number* | **active** | **standby** } **forward last summary** command.

```
Device#show platform hardware fed switch active forward last summary
Input Packet Details:
###[ Ethernet ]###
  dst       = 01:00:5e:01:01:02
  src       = 00:00:00:03:00:05
  type      = 0x0
###[ Raw ]###
     load      = '00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00'
Ingress:
   Port                     : GigabitEthernet1/0/11
   Global Port Number       : 11
   Local Port Number        : 11
   Asic Port Number         : 10
   Asic Instance            : 1
   Vlan                     : 20
   Mapped Vlan ID           : 6
   STP Instance             : 4
   BlockForward             : 0
   BlockLearn               : 0
   L3 Interface             : 39
       IPv4 Routing         : enabled
       IPv6 Routing         : enabled
       Vrf Id               : 0
   Adjacency:
       Station Index        : 3      [SI_DIET_L2]
       Destination Index    : 18
       Rewrite Index        : 2
       Replication Bit Map  : 0x15   ['localData', 'remoteData', 'coreData']
   Decision:
       Destination Index    : 24     [DI_DIET_L2]
       Rewrite Index        : 2      [RI_L2]
       Dest Mod Index       : 9      [DMI_IGMP_CTRL_Q]
       CPU Map Index        : 0      [CMI_NULL]
       Forwarding Mode      : 0      [Bridging]
       Replication Bit Map  :        ['localData', 'remoteData', 'coreData']
       Winner               :        L2DESTMACVLAN LOOKUP
       Qos Label            : 65
       SGT                  : 0
       DGTID                : 0
Egress:
   Possible Replication     :
       Port                 : GigabitEthernet1/0/11
       Port                 : GigabitEthernet1/0/22
       Port                 : GigabitEthernet2/0/1
   Output Port Data         :
     Port                   : GigabitEthernet1/0/22
       Global Port Number   : 22
```

```
        Local Port Number     : 22
        Asic Port Number      : 21
        Asic Instance         : 0
        Unique RI             : 2
        Rewrite Type          : 1      [L2_BRIDGE]
        Mapped Rewrite Type   : 1      [L2_BRIDGE]
        Vlan                  : 20
        Mapped Vlan ID        : 6
      Port                    : GigabitEthernet2/0/1
        Global Port Number    : 97
        Local Port Number     : 1
        Asic Port Number      : 0
        Asic Instance         : 1
        Unique RI             : 2
        Rewrite Type          : 1      [L2_BRIDGE]
        Mapped Rewrite Type   : 1      [L2_BRIDGE]
        Vlan                  : 20
        Mapped Vlan ID        : 6

Output Packet Details:
    Port                      : GigabitEthernet1/0/22
###[ Ethernet ]###
  dst       = 01:00:5e:01:01:02
  src       = 00:00:00:03:00:05
  type      = 0x0
###[ Raw ]###
     load      = '00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00'
    Port                      : GigabitEthernet2/0/1
###[ Ethernet ]###
  dst       = 01:00:5e:01:01:02
  src       = 00:00:00:03:00:05
  type      = 0x0
###[ Raw ]###
     load      = '00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00'
*******************************************************************************
```

show platform resources

To display platform resource information, use the **show platform reources** command in privileged EXEC mode.

show platform resources

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

The output of this command displays the used memory, which is total memory minus the accurate free memory.

Example

The following is sample output from the **show platform resources** command:

```
Switch# show platform resources

**State Acronym: H - Healthy, W - Warning, C - Critical

Resource                Usage                Max             Warning         Critical
     State
------------------------------------------------------------------------------------------------

 Control Processor      7.20%                100%            90%             95%
     H
  DRAM                  2701MB(69%)          3883MB          90%             95%
     H
```

show platform software audit

To display the SE Linux Audit logs, use the **show platform software audit** command in privileged EXEC mode.

show platform software audit {**all** | **summary** | [**switch** {*switch-number* | **active** | **standby**}] {**0** | **F0** | **R0** | {**FP** | **RP**} {**active**}}}

Syntax Description

all	Shows the audit log from all the slots.
summary	Shows the audit log summary count from all the slots.
switch	Shows the audit logs for a slot on a specific switch.
switch-number	Selects the switch with the specified switch number.
switch active	Selects the active instance of the switch.
standby	Selects the standby instance of the switch.
0	Shows the audit log for the SPA-Inter-Processor slot 0.
F0	Shows the audit log for the Embedded-Service-Processor slot 0.
R0	Shows the audit log for the Route-Processor slot 0.
FP active	Shows the audit log for the active Embedded-Service-Processor slot.
RP active	Shows the audit log for the active Route-Processor slot.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Usage Guidelines

This command was introduced in the Cisco IOS XE Gibraltar 16.10.1 as a part of the SELinux Permissive Mode feature. The **show platform software audit** command displays the system logs containing the access violation events.

In Cisco IOS XE Gibraltar 16.10.1, operation in a permissive mode is available - with the intent of confining specific components (process or application) of the IOS-XE platform. In the permissive mode, access violation events are detected and system logs are generated, but the event or operation itself is not blocked. The solution operates mainly in an access violation detection mode.

The following is a sample output of the **show software platform software audit summary** command:

```
Device# show platform software audit summary

===================================
AUDIT LOG ON switch 1
-----------------------------------
AVC Denial count: 58
===================================
```

The following is a sample output of the **show software platform software audit all** command:

```
Device# show platform software audit all

===================================
AUDIT LOG ON switch 1
-----------------------------------
========== START ============
type=AVC msg=audit(1539222292.584:100): avc:  denied  { read } for  pid=14017
comm="mcp_trace_filte" name="crashinfo" dev="rootfs" ino=13667
scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_disk_crashinfo_t:s0 tclass=lnk_file permissive=1
type=AVC msg=audit(1539222292.584:100): avc:  denied  { getattr } for  pid=14017
comm="mcp_trace_filte" path="/mnt/sd1" dev="sda1" ino=2
scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_disk_crashinfo_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1539222292.586:101): avc:  denied  { getattr } for  pid=14028 comm="ls"
 path="/tmp/ufs/crashinfo" dev="tmpfs" ino=58407
scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_ncd_tmp_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1539222292.586:102): avc:  denied  { read } for  pid=14028 comm="ls"
name="crashinfo" dev="tmpfs" ino=58407 scontext=system_u:system_r:polaris_trace_filter_t:s0
 tcontext=system_u:object_r:polaris_ncd_tmp_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1539438600.896:119): avc:  denied  { execute } for  pid=8300 comm="sh"
name="id" dev="loop0" ino=6982 scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
 tcontext=system_u:object_r:bin_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438600.897:120): avc:  denied  { execute_no_trans } for  pid=8300
comm="sh"
path="/tmp/sw/mount/cat9k-rpbase.2018-10-02_00.13_mhungund.SSA.pkg/nyquist/usr/bin/id"
dev="loop0" ino=6982 scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:bin_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438615.535:121): avc:  denied  { name_connect } for  pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
type=AVC msg=audit(1539438624.916:122): avc:  denied  { execute_no_trans } for  pid=8600
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438648.936:123): avc:  denied  { execute_no_trans } for  pid=9307
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438678.649:124): avc:  denied  { name_connect } for  pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
type=AVC msg=audit(1539438696.969:125): avc:  denied  { execute_no_trans } for  pid=10057
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438732.973:126): avc:  denied  { execute_no_trans } for  pid=10858
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438778.008:127): avc:  denied  { execute_no_trans } for  pid=11579
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
```

```
type=AVC msg=audit(1539438800.156:128): avc:  denied  { name_connect } for  pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
type=AVC msg=audit(1539438834.099:129): avc:  denied  { execute_no_trans } for  pid=12451
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539440246.697:149): avc:  denied  { name_connect } for  pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
type=AVC msg=audit(1539440299.119:150): avc:  denied  { name_connect } for  pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
========== END ============
====================================
```

The following is a sample output of the **show software platform software audit switch** command:

```
Device# show platform software audit switch active R0

========== START ============
type=AVC msg=audit(1539222292.584:100): avc:  denied  { read } for  pid=14017
comm="mcp_trace_filte" name="crashinfo" dev="rootfs" ino=13667
scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_disk_crashinfo_t:s0 tclass=lnk_file permissive=1
type=AVC msg=audit(1539222292.584:100): avc:  denied  { getattr } for  pid=14017
comm="mcp_trace_filte" path="/mnt/sd1" dev="sda1" ino=2
scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_disk_crashinfo_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1539222292.586:101): avc:  denied  { getattr } for  pid=14028 comm="ls"
 path="/tmp/ufs/crashinfo" dev="tmpfs" ino=58407
scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_ncd_tmp_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1539222292.586:102): avc:  denied  { read } for  pid=14028 comm="ls"
name="crashinfo" dev="tmpfs" ino=58407 scontext=system_u:system_r:polaris_trace_filter_t:s0
 tcontext=system_u:object_r:polaris_ncd_tmp_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1539438624.916:122): avc:  denied  { execute_no_trans } for  pid=8600
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438648.936:123): avc:  denied  { execute_no_trans } for  pid=9307
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438678.649:124): avc:  denied  { name_connect } for  pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
type=AVC msg=audit(1539438696.969:125): avc:  denied  { execute_no_trans } for  pid=10057
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438732.973:126): avc:  denied  { execute_no_trans } for  pid=10858
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438778.008:127): avc:  denied  { execute_no_trans } for  pid=11579
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438800.156:128): avc:  denied  { name_connect } for  pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
type=AVC msg=audit(1539438834.099:129): avc:  denied  { execute_no_trans } for  pid=12451
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
```

```
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438860.907:130): avc:  denied  { name_connect } for  pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
========== END ============
====================================
```

show platform software fed switch punt cpuq rates

To display the rate at which packets are punted, including the drops in the punted path, use the **show platform software fed switch punt cpuq rates** command in privileged EXEC mode.

show platform software fed switch {*switch-number* | **active** | **standby**} **punt cpuq rates**

Syntax Description

switch{*switch-number* | **active** | **standby**}	Displays information about the switch. You have the following options: • *switch-number.* • **active** —Displays information relating to the active switch. • **standby**—Displays information relating to the standby switch, if available. **Note** This keyword is not supported.
punt	Specifies the punt informtion.
cpuq	Specifies information about CPU receive queue.
rates	Specifies the rate at which the packets are punted.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Usage Guidelines

The output of this command displays the rate in packets per second at intervals of 10 seconds, 1 minute and 5 minutes.

Example

The following is sample output from the **show platform software fed switch active punt cpuq rates** command.

```
Device#show platform software fed switch active punt cpuq rates

Punt Rate CPU Q Statistics


Packets per second averaged over 10 seconds, 1 min and 5 mins
================================================================================================
 Q  |          Queue             |  Rx    |  Rx    |  Rx    |  Drop  |  Drop    |  Drop
 no |          Name              |  10s   |  1min  |  5min  |  10s   |  1min    |  5min
================================================================================================
 0  CPU_Q_DOT1X_AUTH                0        0        0        0        0        0
 1  CPU_Q_L2_CONTROL                 0        0        0        0        0        0
 2  CPU_Q_FORUS_TRAFFIC              336      266      320      0        0        0
```

```
 3  CPU_Q_ICMP_GEN                  0         0         0         0         0         0
 4  CPU_Q_ROUTING_CONTROL           0         0         0         0         0         0
 5  CPU_Q_FORUS_ADDR_RESOLUTION     0         0         0         0         0         0
 6  CPU_Q_ICMP_REDIRECT             0         0         0         0         0         0
 7  CPU_Q_INTER_FED_TRAFFIC         0         0         0         0         0         0
 8  CPU_Q_L2LVX_CONTROL_PKT         0         0         0         0         0         0
 9  CPU_Q_EWLC_CONTROL              0         0         0         0         0         0
10 CPU_Q_EWLC_DATA                 0         0         0         0         0         0
11 CPU_Q_L2LVX_DATA_PKT            0         0         0         0         0         0
12 CPU_Q_BROADCAST                 0         0         0         0         0         0
13 CPU_Q_LEARNING_CACHE_OVFL       0         0         0         0         0         0
14 CPU_Q_SW_FORWARDING             0         0         0         0         0         0
15 CPU_Q_TOPOLOGY_CONTROL          0         0         0         0         0         0
16 CPU_Q_PROTO_SNOOPING            0         0         0         0         0         0
17 CPU_Q_DHCP_SNOOPING             0         0         0         0         0         0
18 CPU_Q_TRANSIT_TRAFFIC           0         0         0         0         0         0
19 CPU_Q_RPF_FAILED                0         0         0         0         0         0
20 CPU_Q_MCAST_END_STATION_SERVICE 0         0         0         0         0         0
21 CPU_Q_LOGGING                   0         0         0         0         0         0
22 CPU_Q_PUNT_WEBAUTH              0         0         0         0         0         0
23 CPU_Q_HIGH_RATE_APP             0         0         0         0         0         0
24 CPU_Q_EXCEPTION                 0         0         0         0         0         0
25 CPU_Q_SYSTEM_CRITICAL           0         0         0         0         0         0
26 CPU_Q_NFL_SAMPLED_DATA          0         0         0         0         0         0
27 CPU_Q_LOW_LATENCY               0         0         0         0         0         0
28 CPU_Q_EGR_EXCEPTION             0         0         0         0         0         0
29 CPU_Q_FSS                       0         0         0         0         0         0
30 CPU_Q_MCAST_DATA                0         0         0         0         0         0
31 CPU_Q_GOLD_PKT                  0         0         0         0         0         0
```

The table below describes the significant fields shown in the display.

Table 8: show platform software fed switch active punt cpuq rates Field Descriptions

Field	Description
Queue Name	Name of the queue.
Rx	The rate at which the packets are received per second in 10s, 1 minute and 5 minutes.
Drop	The rate at which the packets are dropped per second in 10s, 1 minute and 5 minutes.

show platform software fed switch punt packet-capture display

To display packet capture information during high CPU utilization, use the **show platform software fed switch active punt packet-capture display** command in privileged EXEC mode.

show platform software fed switch active punt packet-capture display { **detailed** | **hexdump**}

Syntax Description

switch{*switch-number* | **active** | **standby**}	Displays information about a switch. You have the following options: • **active** —Displays information relating to the active switch. • **standby**—Displays information relating to the standby switch, if available. **Note** The **standby** keyword is not supported.
punt	Specifies punt information.
packet-capture display	Specifies information about the captured packet.
detailed	Specifies detailed information about the captured packet.
hex-dump	Specifies information about the captured packet, in hex format.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Usage Guidelines

The output of this command displays the periodic and persistent logs of CPU-bound packets, inband CPU traffic rates, and running CPU processes when the CPU passes a high CPU utilization threshold.

Examples

The following is a sample output from the **show platform software fed switch active punt packet-capture display detailed** command:

```
Device# show platform software fed switch active punt packet-capture display detailed
Punt packet capturing: disabled. Buffer wrapping: disabled
Total captured so far: 101 packets. Capture capacity : 4096 packets

------ Packet Number: 1, Timestamp: 2018/09/04 23:22:10.179 ------
 interface : GigabitEthernet2/0/2 [if-id: 0x00000032] (physical)
 ether hdr : dest mac: 0100.0ccc.cccd, src mac: 2c36.f8fc.4884
 ether hdr : ethertype: 0x0032

 Doppler Frame Descriptor :
```

```
   0000000044004E04  C00F402D94510000  0000000000000100  0000400401000000
   0000000001000050  000000006D000100  0000000025836200  0000000000000000

 Packet Data Dump (length: 68 bytes) :
   01000CCCCCCD2C36  F8FC48840032AAAA  0300000C010B0000  00000080012C36F8
   FC48800000000080  012C36F8FC488080  0400001400020000  0071000000020001
   244E733E

------ Packet Number: 2, Timestamp: 2018/09/04 23:22:10.179 ------
 interface : GigabitEthernet2/0/2 [if-id: 0x00000032] (physical)
 ether hdr : dest mac: 0180.c200.0000, src mac: 2c36.f8fc.4884
 ether hdr : ethertype: 0x0026
!
!
!
```

show platform software fed switch punt rates interfaces

To display the overall statistics of punt rate for all the interfaces, use the **show platform software fed switch punt rates interfaces** command in privileged EXEC mode.

show platform software fed switch {*switch-number* | **active** | **standby**} **punt rates interfaces**[**interface-id**]

Syntax Description

switch{*switch-number* | **active** | **standby**}	Displays information about the switch. You have the following options: • *switch-number.* • **active** —Displays information relating to the active switch. • **standby**—Displays information relating to the standby switch, if available. **Note** This keyword is not supported.
punt	Specifies the punt informtion.
rates	Specifies the rate at which the packets are punted.
interfaces[**interface-id**]	(Optional) Displays the overall statistics for an interface and also the per-queue configuration for the interface at an interval of 10 seconds.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Usage Guidelines

The output displays the punt rates in packets per second at intervals of 10 seconds, 1 minute and 5 minutes.

Example

The following is sample output from the **show platform software fed switch active punt rates interfaces** command for all the interfaces.

```
Device#show plataform software fed switch active punt rates interfaces

Punt Rate on Interfaces Statistics

Packets per second averaged over 10 seconds, 1 min and 5 mins

================================================================================================

                              |           |  Rx   |  Rx   |  Rx   |  Drop |  Drop  |  Drop
 Interface Name               |  IF_ID    |  10s  |  1min |  5min |  10s  |  1min  |  5min
```

```
=================================================================================================

 Vlan3                          0x00000034    1000     1000      520        0        0        0
-------------------------------------------------------------------------------------------------
```

The table below describes the significant fields shown in the display.

Table 9: show platform software fed switch active punt rates interfaces Field Descriptions

Field	Description
Interface Name	Name of the physical interface.
IF_ID	ID of the physical interface.
Rx	The per second rate at which the packets are received in 10s, 1 minute and 5 minutes.
Drop	The per second rate at which the packets are dropped in 10s, 1 minute and 5 minutes.

The following is sample output from the **show platform software fed switch active punt rates interfaces** *interface-id* command for a specific interface.

```
Device#show platform software fed switch active punt rates interfaces 0x31
Punt Rate on Single Interfaces Statistics

Interface : Port-channel1 [if_id: 0x31]

  Received                          Dropped
  --------                          -------
   Total          : 29617            Total           : 0
   10 sec average : 0                10 sec average  : 0
    1 min average : 0                 1 min average  : 0
    5 min average : 0                 5 min average  : 0

Per CPUQ punt stats on the interface (rate averaged over 10s interval)
=================================================================================
 Q  |         Queue                  |  Recv   |  Recv  |  Drop  |  Drop  |
 no |         Name                   |  Total  |  Rate  |  Total |  Rate  |
=================================================================================
 0   CPU_Q_DOT1X_AUTH                        0        0        0        0
 1   CPU_Q_L2_CONTROL                    29519        0        0        0
 2   CPU_Q_FORUS_TRAFFIC                     0        0        0        0
 3   CPU_Q_ICMP_GEN                          0        0        0        0
 4   CPU_Q_ROUTING_CONTROL                   0        0        0        0
 5   CPU_Q_FORUS_ADDR_RESOLUTION             0        0        0        0
 6   CPU_Q_ICMP_REDIRECT                     0        0        0        0
 7   CPU_Q_INTER_FED_TRAFFIC                 0        0        0        0
 8   CPU_Q_L2LVX_CONTROL_PKT                 0        0        0        0
 9   CPU_Q_EWLC_CONTROL                      0        0        0        0
 10  CPU_Q_EWLC_DATA                         0        0        0        0
 11  CPU_Q_L2LVX_DATA_PKT                    0        0        0        0
 12  CPU_Q_BROADCAST                         0        0        0        0
 13  CPU_Q_LEARNING_CACHE_OVFL               0        0        0        0
 14  CPU_Q_SW_FORWARDING                     0        0        0        0
 15  CPU_Q_TOPOLOGY_CONTROL                 98        0        0        0
 16  CPU_Q_PROTO_SNOOPING                    0        0        0        0
 17  CPU_Q_DHCP_SNOOPING                     0        0        0        0
 18  CPU_Q_TRANSIT_TRAFFIC                   0        0        0        0
 19  CPU_Q_RPF_FAILED                        0        0        0        0
```

```
 20  CPU_Q_MCAST_END_STATION_SERVICE        0         0         0         0
 21  CPU_Q_LOGGING                          0         0         0         0
 22  CPU_Q_PUNT_WEBAUTH                     0         0         0         0
 23  CPU_Q_HIGH_RATE_APP                    0         0         0         0
 24  CPU_Q_EXCEPTION                        0         0         0         0
 25  CPU_Q_SYSTEM_CRITICAL                  0         0         0         0
 26  CPU_Q_NFL_SAMPLED_DATA                 0         0         0         0
 27  CPU_Q_LOW_LATENCY                      0         0         0         0
 28  CPU_Q_EGR_EXCEPTION                    0         0         0         0
 29  CPU_Q_FSS                              0         0         0         0
 30  CPU_Q_MCAST_DATA                       0         0         0         0
 31  CPU_Q_GOLD_PKT                         0         0         0         0

------------------------------------------------------------------------------
```

The table below describes the significant fields shown in the display.

Table 10: show platform software fed switch punt rates interfaces interface-id Field Descriptions

Field	Description
Queue Name	Name of the queue.
Recv Total	Total number of packets received.
Recv Rate	Per second rate at which the packets are received.
Drop Total	Total number of packets dropped.
Drop Rate	Per second rate at which the packets are dropped.

show platform software ilpower

To display the inline power details of all the PoE ports on the device, use the **show platform software ilpower** command in privileged EXEC mode.

show platform software ilpower {**details** | **port** {**GigabitEthernet** *interface-number* } | **system** *slot-number* }

Syntax Description

details	Displays inline power details for all the interfaces.
port	Displays inline power port configuration.
GigabitEthernet *interface-number*	The GigabitEthernet interface number. Values range from 0 to 9.
system *slot-number*	Displays inline power system configuration.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	The command was introduced.

Examples

The following is sample output from the **show platform software ilpower details** command:

```
Device# show platform software ilpower details
ILP Port Configuration for interface Gi1/0/1
    Initialization Done:   Yes
    ILP Supported:         Yes
    ILP Enabled:           Yes
    POST:                  Yes
    Detect On:             No
    Powered Device Detected            No
    Powered Device Class Done          No
    Cisco Powered Device:              No
    Power is On:           No
    Power Denied:          No
    Powered Device Type:               Null
    Powerd Device Class:              Null
    Power State:           NULL
    Current State:         NGWC_ILP_DETECTING_S
    Previous State:        NGWC_ILP_SHUT_OFF_S
    Requested Power in milli watts:       0
    Short Circuit Detected:                 0
    Short Circuit Count:             0
    Cisco Powerd Device Detect Count: 0
    Spare Pair mode:       0
        IEEE Detect:       Stopped
        IEEE Short:        Stopped
        Link Down:         Stopped
        Voltage sense:            Stopped
    Spare Pair Architecture:       1
    Signal Pair Power allocation in milli watts: 0
    Spare Pair Power On:   0
    Powered Device power state:        0
    Timer:
```

```
Power Good:        Stopped
Power Denied:      Stopped
Cisco Powered Device Detect:   Stopped
```

show platform software memory

To display memory information for a specified switch, use the **show platform software memory** command in privileged EXEC mode.

show platform software memory [{**chunk** | **database** | **messaging**}] *process slot*

Syntax Description

Syntax Description

chunk	(Optional) Displays chunk memory information for the specified process.
database	(Optional) Displays database memory information for the specified process.
messaging	(Optional) Displays messaging memory information for the specified process. The information displayed is for internal debugging purposes only.

process

Level that is being set. Options include:

- **bt-logger**—The Binary-Tracing Logger process.
- **btrace-manager**—The Btrace Manager process.
- **chassis-manager**—The Chassis Manager process.
- **cli-agent**—The CLI Agent process.
- **cmm**—The CMM process.
- **dbm**—The Database Manager process.
- **dmiauthd**—The DMI Authentication Daemon process.
- **emd**—The Environmental Monitoring process.
- **fed**—The Forwarding Engine Driver process.
- **forwarding-manager**—The Forwarding Manager process.
- **geo**—The Geo Manager process.
- **gnmi**—The GNMI process.
- **host-manager**—The Host Manager process.
- **interface-manager**—The Interface Manager process.
- **iomd**—The Input/Output Module daemon (IOMd) process.
- **ios**—The IOS process.
- **iox-manager**—The IOx Manager process.
- **license-manager**—The License Manager process.
- **logger**—The Logging Manager process.
- **mdt-pubd**—The Model Defined Telemetry Publisher process.
- **ndbman**—The Netconf DataBase Manager process.
- **nesd**—The Network Element Synchronizer Daemon process.
- **nginx**—The Nginx Webserver process.
- **nif_mgr**—The NIF Manager process.
- **platform-mgr**—The Platform Manager process.
- **pluggable-services**—The Pluggable Services process.
- **replication-mgr**—The Replication Manager process.
- **shell-manager**—The Shell Manager process.
- **sif**—The Stack Interface (SIF) Manager process.
- **smd**—The Session Manager process.
- **stack-mgr**—The Stack Manager process.

- **syncfd**—The SyncmDaemon process.
- **table-manager**—The Table Manager Server.
- **thread-test**—The Multithread Manager process.
- **virt-manager**—The Virtualization Manager process.

slot — Hardware slot where the process for which the level is set, is running. Options include:

- *number*—Number of the SIP slot of the hardware module where the level is set. For instance, if you want to specify the SIP in SIP slot 2 of the switch, enter 2.
- *SIP-slot / SPA-bay*—Number of the SIP switch slot and the number of the shared port adapter (SPA) bay of that SIP. For instance, if you want to specify the SPA in bay 2 of the SIP in switch slot 3, enter 3/2.
- **F0**—The Embedded Service Processor slot 0.
- **FP active**—The active Embedded Service Processor.
- **R0**—The route processor in slot 0.
- **RP active**—The active route processor.
- **RP standby**—The standby route processor.
- **switch** <*number*> —The switch, with its number specified.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command

The following is a sample output displaying the abbreviated (brief keyword) memory information for the Forwarding Manager process for Cisco Catalyst 9000 Series ESP slot 0:

```
Device# show platform software memory forwarding-manager switch 1 fp active brief

  module                  allocated     requested     allocs        frees
  ------------------------------------------------------------------------------
  Summary                 5702540       5619788       121888        116716
  AOM object              1920374       1920310       4             0
  AOM links array         880379        880315        4             0
  smc_message             819575        819511        4             0
  AOM update state        640380        640316        4             0
  dpidb-config            208776        203544        351           24
  fman-infra-avl          178016        153680        1521          0
  AOM batch               152373        152309        4             0
```

```
  AOM asynchronous conte  128388        128324        4             0
  AOM basic data          124824        124760        5             1
  eventutil               118939        118299        50            10
  AOM tree node           96465         96385         5             0
  AOM tree root           72377         72313         4             0
  acl                     36090         31914         504           243
  fman-infra-ipc          35326         24366         115097        114412
  AOM uplink update node  32386         32322         4             0
  unknown                 30528         23808         424           4
  uipeer                  27232         27152         5             0
  fman-infra-qos          26872         24712         164           29
  cce-class               19427         15411         251           0
  l2 control protocol     15472         12896         325           164
  fman-infra-cce          15272         13576         106           0
  smc_channel             15223         15159         4             0
  unknown                 14208         8736          447           105
  chunk                   12513         12033         33            3
  cce-bind                8496          7552          82            23
  MATM mac entry          8040          5928          544           412
  adj                     7064          6312          157           110
  route-pfx               6116          5412          157           113
  Filter_rules            4912          4896          1             0
  fman-infra-dpidb        4130          2338          112           0
  SMC Buffer              3794          3202          43            6
  urpf-list               3028          2100          85            27
  lookup                  2480          2160          30            10
  MATM mac table          2432          1600          148           96
  cdllib                  1688          1672          1             0
  route-tbl               1600          1264          21            0
  FNF Flowdef             1492          1460          3             1
  acl-ref                 1120          1024          8             2
  cgm-lib                 1120          880           410           395
  pbr_if_cfg              1088          976           205           198
  FNF Monitor             1048          1032          1             0
  pbr_routemap            960           864           18            12
!
!
!
```

The following table describes the significant fields shown in the display.

Table 11: show platform software memory brief Field Descriptions

Field	Description
module	Name of submodule.
allocated	Memory, allocated in bytes.
requested	Number of bytes requested by application.
allocs	Number of discrete allocation event attempts.
frees	Number of free events.

show platform software process list

To display the list of running processes on a platform, use the **show platform software process list** command in privileged EXEC mode.

show platform software process list switch {*switch-number* | **active** | **standby**} {**0** | **F0** | **R0**} [{**name** *process-name* | **process-id** *process-ID* | **sort memory** | **summary**}]

Syntax Description

switch *switch-number*	Displays information about the switch. Valid values for *switch-number* argument are from 0 to 9.
active	Displays information about the active instance of the switch.
standby	Displays information about the standby instance of the switch.
0	Displays information about the shared port adapters (SPA) Interface Processor slot 0.
F0	Displays information about the Embedded Service Processor (ESP) slot 0.
R0	Displays information about the Route Processor (RP) slot 0.
name *process-name*	(Optional) Displays information about the specified process. Enter the process name.
process-id *process-ID*	(Optional) Displays information about the specified process ID. Enter the process ID.
sort	(Optional) Displays information sorted according to processes.
memory	(Optional) Displays information sorted according to memory.
summary	(Optional) Displays a summary of the process memory of the host device.

Command Modes

Privileged EXE (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	The Size column in the output was modified to display Resident Set Size (RSS) in KB.
Cisco IOS XE Everest 16.5.1a	The command was introduced.

Examples

The following is sample output from the **show platform software process list switch active R0** command:

```
Switch# show platform software process list switch active R0 summary

Total number of processes: 278
  Running          : 2
  Sleeping         : 276
  Disk sleeping    : 0
  Zombies          : 0
```

```
Stopped          : 0
Paging           : 0

Up time          : 8318
Idle time        : 0
User time        : 216809
Kernel time      : 78931

Virtual memory   : 12933324800
Pages resident   : 634061
Major page faults: 2228
Minor page faults: 3491744

Architecture     : mips64
Memory (kB)
  Physical       : 3976852
  Total          : 3976852
  Used           : 2766952
  Free           : 1209900
  Active         : 2141344
  Inactive       : 1589672
  Inact-dirty    : 0
  Inact-clean    : 0
  Dirty          : 4
  AnonPages      : 1306800
  Bounce         : 0
  Cached         : 1984688
  Commit Limit   : 1988424
  Committed As   : 3358528
  High Total     : 0
  High Free      : 0
  Low Total      : 3976852
  Low Free       : 1209900
  Mapped         : 520528
  NFS Unstable   : 0
  Page Tables    : 17328
  Slab           : 0
  VMmalloc Chunk : 1069542588
  VMmalloc Total : 1069547512
  VMmalloc Used  : 2588
  Writeback      : 0
  HugePages Total: 0
  HugePages Free : 0
  HugePages Rsvd : 0
  HugePage Size  : 2048

Swap (kB)
  Total          : 0
  Used           : 0
  Free           : 0
  Cached         : 0

Buffers (kB)     : 439528

Load Average
  1-Min          : 1.13
  5-Min          : 1.18
  15-Min         : 0.92
```

The following is sample output from the **show platform software process list switch active R0** command:

```
# show platform software process list switch active R0
Name                       Pid    PPid  Group Id  Status    Priority  Size
------------------------------------------------------------------------------
systemd                      1       0         1  S               20  7892
kthreadd                     2       0         0  S               20  0
ksoftirqd/0                  3       2         0  S               20  0
kworker/0:0H                 5       2         0  S                0  0
rcu_sched                    7       2         0  S               20  0
rcu_bh                       8       2         0  S               20  0
migration/0                  9       2         0  S       4294967196  0
migration/1                 10       2         0  S       4294967196  0
ksoftirqd/1                 11       2         0  S               20  0
kworker/1:0H                13       2         0  S                0  0
migration/2                 14       2         0  S       4294967196  0
ksoftirqd/2                 15       2         0  S               20  0
kworker/2:0H                17       2         0  S                0  0
systemd-journal            221       1       221  S               20  4460
kworker/1:3                246       2         0  S               20  0
systemd-udevd              253       1       253  S               20  5648
kvm-irqfd-clean            617       2         0  S                0  0
scsi_eh_6                  620       2         0  S               20  0
scsi_tmf_6                 621       2         0  S                0  0
usb-storage                622       2         0  S               20  0
scsi_eh_7                  625       2         0  S               20  0
scsi_tmf_7                 626       2         0  S                0  0
usb-storage                627       2         0  S               20  0
kworker/7:1                630       2         0  S               20  0
bioset                     631       2         0  S                0  0
kworker/3:1H               648       2         0  S                0  0
kworker/0:1H               667       2         0  S                0  0
kworker/1:1H               668       2         0  S                0  0
bioset                     669       2         0  S                0  0
kworker/6:2                698       2         0  S               20  0
kworker/2:2                699       2         0  S               20  0
kworker/2:1H               703       2         0  S                0  0
kworker/7:1H               748       2         0  S                0  0
kworker/5:1H               749       2         0  S                0  0
kworker/6:1H               754       2         0  S                0  0
kworker/7:2                779       2         0  S               20  0
auditd                     838       1       838  S               16  2564
.
.
.
```

The table below describes the significant fields shown in the displays.

Table 12: show platform software process list Field Descriptions

Field	Description
Name	Displays the command name associated with the process. Different threads in the same process may have different command values.
Pid	Displays the process ID that is used by the operating system to identify and keep track of the processes.
PPid	Displays process ID of the parent process.
Group Id	Displays the group ID

Field	Description
Status	Displays the process status in human readable form.
Priority	Displays the negated scheduling priority.
Size	Prior to Cisco IOS XE Gibraltar 16.10.1: Displays Virtual Memory size. From Cisco IOS XE Gibraltar 16.10.1 onwards: Displays the Resident Set Size (RSS) that shows how much memory is allocated to that process in the RAM.

show platform software process memory

To display the amount of memory used by each system process, use the **show platform software process memory** command in privileged EXEC mode.

show platform process memory
switch {*switch-number* | **active** | **standby**} {**0** | **F0** | **FP** | **R0**} {**all** [**sorted** | **virtual** [**sorted**]] | **name** *process-name* {**maps** | **smaps** [**summary**] } | **process-id** *process-id* {**maps** | **smaps** [**summary**] } }

Syntax Description

switch *switch-number*	Displays information about the switch. Enter the switch number.
active	Specifies the active instance of the device.
standby	Specifies the standby instance of the device.
0	Specifies the Shared Port Adapter (SPA) Interface Processor slot 0.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
FP	Specifies the Embedded Service Processor (ESP).
R0	Specifies the Route Processor (RP) slot 0.
all	Lists all processes.
sorted	(Optional) Sorts the output based on Resident Set Size (RSS).
virtual	(Optional) Specifies virtual memory.
name *process-name*	Specifies a process name.
maps	Specifies the memory maps of a process.
smaps summary	Specifies the smaps summary of a process.
process-id *process-id*	Specifies a process identifier.

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Command Modes

Privileged EXEC(#)

Examples:

The following is a sample output from the **show platform software process memory active R0 all** command:

```
Device# show platform software process memory switch active R0 all

   Pid       RSS       PSS      Heap    Shared   Private              Name
-------------------------------------------------------------------------------
     1      4876      3229      1064      1808      3068           systemd
   118      3184      1327       132      2352       832   systemd-journal
   159      3008      1191       396      1996      1012     systemd-udevd
   407      3192      1262       132      2196       996       dbus-daemon
  3406      4772      3064       264      1940      2832          virtlogd
  3411      5712      3474      2964      2344      3368       droputil.sh
  3416      2588       358       132      2336       252       libvirtd.sh
  3420      5708      3484      2976      2308      3400      reflector.sh
  3424      1804       263       132      1632       172            xinetd
  3425       964       118       132       872        92             sleep
  3434      3060       844       528      2304       756            oom.sh
  3442      2068       606       132      1604       464           rpcbind
  3485      2380       845       132      1636       744         rpc.statd
  3486      1632       338       132      1348       284   boothelper_evt.
  3493      1136       156       132      1004       132     inotifywait
  3504      2048       753       132      1372       676       rpc.mountd
  3584      2868       620        36      2384       484            rotee
  3649      1032       116       132       944        88             sleep
  3705      2784       613        36      2296       488            rotee
  3718      2856       610        36      2376       480            rotee
  3759      1292       184       132      1136       156       inotifywait
  3787      4256      2040      1640      2300      1956          iptbl.sh
  3894      2948       637        36      2460       488            rotee
  4017      1380       175       132      1236       144       inotifywait
  4866      1820       287       132      1624       196            xinetd
  5887      1692       257       132      1508       184            xinetd
  5891      7248      4984      4584      2348      4900   rollback_timer.
  5893      1764       257       132      1588       176            xinetd
  6031      2804       601        36      2332       472            rotee
  6037      1228       163       132      1092       136       inotifywait
  6077      4736      3389      2992      1368      3368           psvp.sh
  6115      1620       476        36      1152       468            rotee
  6122       624       149       132       480       144       inotifywait
  6127      5440      4077      3680      1384      4056            pvp.sh
  6165      1736       592        36      1152       584            rotee
  6245       624       149       132       480       144       inotifywait
  6353      2592      1260       924      1352      1240           pman.sh
  6470      1632       488        36      1152       480            rotee
  6499      2588      1262       924      1348      1240           pman.sh
  6666      1640       496        36      1152       488            rotee
  6718      2584      1258       800      1348      1236           pman.sh
  6736      8360      7020      6640      1360      7000   auto_upgrade_cl
  6909      1636       492        36      1152       484            rotee
  6955      2588      1262       928      1348      1240           pman.sh
  7029      2196       679        40      1552       644   auto_upgrade_se
  7149      1636       492        36      1152       484            rotee
  7224     13200      4595        48      9368      3832         bt_logger
  7295      2588      1262       800      1348      1240           pman.sh
.
.
.
```

The table below describes the significant fields shown in the displays.

Table 13: show platform software process memory Field Descriptions

Field	Description
PID	Displays the process ID that is used by the operating system to identify and keep track of the processes.
RSS	Displays the Resident Set Size (in kilobytes (KB)) that shows how much memory is allocated to that process in the RAM.
PSS	Displays the Proportional Set Size of a process. This is the count of pages it has in memory, where each page is divided by the number of processes sharing it.
Heap	Displays where all user-allocated memory is located.
Shared	Shared clean + Shared dirty
Private	Private clean + Private dirty
Name	Displays the command name associated with the process. Different threads in the same process may have different command values.

show platform software process slot switch

To display platform software process switch information, use the **show platform software process slot switch** command in privileged EXEC mode.

show platform software process slot switch {*switch-number* | **active** | **standby**} {**0** | **F0** | **R0**} **monitor** [{**cycles** *no-of-times* [{**interval** *delay* [{**lines** *number*}]}]}]

Syntax Description

switch-number	Switch number.
active	Specifies the active instance.
standby	Specifies the standby instance.
0	Specifies the shared port adapter (SPA) interface processor slot 0.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
R0	Specifies the Route Processor (RP) slot 0.
monitor	Monitors the running processes.
cycles *no-of-tmes*	(Optional) Sets the number of times to run monitor command. Valid values are from 1 to 4294967295. The default is 5.
interval *delay*	(Optional) Sets a delay after each . Valid values are from 0 to 300. The default is 3.
lines *number*	(Optional) Sets the number of lines of output displayed. Valid values are from 0 to 512. The default is 0.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

The output of the **show platform software process slot switch** and **show processes cpu platform monitor location** commands display the output of the Linux **top** command. The output of these commands display Free memory and Used memory as displayed by the Linux **top** command. The values displayed for the Free memory and Used memory by these commands do not match the values displayed by the output of other platform-memory related CLIs.

Examples

The following is sample output from the **show platform software process slot monitor** command:

```
Switch# show platform software process slot switch active R0 monitor
```

```
top - 00:01:52 up 1 day, 11:20,  0 users,  load average: 0.50, 0.68, 0.83
Tasks: 311 total,   2 running, 309 sleeping,   0 stopped,   0 zombie
Cpu(s):  7.4%us,  3.3%sy,  0.0%ni, 89.2%id,  0.0%wa,  0.0%hi,  0.1%si,  0.0%st
Mem:   3976844k total,  3955036k used,    21808k free,   419312k buffers
Swap:        0k total,        0k used,        0k free,  1946764k cached

  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+  COMMAND
 5693 root      20   0  3448 1368  912 R    7  0.0   0:00.07 top
17546 root      20   0 2044m 244m  79m S    7  6.3 186:49.08 fed main event
18662 root      20   0 1806m 678m 263m S    5 17.5 215:32.38 linux_iosd-imag
30276 root      20   0  171m  42m  33m S    5  1.1 125:06.77 repm
17835 root      20   0  935m  74m  63m S    4  1.9  82:28.31 sif_mgr
18534 root      20   0  182m 150m  10m S    2  3.9   8:12.08 smand
    1 root      20   0  8440 4740 2184 S    0  0.1   0:09.52 systemd
    2 root      20   0     0    0    0 S    0  0.0   0:00.00 kthreadd
    3 root      20   0     0    0    0 S    0  0.0   0:02.86 ksoftirqd/0
    5 root       0 -20     0    0    0 S    0  0.0   0:00.00 kworker/0:0H
    7 root      RT   0     0    0    0 S    0  0.0   0:01.44 migration/0
    8 root      20   0     0    0    0 S    0  0.0   0:00.00 rcu_bh
    9 root      20   0     0    0    0 S    0  0.0   0:23.08 rcu_sched
   10 root      20   0     0    0    0 S    0  0.0   0:58.04 rcuc/0
   11 root      20   0     0    0    0 S    0  0.0  21:35.60 rcuc/1
   12 root      RT   0     0    0    0 S    0  0.0   0:01.33 migration/1
```

Related Commands

Command	Description
show processes cpu platform monitor location	Displays information about the CPU utilization of the IOS-XE processes.

show platform software status control-processor

To display platform software control-processor status, use the **show platform software status control-processor** command in privileged EXEC mode.

show platform software status control-processor [{**brief**}]

Syntax Description

brief	(Optional) Displays a summary of the platform control-processor status.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Examples

The following is sample output from the **show platform memory software status control-processor** command:

```
Switch# show platform software status control-processor

2-RP0: online, statistics updated 7 seconds ago
Load Average: healthy
  1-Min: 1.00, status: healthy, under 5.00
  5-Min: 1.21, status: healthy, under 5.00
  15-Min: 0.90, status: healthy, under 5.00
Memory (kb): healthy
  Total: 3976852
  Used: 2766284 (70%), status: healthy
  Free: 1210568 (30%)
  Committed: 3358008 (84%), under 95%
Per-core Statistics
CPU0: CPU Utilization (percentage of time spent)
  User:  4.40, System:  1.70, Nice:  0.00, Idle: 93.80
  IRQ:  0.00, SIRQ:  0.10, IOwait:  0.00
CPU1: CPU Utilization (percentage of time spent)
  User:  3.80, System:  1.20, Nice:  0.00, Idle: 94.90
  IRQ:  0.00, SIRQ:  0.10, IOwait:  0.00
CPU2: CPU Utilization (percentage of time spent)
  User:  7.00, System:  1.10, Nice:  0.00, Idle: 91.89
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU3: CPU Utilization (percentage of time spent)
  User:  4.49, System:  0.69, Nice:  0.00, Idle: 94.80
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00

3-RP0: unknown, statistics updated 2 seconds ago
Load Average: healthy
  1-Min: 0.24, status: healthy, under 5.00
  5-Min: 0.27, status: healthy, under 5.00
  15-Min: 0.32, status: healthy, under 5.00
Memory (kb): healthy
  Total: 3976852
  Used: 2706768 (68%), status: healthy
  Free: 1270084 (32%)
  Committed: 3299332 (83%), under 95%
Per-core Statistics
CPU0: CPU Utilization (percentage of time spent)
```

```
  User:  4.50, System:  1.20, Nice:  0.00, Idle: 94.20
  IRQ:  0.00, SIRQ:  0.10, IOwait:  0.00
CPU1: CPU Utilization (percentage of time spent)
  User:  5.20, System:  0.50, Nice:  0.00, Idle: 94.29
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU2: CPU Utilization (percentage of time spent)
  User:  3.60, System:  0.70, Nice:  0.00, Idle: 95.69
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU3: CPU Utilization (percentage of time spent)
  User:  3.00, System:  0.60, Nice:  0.00, Idle: 96.39
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00

4-RP0: unknown, statistics updated 2 seconds ago
Load Average: healthy
  1-Min: 0.21, status: healthy, under 5.00
  5-Min: 0.24, status: healthy, under 5.00
  15-Min: 0.24, status: healthy, under 5.00
Memory (kb): healthy
  Total: 3976852
  Used: 1452404 (37%), status: healthy
  Free: 2524448 (63%)
  Committed: 1675120 (42%), under 95%
Per-core Statistics
CPU0: CPU Utilization (percentage of time spent)
  User:  2.30, System:  0.40, Nice:  0.00, Idle: 97.30
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU1: CPU Utilization (percentage of time spent)
  User:  4.19, System:  0.69, Nice:  0.00, Idle: 95.10
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU2: CPU Utilization (percentage of time spent)
  User:  4.79, System:  0.79, Nice:  0.00, Idle: 94.40
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU3: CPU Utilization (percentage of time spent)
  User:  2.10, System:  0.40, Nice:  0.00, Idle: 97.50
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00

9-RP0: unknown, statistics updated 4 seconds ago
Load Average: healthy
  1-Min: 0.20, status: healthy, under 5.00
  5-Min: 0.35, status: healthy, under 5.00
  15-Min: 0.35, status: healthy, under 5.00
Memory (kb): healthy
  Total: 3976852
  Used: 1451328 (36%), status: healthy
  Free: 2525524 (64%)
  Committed: 1675932 (42%), under 95%
Per-core Statistics
CPU0: CPU Utilization (percentage of time spent)
  User:  1.90, System:  0.50, Nice:  0.00, Idle: 97.60
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU1: CPU Utilization (percentage of time spent)
  User:  4.39, System:  0.19, Nice:  0.00, Idle: 95.40
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU2: CPU Utilization (percentage of time spent)
  User:  5.70, System:  1.00, Nice:  0.00, Idle: 93.30
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU3: CPU Utilization (percentage of time spent)
  User:  1.30, System:  0.60, Nice:  0.00, Idle: 98.00
  IRQ:  0.00, SIRQ:  0.10, IOwait:  0.00
```

The following is sample output from the **show platform memory software status control-processor brief** command:

```
Switch# show platform software status control-processor brief

Load Average
 Slot  Status  1-Min  5-Min 15-Min
2-RP0 Healthy   1.10   1.21   0.91
3-RP0 Healthy   0.23   0.27   0.31
4-RP0 Healthy   0.11   0.21   0.22
9-RP0 Healthy   0.10   0.30   0.34

Memory (kB)
 Slot  Status    Total     Used (Pct)     Free (Pct) Committed (Pct)
2-RP0 Healthy  3976852  2766956 (70%)  1209896 (30%)   3358352 (84%)
3-RP0 Healthy  3976852  2706824 (68%)  1270028 (32%)   3299276 (83%)
4-RP0 Healthy  3976852  1451888 (37%)  2524964 (63%)   1675076 (42%)
9-RP0 Healthy  3976852  1451580 (37%)  2525272 (63%)   1675952 (42%)

CPU Utilization
 Slot  CPU   User System   Nice   Idle    IRQ   SIRQ IOwait
2-RP0    0   4.10   2.00   0.00  93.80   0.00   0.10   0.00
         1   4.60   1.00   0.00  94.30   0.00   0.10   0.00
         2   6.50   1.10   0.00  92.40   0.00   0.00   0.00
         3   5.59   1.19   0.00  93.20   0.00   0.00   0.00
3-RP0    0   2.80   1.20   0.00  95.90   0.00   0.10   0.00
         1   4.49   1.29   0.00  94.20   0.00   0.00   0.00
         2   5.30   1.60   0.00  93.10   0.00   0.00   0.00
         3   5.80   1.20   0.00  93.00   0.00   0.00   0.00
4-RP0    0   1.30   0.80   0.00  97.89   0.00   0.00   0.00
         1   1.30   0.20   0.00  98.50   0.00   0.00   0.00
         2   5.60   0.80   0.00  93.59   0.00   0.00   0.00
         3   5.09   0.19   0.00  94.70   0.00   0.00   0.00
9-RP0    0   3.99   0.69   0.00  95.30   0.00   0.00   0.00
         1   2.60   0.70   0.00  96.70   0.00   0.00   0.00
         2   4.49   0.89   0.00  94.60   0.00   0.00   0.00
         3   2.60   0.20   0.00  97.20   0.00   0.00   0.00
```

show platform software thread list

To display the list of threads on a platform, use the **show platform software thread list** command in privileged EXEC mode.

show platform software thread list switch { *switch-number* | **active** | **standby** } { **0** | **F0** | **FP active** | **R0** } **pname** { **cdman** | **vidman** | **all** } **tname** { **main** | **pktio** | **rt** | **all** }

Syntax Description

switch *switch-number*	Displays information about the switch. Enter the switch number.
active	Specifies the active instance of the device.
standby	Specifies standby instance of the device.
0	Specifies the Shared Port Adapter (SPA) Interface Processor slot 0.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
FP active	Specifies the active instance of Embedded Service Processor (ESP).
R0	Specifies the Route Processor (RP) slot 0.
pname	Specifies a process name. The possible values are **cdman**, **vidman**, and **all**.
tname	Specifies a thread name. The possible values are **main**, **pktio**, **rt**, and **all**.

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Command Modes

Privileged EXEC(#)

Examples:

The following is sample output from the **show platform software thread list switch active R0 pname cdman tname all** command:

```
Device# show platform software thread list switch active R0 pname cdman tname all

Name           Tid    PPid  Group Id  Core    Vcswch   Nvcswch  Status    Priority
TIME+  Size
-------------------------------------------------------------------------------------------------
cdman         8407    7295      8407     1         0         0  S              20
12309  36976
```

The table below describes the significant fields shown in the displays.

Table 14: show platform software thread list Field Descriptions

Field	Description
Name	Displays the command name associated with the process. Different threads in the same process may have different command values.
Tid	Displays the process ID.
PPid	Displays the process ID of the parent process.
Group Id	Displays the group ID.
Core	Displays processor information.
Vcswch	Displays the number of voluntary context switches.
Nvcswch	Displays the number of non-voluntary context switches.
Status	Displays the process status in human readable form.
Priority	Displays the negated scheduling priority.
TIME+	Displays the time since the start of the process.
Size	Displays the Resident Set Size (in kilobytes (KB)) that shows how much memory is allocated to that process in the RAM.

show processes cpu platform

To display information about the CPU utilization of the IOS-XE processes, use the **show processes cpu platform** command in privileged EXEC mode.

show processes cpu platform [[**sorted** [**1min** | **5min** | **5sec**]] **location**
switch { *switch-number* | **active** | **standby** } { **F0** | **FP active** | **R0** | **RP active** }]

Syntax Description

sorted	(Optional) Displays output sorted based on percentage of CPU usage on a platform.
1min	(Optional) Sorts based on 1 minute intervals.
5min	(Optional) Sorts based on 5 minute intervals.
5sec	(Optional) Sorts based on 5 second intervals.
location	Specifies the Field Replaceable Unit (FRU) location.
switch *switch-number*	Displays information about the switch. Enter the switch number.
active	Specifies the active instance of the device.
standby	Specifies the standby instance of the device.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
FP active	Specifies active instances on the Embedded Service Processor (ESP).
R0	Specifies the Route Processor (RP) slot 0.
RP active	Specifies active instances on the Route Processor (RP).

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Command Modes

Privileged EXEC (#)

Examples:

The following is sample output from the **show processes cpu platform** command:

```
Device# show processes cpu platform

CPU utilization for five seconds:  1%, one minute:  3%, five minutes:  2%
Core 0: CPU utilization for five seconds:  2%, one minute:  2%, five minutes:  2%
Core 1: CPU utilization for five seconds:  2%, one minute:  1%, five minutes:  1%
Core 2: CPU utilization for five seconds:  3%, one minute:  1%, five minutes:  1%
Core 3: CPU utilization for five seconds:  2%, one minute:  5%, five minutes:  2%
   Pid    PPid    5Sec    1Min    5Min  Status        Size  Name
------------------------------------------------------------------------------
     1       0      0%      0%      0%  S             4876  systemd
```

```
     2       0      0%      0%      0%  S                0  kthreadd
     3       2      0%      0%      0%  S                0  ksoftirqd/0
     5       2      0%      0%      0%  S                0  kworker/0:0H
     7       2      0%      0%      0%  S                0  rcu_sched
     8       2      0%      0%      0%  S                0  rcu_bh
     9       2      0%      0%      0%  S                0  migration/0
    10       2      0%      0%      0%  S                0  watchdog/0
    11       2      0%      0%      0%  S                0  watchdog/1
    12       2      0%      0%      0%  S                0  migration/1
    13       2      0%      0%      0%  S                0  ksoftirqd/1
    15       2      0%      0%      0%  S                0  kworker/1:0H
    16       2      0%      0%      0%  S                0  watchdog/2
    17       2      0%      0%      0%  S                0  migration/2
    18       2      0%      0%      0%  S                0  ksoftirqd/2
    20       2      0%      0%      0%  S                0  kworker/2:0H
    21       2      0%      0%      0%  S                0  watchdog/3
    22       2      0%      0%      0%  S                0  migration/3
    23       2      0%      0%      0%  S                0  ksoftirqd/3
    24       2      0%      0%      0%  S                0  kworker/3:0
    25       2      0%      0%      0%  S                0  kworker/3:0H
    26       2      0%      0%      0%  S                0  kdevtmpfs
    27       2      0%      0%      0%  S                0  netns
    28       2      0%      0%      0%  S                0  perf
    29       2      0%      0%      0%  S                0  khungtaskd
    30       2      0%      0%      0%  S                0  writeback
    31       2      7%      8%      8%  S                0  ksmd
    32       2      0%      0%      0%  S                0  khugepaged
    33       2      0%      0%      0%  S                0  crypto
    34       2      0%      0%      0%  S                0  bioset
    35       2      0%      0%      0%  S                0  kblockd
    36       2      0%      0%      0%  S                0  ata_sff
    37       2      0%      0%      0%  S                0  rpciod
    63       2      0%      0%      0%  S                0  kswapd0
    64       2      0%      0%      0%  S                0  vmstat
    65       2      0%      0%      0%  S                0  fsnotify_mark
.
.
.
```

The following is sample output from the **show processes cpu platform sorted 5min location switch 5 R0**

```
Device# show processes cpu platform sorted 5min location switch 5 R0

CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 0: CPU utilization for five seconds:  1%, one minute:  1%, five minutes:  1%
Core 1: CPU utilization for five seconds:  1%, one minute:  1%, five minutes:  1%
Core 2: CPU utilization for five seconds:  1%, one minute:  1%, five minutes:  1%
Core 3: CPU utilization for five seconds:  2%, one minute:  2%, five minutes:  1%
Core 4: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 5: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 6: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 7: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
   Pid    PPid    5Sec    1Min    5Min  Status        Size  Name
-------------------------------------------------------------------------------
 16358   15516      4%      4%      4%  S           221376  fed main event
 14062   12756      1%      1%      1%  S            52140  sif_mgr
 32105    8618      0%      0%      0%  S              260  inotifywait
 31396   31393      0%      0%      0%  S            36516  python2.7
 31393   31271      0%      0%      0%  S             2744  rdope.sh
 31319       1      0%      0%      0%  S             2648  rotee
 31271       1      0%      0%      0%  S             3852  pman.sh
 29671       2      0%      0%      0%  S                0  kworker/u16:0
 29341   29329      0%      0%      0%  S             1780  sntp
 29329       1      0%      0%      0%  S             2788  stack_sntp.sh
.
```

.
.

The following is sample output from the **show processes cpu platform location switch 7 R0** command:

```
Device# show processes cpu platform location switch 7 R0

CPU utilization for five seconds:  3%, one minute:  3%, five minutes:  3%
Core 0: CPU utilization for five seconds:  1%, one minute:  5%, five minutes:  5%
Core 1: CPU utilization for five seconds:  1%, one minute: 11%, five minutes:  5%
Core 2: CPU utilization for five seconds: 22%, one minute:  7%, five minutes:  6%
Core 3: CPU utilization for five seconds:  5%, one minute:  6%, five minutes:  6%
Core 4: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 5: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 6: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 7: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  6%
   Pid    PPid    5Sec    1Min    5Min  Status        Size  Name
--------------------------------------------------------------------------------
     1       0      0%      0%      0%  S             8044  systemd
     2       0      0%      0%      0%  S                0  kthreadd
.
.
.
```

show processes cpu platform history

To display information about the CPU usage history of a system, use the **show processes cpu platform history** command.

show processes cpu platform history [**1min** | **5min** | **5sec** | **60min**] **location switch** { *switch-number* | **active** | **standby** } { **0** | **F0** | **FP active** | **R0** }

1min	(Optional) Displays CPU utilization history with 1 minute intervals.
5min	(Optional) Displays CPU utilization history with 5 minute intervals.
5sec	(Optional) Displays CPU utilization history with 5 second intervals.
60min	(Optional) Displays CPU utilization history with 60 minute intervals.
location	Specifies the Field Replaceable Unit (FRU) location.
switch *switch-number*	Displays information about the switch. Enter the switch number.
active	Specifies the active instance of the device.
standby	Specifies the standby instance of the device.
0	Specifies the Shared Port Adapter (SPA) Interface Processor slot 0.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
FP active	Specifies active instances on the Embedded Service Processor (ESP).
R0	Specifies the Route Processor (RP) slot 0.

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Command Modes

Privileged EXEC (#)

Examples:

The following is sample output from the **show processes cpu platform** command:

```
Device# show processes cpu platform
```

```
CPU utilization for five seconds:  1%, one minute:  3%, five minutes:  2%
Core 0: CPU utilization for five seconds:  2%, one minute:  2%, five minutes:  2%
Core 1: CPU utilization for five seconds:  2%, one minute:  1%, five minutes:  1%
Core 2: CPU utilization for five seconds:  3%, one minute:  1%, five minutes:  1%
Core 3: CPU utilization for five seconds:  2%, one minute:  5%, five minutes:  2%
   Pid    PPid    5Sec    1Min    5Min  Status        Size  Name
--------------------------------------------------------------------------------
     1       0      0%      0%      0%  S             4876  systemd
     2       0      0%      0%      0%  S                0  kthreadd
     3       2      0%      0%      0%  S                0  ksoftirqd/0
     5       2      0%      0%      0%  S                0  kworker/0:0H
     7       2      0%      0%      0%  S                0  rcu_sched
     8       2      0%      0%      0%  S                0  rcu_bh
     9       2      0%      0%      0%  S                0  migration/0
    10       2      0%      0%      0%  S                0  watchdog/0
    11       2      0%      0%      0%  S                0  watchdog/1
    12       2      0%      0%      0%  S                0  migration/1
    13       2      0%      0%      0%  S                0  ksoftirqd/1
    15       2      0%      0%      0%  S                0  kworker/1:0H
    16       2      0%      0%      0%  S                0  watchdog/2
    17       2      0%      0%      0%  S                0  migration/2
    18       2      0%      0%      0%  S                0  ksoftirqd/2
    20       2      0%      0%      0%  S                0  kworker/2:0H
    21       2      0%      0%      0%  S                0  watchdog/3
    22       2      0%      0%      0%  S                0  migration/3
    23       2      0%      0%      0%  S                0  ksoftirqd/3
    24       2      0%      0%      0%  S                0  kworker/3:0
    25       2      0%      0%      0%  S                0  kworker/3:0H
    26       2      0%      0%      0%  S                0  kdevtmpfs
    27       2      0%      0%      0%  S                0  netns
    28       2      0%      0%      0%  S                0  perf
    29       2      0%      0%      0%  S                0  khungtaskd
    30       2      0%      0%      0%  S                0  writeback
    31       2      7%      8%      8%  S                0  ksmd
    32       2      0%      0%      0%  S                0  khugepaged
    33       2      0%      0%      0%  S                0  crypto
    34       2      0%      0%      0%  S                0  bioset
    35       2      0%      0%      0%  S                0  kblockd
    36       2      0%      0%      0%  S                0  ata_sff
    37       2      0%      0%      0%  S                0  rpciod
    63       2      0%      0%      0%  S                0  kswapd0
    64       2      0%      0%      0%  S                0  vmstat
    65       2      0%      0%      0%  S                0  fsnotify_mark
.
.
.
```

The following is sample output from the **show processes cpu platform history 5sec** command:

```
Device# show processes cpu platform history 5sec

5 seconds ago, CPU utilization: 0%
10 seconds ago, CPU utilization: 0%
15 seconds ago, CPU utilization: 0%
20 seconds ago, CPU utilization: 0%
25 seconds ago, CPU utilization: 0%
30 seconds ago, CPU utilization: 0%
35 seconds ago, CPU utilization: 0%
40 seconds ago, CPU utilization: 0%
45 seconds ago, CPU utilization: 0%
50 seconds ago, CPU utilization: 0%
55 seconds ago, CPU utilization: 0%
60 seconds ago, CPU utilization: 0%
65 seconds ago, CPU utilization: 0%
70 seconds ago, CPU utilization: 0%
```

```
75 seconds ago, CPU utilization: 0%
80 seconds ago, CPU utilization: 0%
85 seconds ago, CPU utilization: 0%
90 seconds ago, CPU utilization: 0%
95 seconds ago, CPU utilization: 0%
100 seconds ago, CPU utilization: 0%
105 seconds ago, CPU utilization: 0%
110 seconds ago, CPU utilization: 0%
115 seconds ago, CPU utilization: 0%
120 seconds ago, CPU utilization: 0%
125 seconds ago, CPU utilization: 0%
130 seconds ago, CPU utilization: 0%
135 seconds ago, CPU utilization: 0%
140 seconds ago, CPU utilization: 0%
145 seconds ago, CPU utilization: 1%
150 seconds ago, CPU utilization: 0%
155 seconds ago, CPU utilization: 0%
160 seconds ago, CPU utilization: 0%
165 seconds ago, CPU utilization: 0%
170 seconds ago, CPU utilization: 0%
175 seconds ago, CPU utilization: 0%
180 seconds ago, CPU utilization: 0%
185 seconds ago, CPU utilization: 0%
190 seconds ago, CPU utilization: 0%
195 seconds ago, CPU utilization: 0%
200 seconds ago, CPU utilization: 0%
205 seconds ago, CPU utilization: 0%
210 seconds ago, CPU utilization: 0%
215 seconds ago, CPU utilization: 0%
220 seconds ago, CPU utilization: 0%
225 seconds ago, CPU utilization: 0%
230 seconds ago, CPU utilization: 0%
235 seconds ago, CPU utilization: 0%
240 seconds ago, CPU utilization: 0%
245 seconds ago, CPU utilization: 0%
250 seconds ago, CPU utilization: 0%
.
.
.
```

show processes cpu platform monitor

To displays information about the CPU utilization of the IOS-XE processes, use the **show processes cpu platform monitor** command in privileged EXEC mode.

show processes cpu platform monitor location switch {*switch-number* | **active** | **standby**} {**0** | **F0** | **R0**}

Syntax Description

location	Displays information about the Field Replaceable Unit (FRU) location.
switch	Specifies the switch.
switch-number	Switch number.
active	Specifies the active instance.
standby	Specifies the standby instance.
0	Specifies the shared port adapter (SPA) interface processor slot 0.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
R0	Specifies the Route Processor (RP) slot 0.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

The output of the **show platform software process slot switch** and **show processes cpu platform monitor location** commands display the output of the Linux **top** command. The output of these commands display Free memory and Used memory as displayed by the Linux **top** command. The values displayed for the Free memory and Used memory by these commands do not match the values displayed by the output of other platform-memory related CLIs.

Examples

The following is sample output from the **show processes cpu monitor location switch active R0** command:

```
Switch# show processes cpu platform monitor location switch active R0

top - 00:04:21 up 1 day, 11:22,  0 users,  load average: 0.42, 0.60, 0.78
Tasks: 312 total,   4 running, 308 sleeping,   0 stopped,   0 zombie
Cpu(s):  7.4%us,  3.3%sy,  0.0%ni, 89.2%id,  0.0%wa,  0.0%hi,  0.1%si,  0.0%st
Mem:   3976844k total,  3956928k used,    19916k free,   419312k buffers
Swap:        0k total,        0k used,        0k free,  1947036k cached

  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+  COMMAND
 6294 root      20   0  3448 1368  912 R    9  0.0   0:00.07 top
17546 root      20   0 2044m 244m  79m S    7  6.3 187:02.07 fed main event
30276 root      20   0  171m  42m  33m S    7  1.1 125:15.54 repm
   16 root      20   0     0    0    0 S    5  0.0  22:07.92 rcuc/2
   21 root      20   0     0    0    0 R    5  0.0  22:13.24 rcuc/3
```

```
18662 root      20   0 1806m 678m 263m R    5 17.5 215:47.59 linux_iosd-imag
   11 root      20   0     0    0    0 S    4  0.0  21:37.41 rcuc/1
10333 root      20   0  6420 3916 1492 S    4  0.1   4:47.03 btrace_rotate.s
   10 root      20   0     0    0    0 S    2  0.0   0:58.13 rcuc/0
 6304 root      20   0   776   12    0 R    2  0.0   0:00.01 ls
17835 root      20   0  935m  74m  63m S    2  1.9  82:34.07 sif_mgr
    1 root      20   0  8440 4740 2184 S    0  0.1   0:09.52 systemd
    2 root      20   0     0    0    0 S    0  0.0   0:00.00 kthreadd
    3 root      20   0     0    0    0 S    0  0.0   0:02.86 ksoftirqd/0
    5 root       0 -20     0    0    0 S    0  0.0   0:00.00 kworker/0:0H
    7 root      RT   0     0    0    0 S    0  0.0   0:01.44 migration/0
```

Related Commands

Command	Description
show platform software process slot switch	Displays platform software process switch information.

show processes memory

To display the amount of memory used by each system process, use the **show processes memory** command in privileged EXEC mode.

show processes memory [{ *process-id* | **sorted** [{ **allocated** | **getbufs** | **holding** }] }]

Syntax Description

process-id	(Optional) Process ID (PID) of a specific process. When you specify a process ID, only details for the specified process will be shown.
sorted	(Optional) Displays memory data sorted by the Allocated, Get Buffers, or Holding column. If the **sorted** keyword is used by itself, data is sorted by the Holding column by default.
allocated	(Optional) Displays memory data sorted by the Allocated column.
getbufs	(Optional) Displays memory data sorted by the Getbufs (Get Buffers) column.
holding	(Optional) Displays memory data sorted by the Holding column. This keyword is the default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

The **show processes memory** command and the **show processes memory sorted** command displays a summary of total, used, and free memory, followed by a list of processes and their memory impact.

If the standard **show processes memory** *process-id* command is used, processes are sorted by their PID. If the **show processes memory sorted** command is used, the default sorting is by the Holding value.

Note Holding memory of a particular process can be allocated by other processes also, and so it can be greater than the allocated memory.

The following is sample output from the **show processes memory** command:

```
Device# show processes memory

Processor Pool Total:   25954228 Used:    8368640 Free:   17585588
 PID TTY  Allocated      Freed    Holding    Getbufs    Retbufs Process
   0   0    8629528     689900    6751716          0          0 *Init*
   0   0      24048      12928      24048          0          0 *Sched*
   0   0        260        328         68     350080          0 *Dead*
   1   0          0          0      12928          0          0 Chunk Manager
   2   0        192        192       6928          0          0 Load Meter
   3   0     214664        304     227288          0          0 Exec
   4   0          0          0      12928          0          0 Check heaps
   5   0          0          0      12928          0          0 Pool Manager
   6   0        192        192      12928          0          0 Timers
   7   0        192        192      12928          0          0 Serial Backgroun
```

```
  8   0        192        192      12928          0          0 AAA high-capacit
  9   0          0          0      24928          0          0 Policy Manager
 10   0          0          0      12928          0          0 ARP Input
 11   0        192        192      12928          0          0 DDR Timers
 12   0          0          0      12928          0          0 Entity MIB API
 13   0          0          0      12928          0          0 MPLS HC Counter
 14   0          0          0      12928          0          0 SERIAL A'detect
.
.
.
 78   0          0          0      12992          0          0 DHCPD Timer
 79   0        160          0      13088          0          0 DHCPD Database
                                 8329440 Total
```

The table below describes the significant fields shown in the display.

Table 15: show processes memory Field Descriptions

Field	Description
Processor Pool Total	Total amount of memory, in kilobytes (KB), held for the Processor memory pool.
Used	Total amount of used memory, in KB, in the Processor memory pool.
Free	Total amount of free memory, in KB, in the Processor memory pool.
PID	Process ID.
TTY	Terminal that controls the process.
Allocated	Bytes of memory allocated by the process.
Freed	Bytes of memory freed by the process, regardless of who originally allocated it.
Holding	Amount of memory, in KB, currently allocated to the process. This includes memory allocated by the process and assigned to the process.
Getbufs	Number of times the process has requested a packet buffer.
Retbufs	Number of times the process has relinquished a packet buffer.
Process	Process name.
Init	System initialization process.
Sched	The scheduler process.
Dead	Processes as a group that are now dead.
<value> Total	Total amount of memory, in KB, held by all processes (sum of the “Holding” column).

The following is sample output from the **show processes memory** command when the **sorted** keyword is used. In this case, the output is sorted by the Holding column, from largest to smallest.

```
Device# show processes memory sorted

Processor Pool Total:   25954228 Used:    8371280 Free:   17582948
 PID TTY  Allocated      Freed    Holding    Getbufs    Retbufs Process
   0   0    8629528     689900    6751716          0          0 *Init*
```

```
  3   0     217304        304     229928          0          0 Exec
 53   0     109248        192      96064          0          0 DHCPD Receive
 56   0          0          0      32928          0          0 COPS
 19   0      39048          0      25192          0          0 Net Background
 42   0          0          0      24960          0          0 L2X Data Daemon
 58   0        192        192      24928          0          0 X.25 Background
 43   0        192        192      24928          0          0 PPP IP Route
 49   0          0          0      24928          0          0 TCP Protocols
 48   0          0          0      24928          0          0 TCP Timer
 17   0        192        192      24928          0          0 XML Proxy Client
  9   0          0          0      24928          0          0 Policy Manager
 40   0          0          0      24928          0          0 L2X SSS manager
 29   0          0          0      24928          0          0 IP Input
 44   0        192        192      24928          0          0 PPP IPCP
 32   0        192        192      24928          0          0 PPP Hooks
 34   0          0          0      24928          0          0 SSS Manager
 41   0        192        192      24928          0          0 L2TP mgmt daemon
 16   0        192        192      24928          0          0 Dialer event
 35   0          0          0      24928          0          0 SSS Test Client
--More--
```

The following is sample output from the **show processes memory** command when a process ID (*process-id*) is specified:

```
Device# show processes memory 1

Process ID: 1
Process Name: Chunk Manager
Total Memory Held: 8428 bytes
Processor memory holding = 8428 bytes
pc = 0x60790654, size =      6044, count =    1
pc = 0x607A5084, size =      1544, count =    1
pc = 0x6076DBC4, size =       652, count =    1
pc = 0x6076FF18, size =       188, count =    1
I/O memory holding = 0 bytes

Device# show processes memory 2

Process ID: 2
Process Name: Load Meter
Total Memory Held: 3884 bytes
Processor memory holding = 3884 bytes
pc = 0x60790654, size =      3044, count =    1
pc = 0x6076DBC4, size =       652, count =    1
pc = 0x6076FF18, size =       188, count =    1
I/O memory holding = 0 bytes
```

Related Commands

Command	Description
show memory	Displays statistics about memory, including memory-free pool statistics.
show processes	Displays information about the active processes.

show processes memory platform

To display memory usage for each Cisco IOS XE process, use the **show processes memory platform** command in privileged EXEC mode.

show processes memory platform [[**detailed** { **name** *process-name* | **process-id** *process-ID* } [**location** | **maps** [**location**] | **smaps** [**location**]] | **location** | **sorted** [**location**]] **switch** { *switch-number* | **active** | **standby** } { **0** | **F0** | **R0** } | **accounting**]

Syntax Description

accounting	(Optional) Displays the top memory allocators for each Cisco IOS XE process.
detailed	(Optional) Displays detailed memory information for a specified Cisco IOS XE process.
name *process-name*	(Optional) Displays the Cisco IOS XE process name. Enter the process name.
process-id *process-ID*	(Optional) Displayss the Cisco IOS XE process ID. Enter the process ID.
location	(Optional) Displays information about the Field Replaceable Unit (FRU) location.
maps	(Optional) Displays memory maps of a process.
smaps	(Optional) Displays static memory maps of a process.
sorted	(Optional) Displays the sorted output based on the Resident Set Size (RSS) memory used by Cisco IOS XE process.
switch *switch-number*	Displays information about the device.
active	Displays information about the active instance of the device.
standby	Displays information about the standby instance of the device.
0	Displays information about Shared Port Adapter (SPA)-Inter-Processor slot 0.
F0	Displays information about Embedded Service Processor (ESP) slot 0.
R0	Displays information about Route Processor (RP) slot 0.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.
Cisco IOS XE Gibraltar 16.10.1	This command was modified. The keyword **accounting** was added. The **Total** column was deleted from the output.

Examples

The following is a sample output from the **show processes memory platform** command:

```
device# show processes memory platform

System memory: 3976852K total, 2761580K used, 1215272K free,
Lowest: 1215272K
   Pid    Text      Data   Stack   Dynamic       RSS                  Name
--------------------------------------------------------------------------------
     1    1246      4400     132      1308      4400               systemd
    96     233      2796     132       132      2796       systemd-journal
   105     284      1796     132       176      1796         systemd-udevd
   707      52      2660     132       172      2660            in.telnetd
   744     968      3264     132      1700      3264             brelay.sh
   835      52      2660     132       172      2660            in.telnetd
   863     968      3264     132      1700      3264             brelay.sh
   928     968      3996     132      2312      3996          reflector.sh
   933     968      3976     132      2312      3976           droputil.sh
   934     968      2140     132       528      2140                oom.sh
   936     173       936     132       132       936               xinetd
   945     968      1472     132       132      1472            libvirtd.sh
   947     592     43164     132      3096     43164                 repm
   954      45       932     132       132       932              rpcbind
   986     482      3476     132       132      3476             libvirtd
   988      66       940     132       132       940            rpc.statd
   993     968       928     132       132       928       boothelper_evt.
  1017      21       640     132       132       640           inotifywait
  1089     102      1200     132       132      1200            rpc.mountd
  1328       9      2940     132       148      2940                 rotee
  1353      39       532     132       132       532                 sleep
!
!
!
```

The following is a sample output from the **show processes memory platform accounting** command:

```
device# show processes memory platform accounting
Hourly Stats

  process                 callsite_ID(bytes)  max_diff_bytes   callsite_ID(calls)
max_diff_calls   tracekey                                    timestamp(UTC)

--------------------------------------------------------------------------------------------------------------

  smand_rp_0              3624155137          172389           3624155138          50
         1#a3e0e4361082c702e5bf1afbd90e6313       2018-09-04 14:23
  linux_iosd-imag_rp_0    3626295305          49188            3624155138          12
         1#545420bd869d25eb5ab826182ee5d9ce       2018-09-04 12:03
  btman_rp_0              3624737792          17080            2953915394          64
         1#d6888bd9564a3c4fcf049c31ba07a036       2018-09-04 22:29
```

```
  fman_fp_image_fp_0      3624059905          16960            4027402242          298
         1#921ba4d9df5b0a6e946a3b270bd6592d       2018-09-04 22:55
  fed_main_event_fp_0     3626295305          16396            4027402242          32
         1#27083f7bf3985d892505806cae2bfb0d       2018-09-04 12:03
  dbm_rp_0                3626295305          16396            4027402242          3
         1#2b878f802bd7703c5298d37e7a4e8ac3       2018-09-04 12:02
  tamd_proc_rp_0          3895208962          12632            3624667171          7
         1#5b0ed8f88ef5f873abcaf8a744037a44       2018-09-04 18:47
  btman_fp_0              3624233985          12288            3624737792          9
         1#d6888bd9564a3c4fcf049c31ba07a036       2018-09-04 15:23
  sif_mgr_rp_0            3624059907          8216             4027402242          4
         1#de2a951a8a7bae83ca2c04c56810eb72       2018-09-04 14:21
  python2.7_fp_0          2954560513          8000             2954560513          1
                                                   2018-09-04 12:16
  nginx_rp_0              3357041665          4608             4027402242          4
         1#32e56bb09e0509c5fa5ac32093631206       2018-09-04 16:18
  rotee_FRU_SLOT_NUM      3624667169          4097             3624667169          1
         1#ff68e5150a698cd59fa259828614995b       2018-09-04 10:43
  hman_rp_0               3893617664          1488             3893617664          1
         1#1c4aadada30083c5d6f66dc8ca8cd4cb       2018-09-04 10:42
  tams_proc_rp_0          3895096320          1024             3895096320          1
         1#a36a3afa9884c8dc4d40af1e80cacd26       2018-09-04 10:42
  stack_mgr_rp_0          4027402242          904              4027402242          4
         1#ca902eab11a18ab056b16554f49871e8       2018-09-04 14:21
  sessmgrd_rp_0           3491618816          848              3624155138          8
         1#720239fc8bddcabc059768c55a1640ed       2018-09-04 14:32
  psd_rp_0                4027402242          696              4027402242          4
         1#98cf04e0ddd78c2400b3ca3b5f298594       2018-09-04 14:21
  lman_rp_0               4027402242          592              4027402242          4
         1#dc8ed9e428d36477a617d56c51d5caf2       2018-09-04 14:21
  bt_logger_rp_0          4027402242          592              4027402242          4
         1#ba882be1ed783e72575e97cc0908e0e8       2018-09-04 14:21
  repm_rp_0               4027402242          592              4027402242          4
         1#ae461a05430efa767427f2ab40aba372       2018-09-04 14:21
  fman_rp_rp_0            4027402242          592              4027402242          3
         1#09def9cc1390911be9e3a7a9c89f4cf7       2018-09-04 12:16
  epc_ws_liaison_fp_0     4027402242          592              4027402242          4
         1#41451626dcce9d1478b22e2ebbbdcf54       2018-09-04 14:21
  cli_agent_rp_0          4027402242          592              4027402242          4
         1#92d3882919daf3a9e210807c61de0552       2018-09-04 14:21
  cmm_rp_0                4027402242          592              4027402242          4
         1#15ed1d79e96874b1e0621c42c3de6166       2018-09-04 14:21
  tms_rp_0                4027402242          352              4027402242          4
         1#5c6efe2e21f15aa16318576d3ec9153c       2018-09-04 12:03
  plogd_rp_0              4027402242          48               4027402242          1
         1#2d7f2ef57206f4fa763d7f2f5400bf1b       2018-09-04 10:43
  cmand_rp_0              3624155137          17               3624155137          1
         1#f1f41f61c44d73014023db5d8a46ecf5       2018-09-04 10:42
!
!
!
```

The following is a sample output from the **show processes memory platform sorted** command:

```
device# show processes memory platform sorted
System memory: 3976852K total, 2762884K used, 1213968K free,
Lowest: 1213968K

   Pid      Text      Data   Stack   Dynamic       RSS                Name
--------------------------------------------------------------------------------
  7885    149848     684864    136        80    684864     linux_iosd-imag
  9655      3787     264964    136     18004    264964                 wcm
```

```
  17261     324      248588    132    103908    248588      fed main event
  4268      391      102084    136      5596    102084           cli_agent
  4856      357       93388    132      3680     93388                dbm
17067     1087      77912    136      1796     77912        platform_mgr
!
!
!
```

The following is sample output from the **show processes memory platform sorted location switch active R0** command:

```
device# show processes memory platform sorted location switch active R0
System memory: 3976852K total, 2762884K used, 1213968K free,
Lowest: 1213968K

   Pid      Text      Data   Stack   Dynamic       RSS                Name
--------------------------------------------------------------------------------
  7885    149848     684864    136        80    684864     linux_iosd-imag
  9655      3787     264964    136     18004    264964                wcm
  17261     324      248588    132    103908    248588      fed main event
  4268      391      102084    136      5596    102084           cli_agent
  4856      357       93388    132      3680     93388                dbm
17067     1087      77912    136      1796     77912        platform_mgr
!
!
!
```

show processes platform

To display information about the IOS-XE processes running on a platform, use the **show processes platform** command in privileged EXEC mode.

show processes platform [**detailed name** *process-name*] [**location switch** {*switch-number* | **active** | **standby**} {**0** | **F0** | **FP active** | **R0**}]

detailed	(Optional) Displays detailed information of the specified IOS-XE process.
name *process-name*	(Optional) Specifies the process name.
location	(Optional) Specifies the Field Replaceable Unit (FRU) location.
switch *switch-number*	(Optional) Displays information about the switch.
active	(Optional) Specifies the active instance of the device.
standby	(Optional) Specifies standby instance of the device.
0	Specifies the Shared Port Adapter (SPA) Interface Processor slot 0.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
FP active	Specifies the active instance in the Embedded Service Processor (ESP).
R0	Specifies the Route Processor (RP) slot 0.

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Command Modes

Privileged EXEC(#)

Examples:

The following is sample output from the **show processes platform** command:

```
Device# show processes platform

CPU utilization for five seconds: 1%, one minute: 2%, five minutes: 1%
   Pid    PPid  Status        Size  Name
-------------------------------------------------------------
     1       0  S             4876  systemd
     2       0  S                0  kthreadd
     3       2  S                0  ksoftirqd/0
     5       2  S                0  kworker/0:0H
     7       2  S                0  rcu_sched
     8       2  S                0  rcu_bh
     9       2  S                0  migration/0
    10       2  S                0  watchdog/0
    11       2  S                0  watchdog/1
    12       2  S                0  migration/1
```

```
 13       2  S                0  ksoftirqd/1
 15       2  S                0  kworker/1:0H
 16       2  S                0  watchdog/2
 17       2  S                0  migration/2
 18       2  S                0  ksoftirqd/2
 20       2  S                0  kworker/2:0H
 21       2  S                0  watchdog/3
 22       2  S                0  migration/3
 23       2  S                0  ksoftirqd/3
 24       2  S                0  kworker/3:0
 25       2  S                0  kworker/3:0H
 26       2  S                0  kdevtmpfs
 27       2  S                0  netns
 28       2  S                0  perf
 29       2  S                0  khungtaskd
 30       2  S                0  writeback
 31       2  S                0  ksmd
 32       2  S                0  khugepaged
 33       2  S                0  crypto
 34       2  S                0  bioset
 35       2  S                0  kblockd
 36       2  S                0  ata_sff
 37       2  S                0  rpciod
 63       2  S                0  kswapd0
 64       2  S                0  vmstat
 65       2  S                0  fsnotify_mark
 66       2  S                0  nfsiod
 74       2  S                0  bioset
 75       2  S                0  bioset
 76       2  S                0  bioset
 77       2  S                0  bioset
 78       2  S                0  bioset
 79       2  S                0  bioset
 80       2  S                0  bioset
 81       2  S                0  bioset
 82       2  S                0  bioset
 83       2  S                0  bioset
 84       2  S                0  bioset
 85       2  S                0  bioset
 86       2  S                0  bioset
 87       2  S                0  bioset
 88       2  S                0  bioset
 89       2  S                0  bioset
 90       2  S                0  bioset
 91       2  S                0  bioset
 92       2  S                0  bioset
 93       2  S                0  bioset
 94       2  S                0  bioset
 95       2  S                0  bioset
 96       2  S                0  bioset
 97       2  S                0  bioset
100       2  S                0  ipv6_addrconf
102       2  S                0  deferwq
```

The table below describes the significant fields shown in the displays.

Table 16: show processes platform Field Descriptions

Field	Description
Pid	Displays the process ID.

Field	Description
PPid	Displays the process ID of the parent process.
Status	Displays the process status in human readable form.
Size	Displays the Resident Set Size (in kilobytes (KB)) that shows how much memory is allocated to that process in the RAM.
Name	Displays the command name associated with the process. Different threads in the same process may have different command values.

show power inline

To display the Power over Ethernet (PoE) status for the specified PoE port, the specified stack member, or for all PoE ports in the switch stack, use the **show power inline** command in EXEC mode.

show power inline [{**police** | **priority**}] [{*interface-id* | **module** *stack-member-number*}] [**detail**]

Syntax Description

police	(Optional) Displays the power policing information about real-time power consumption.
priority	(Optional) Displays the power inline port priority for each port.
interface-id	(Optional) ID of the physical interface.
module *stack-member-number*	(Optional) Limits the display to ports on the specified stack member. The range is 1 to 9. This keyword is supported only on stacking-capable switches.
detail	(Optional) Displays detailed output of the interface or module.

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Examples

This is an example of output from the **show power inline** command. The table that follows describes the output fields.

```
Device> show power inline
Module   Available     Used     Remaining
          (Watts)     (Watts)    (Watts)
------   ---------   --------   ---------
1             n/a        n/a         n/a
2             n/a        n/a         n/a
3          1440.0       15.4      1424.6
4           720.0        6.3       713.7
Interface Admin  Oper       Power   Device              Class Max
                            (Watts)
--------- ------ ---------- ------- ------------------- ----- ----
Gi3/0/1   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/2   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/3   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/4   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/5   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/6   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/7   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/8   auto   off        0.0     n/a                 n/a   30.0
```

```
Gi3/0/9   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/10  auto   off        0.0     n/a                 n/a   30.0
Gi3/0/11  auto   off        0.0     n/a                 n/a   30.0
Gi3/0/12  auto   off        0.0     n/a                 n/a   30.0
<output truncated>
```

This is an example of output from the **show power inline** *interface-id* command on a switch port:

```
Device> show power inline gigabitethernet1/0/1
Interface Admin  Oper       Power   Device              Class Max
                            (Watts)
--------- ------ ---------- ------- ------------------- ----- ----
Gi1/0/1   auto   off        0.0     n/a                 n/a   30.0
```

This is an example of output from the **show power inline module** *switch-number* command on stack member 3. The table that follows describes the output fields.

```
Device> show power inline module 3
Module   Available     Used     Remaining
          (Watts)     (Watts)    (Watts)
------   ---------   --------   ---------
3           865.0      864.0         1.0
Interface Admin  Oper       Power   Device              Class Max
                            (Watts)
--------- ------ ---------- ------- ------------------- ----- ----
Gi3/0/1   auto   power-deny 4.0     n/a                 n/a   15.4
Gi3/0/2   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/3   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/4   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/5   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/6   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/7   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/8   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/9   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/10  auto   off        0.0     n/a                 n/a   15.4
<output truncated>
```

Table 17: show power inline Field Descriptions

Field	Description
Available	The total amount of configured power[1] on the PoE switch in watts (W).
Used	The amount of configured power that is allocated to PoE ports in watts.
Remaining	The amount of configured power in watts that is not allocated to ports in the system. (Available – Used = Remaining)
Admin	Administration mode: auto, off, static.

Field	Description
Oper	Operating mode: • on—The powered device is detected, and power is applied. • off—No PoE is applied. • faulty—Device detection or a powered device is in a faulty state. • power-deny—A powered device is detected, but no PoE is available, or the maximum wattage exceeds the detected powered-device maximum.
Power	The maximum amount of power that is allocated to the powered device in watts. This value is the same as the value in the *Cutoff Power* field in the **show power inline police** command output.
Device	The device type detected: n/a, unknown, Cisco powered-device, IEEE powered-device, or the name from CDP.
Class	The IEEE classification: n/a or a value from 0 to 4.
Max	The maximum amount of power allocated to the powered device in watts.
AdminPowerMax	The maximum amount power allocated to the powered device in watts when the switch polices the real-time power consumption. This value is the same as the *Max* field value.
AdminConsumption	The power consumption of the powered device in watts when the switch polices the real-time power consumption. If policing is disabled, this value is the same as the *AdminPowerMax* field value.

[1] The configured power is the power that you manually specify or that the switch specifies by using CDP power negotiation or the IEEE classification, which is different than the real-time power that is monitored with the power sensing feature.

This is an example of output from the **show power inline police** command on a stacking-capable switch:

```
Device> show power inline police
Module   Available     Used      Remaining
          (Watts)     (Watts)    (Watts)
------   ---------   --------   ---------
1           370.0        0.0       370.0
3           865.0      864.0         1.0
          Admin  Oper         Admin      Oper       Cutoff Oper
Interface State  State        Police     Police     Power  Power
--------- ------ ------------ ---------- ---------- ------ ------
Gi1/0/1   auto   off          none       n/a        n/a    0.0
Gi1/0/2   auto   off          log        n/a        5.4    0.0
Gi1/0/3   auto   off          errdisable n/a        5.4    0.0
Gi1/0/4   off    off          none       n/a        n/a    0.0
Gi1/0/5   off    off          log        n/a        5.4    0.0
Gi1/0/6   off    off          errdisable n/a        5.4    0.0
Gi1/0/7   auto   off          none       n/a        n/a    0.0
Gi1/0/8   auto   off          log        n/a        5.4    0.0
Gi1/0/9   auto   on           none       n/a        n/a    5.1
Gi1/0/10  auto   on           log        ok         5.4    4.2
Gi1/0/11  auto   on           log        log        5.4    5.9
Gi1/0/12  auto   on           errdisable ok         5.4    4.2
```

```
Gi1/0/13  auto   errdisable  errdisable n/a        5.4    0.0
<output truncated>
```

In the previous example:

- The Gi1/0/1 port is shut down, and policing is not configured.
- The Gi1/0/2 port is shut down, but policing is enabled with a policing action to generate a syslog message.
- The Gi1/0/3 port is shut down, but policing is enabled with a policing action is to shut down the port.
- Device detection is disabled on the Gi1/0/4 port, power is not applied to the port, and policing is disabled.
- Device detection is disabled on the Gi1/0/5 port, and power is not applied to the port, but policing is enabled with a policing action to generate a syslog message.
- Device detection is disabled on the Gi1/0/6 port, and power is not applied to the port, but policing is enabled with a policing action to shut down the port.
- The Gi1/0/7 port is up, and policing is disabled, but the switch does not apply power to the connected device.
- The Gi1/0/8 port is up, and policing is enabled with a policing action to generate a syslog message, but the switch does not apply power to the powered device.
- The Gi1/0/9 port is up and connected to a powered device, and policing is disabled.
- The Gi1/0/10 port is up and connected to a powered device, and policing is enabled with a policing action to generate a syslog message. The policing action does not take effect because the real-time power consumption is less than the cutoff value.
- The Gi1/0/11 port is up and connected to a powered device, and policing is enabled with a policing action to generate a syslog message.
- The Gi1/0/12 port is up and connected to a powered device, and policing is enabled with a policing action to shut down the port. The policing action does not take effect because the real-time power consumption is less than the cutoff value.
- The Gi1/0/13 port is up and connected to a powered device, and policing is enabled with a policing action to shut down the port.

This is an example of output from the **show power inline police** *interface-id* command on a standalone switch. The table that follows describes the output fields.

```
Device> show power inline police gigabitethernet1/0/1
Interface Admin  Oper       Admin      Oper       Cutoff Oper
          State  State      Police     Police     Power  Power
--------- ------ ---------- ---------- ---------- ------ -----
Gi1/0/1   auto   off        none       n/a        n/a    0.0
```

Table 18: show power inline police Field Descriptions

Field	Description
Available	The total amount of configured power[2] on the switch in watts (W).
Used	The amount of configured power allocated to PoE ports in watts.
Remaining	The amount of configured power in watts that is not allocated to ports in the system. (Available – Used = Remaining)
Admin State	Administration mode: auto, off, static.
Oper State	Operating mode: **Note** The operating mode is the current PoE state for the specified PoE port, the specified stack member, or for all PoE ports on the switch. • errdisable—Policing is enabled. • faulty—Device detection on a powered device is in a faulty state. • off—No PoE is applied. • on—The powered device is detected, and power is applied. • power-deny—A powered device is detected, but no PoE is available, or the real-time power consumption exceeds the maximum power allocation.
Admin Police	Status of the real-time power-consumption policing feature: • errdisable—Policing is enabled, and the switch shuts down the port when the real-time power consumption exceeds the maximum power allocation . • log—Policing is enabled, and the switch generates a syslog message when the real-time power consumption exceeds the maximum power allocation. • none—Policing is disabled.
Oper Police	Policing status: • errdisable—The real-time power consumption exceeds the maximum power allocation, and the switch shuts down the PoE port. • log—The real-time power consumption exceeds the maximum power allocation, and the switch generates a syslog message. • n /a—Device detection is disabled, power is not applied to the PoE port, or no policing action is configured. • ok—Real-time power consumption is less than the maximum power allocation.
Cutoff Power	The maximum power allocated on the port. When the real-time power consumption is greater than this value, the switch takes the configured policing action.

Field	Description
Oper Power	The real-time power consumption of the powered device.

[2] The configured power is the power that you manually specify or that the switch specifies by using CDP power negotiation or the IEEE classification, which is different than the real-time power that is monitored with the power sensing feature.

This is an example of output from the **show power inline priority** command on a standalone switch.

```
Device> show power inline priority
Interface  Admin  Oper       Priority
           State  State
---------- ------ ---------- --------

Gi1/0/1    auto   off        low
Gi1/0/2    auto   off        low
Gi1/0/3    auto   off        low
Gi1/0/4    auto   off        low
Gi1/0/5    auto   off        low
Gi1/0/6    auto   off        low
Gi1/0/7    auto   off        low
Gi1/0/8    auto   off        low
Gi1/0/9    auto   off        low
```

show stack-power

To display information about StackPower stacks or switches in a power stack, use the **show stack-power** command in EXEC mode.

Note Cisco Catalyst 9300L Series Switches do not support this command.

{**show stack-power** [{**budgeting** | **detail** | **load-shedding** | **neighbors**}] [**order** *power-stack-name*] | [{**stack-name** [*stack-id*] | **switch** [*switch-id*]}]}

Syntax Description

budgeting	(Optional) Displays the stack power budget table.
detail	(Optional) Displays the stack power stack details.
load-shedding	(Optional) Displays the stack power load shedding table.
neighbors	(Optional) Displays the stack power neighbor table.
order *power-stack-name*	(Optional) Displays the load shedding priority for a power stack. **Note** This keyword is available only after the **load-shedding** keyword.
stack-name	(Optional) Displays budget table, details, or neighbors for all power stacks or the specified power stack. **Note** This keyword is not available after the **load-shedding** keyword.
stack-id	(Optional) Power stack ID for the power stack. The stack ID must be 31 characters or less.
switch	(Optional) Displays budget table, details, load-shedding, or neighbors for all switches or the specified switch.
switch-id	(Optional) Switch ID for the switch. The switch number is from 1 to 9.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

This command is available only on switch stacks running the IP Base or IP Services image.

If a switch is shut down because of load shedding, the output of the **show stack-power** command still includes the MAC address of the shutdown neighbor switch. The command output shows the stack power topology even if there is not enough power to power a switch.

Examples

This is an example of output from the **show stack-power** command:

```
Device# show stack-power
Power Stack           Stack   Stack    Total   Rsvd    Alloc   Unused  Num  Num
Name                  Mode    Topolgy  Pwr(W)  Pwr(W)  Pwr(W)  Pwr(W)  SW   PS
--------------------  ------  -------  ------  ------  ------  ------  ---  ---
Powerstack-1          SP-PS   Stndaln  350     150     200     0       1    1
```

This is an example of output from the **show stack-power budgeting** command:

```
Device# show stack-power budgeting
Power Stack           Stack   Stack    Total   Rsvd    Alloc   Unused  Num  Num
Name                  Mode    Topolgy  Pwr(W)  Pwr(W)  Pwr(W)  Pwr(W)  SW   PS
--------------------  ------  -------  ------  ------  ------  ------  ---  ---
Powerstack-1          SP-PS   Stndaln  350     150     200     0       1    1

    Power Stack           PS-A   PS-B   Power     Alloc     Avail   Consumd Pwr
SW  Name                  (W)    (W)    Budgt(W)  Power(W)  Pwr(W)  Sys/PoE(W)
--  --------------------  -----  -----  --------  --------  ------  -----------
1   Powerstack-1          350    0      200       200       0       60   /0
--  --------------------  -----  -----  --------  --------  ------  -----------
Totals:                                          200       0       60   /0
```

show shell

To display shell information, use the **show shell** command in user EXEC mode.

show shell [{**enviornment** | **functions** [{**brief** *shell_function*}] | **triggers**}]

Syntax Description

environment	(Optional) Displays shell environment inform
functions [**brief** |*shell_function*]	(Optional) Displays macro information. • **brief**—Names of the shell functions. • *shell_function*—Name of a shell functior
triggers	(Optional) Displays event trigger information.

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use this command to display the shell information for the switch.

Example

This example shows how to use the **show shell** *triggers* command to view the event triggers in the switch software:

```
Device# term shell
Device# show shell triggers
User defined triggers
---------------------
Built-in triggers
-----------------
Trigger Id: CISCO_CUSTOM_EVENT
Trigger description: Custom macroevent to apply user defined configuration
Trigger environment: User can define the macro
Trigger mapping function: CISCO_CUSTOM_AUTOSMARTPORT

Trigger Id: CISCO_DMP_EVENT
Trigger description: Digital media-player device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - $ACCESS_VLAN=(1)
 The value in the parenthesis is a default value
Trigger mapping function: CISCO_DMP_AUTO_SMARTPORT

Trigger Id: CISCO_IPVSC_EVENT
Trigger description: IP-camera device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - $ACCESS_VLAN=(1)
 The value in parenthesis is a default value
Trigger mapping function: CISCO_IP_CAMERA_AUTO_SMARTPORT
```

```
Trigger Id: CISCO_LAST_RESORT_EVENT
Trigger description: Last resortevent to apply port configuration
Trigger environment: Parameters that can be set in the shell - $ACCESS_VLAN=(1)
 The value in the parenthesis is a default value
Trigger mapping function: CISCO_LAST_RESORT_SMARTPORT

Trigger Id: CISCO_PHONE_EVENT
Trigger description: IP-phone device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - $ACCESS_VLAN=(1)
and $VOICE_VLAN=(2), The value in the parenthesis is a default value
Trigger mapping function: CISCO_PHONE_AUTO_SMARTPORT

Trigger Id: CISCO_ROUTER_EVENT
Trigger description: Router device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - $NATIVE_VLAN=(1)
 The value in the parenthesis is a default value
Trigger mapping function: CISCO_ROUTER_AUTO_SMARTPORT

Trigger Id: CISCO_SWITCH_ETHERCHANNEL_CONFIG
Trigger description: etherchannel parameter
Trigger environment: $INTERFACE_LIST=(),$PORT-CHANNEL_ID=(),
                             $EC_MODE=(),$EC_PROTOCOLTYPE=(),
                             PORT-CHANNEL_TYPE=()
Trigger mapping function: CISCO_ETHERCHANNEL_AUTOSMARTPORT

Trigger Id: CISCO_SWITCH_EVENT
Trigger description: Switch device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - $NATIVE_VLAN=(1)
 The value in the parenthesis is a default value
Trigger mapping function: CISCO_SWITCH_AUTO_SMARTPORT

Trigger Id: CISCO_WIRELESS_AP_EVENT
Trigger description: Autonomous ap device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - $NATIVE_VLAN=(1)
 The value in the parenthesis is a default value
Trigger mapping function: CISCO_AP_AUTO_SMARTPORT

Trigger Id: CISCO_WIRELESS_LIGHTWEIGHT_AP_EVENT
Trigger description: Lightweight-ap device event to apply port configuration
Trigger environment: Parameters that can be set in the shell - $ACCESS_VLAN=(1)
  The value in the parenthesis is a default value
Trigger mapping function: CISCO_LWAP_AUTO_SMARTPORT

Trigger Id: word
Trigger description: word
Trigger environment:
Trigger mapping function:
```

This example shows how to use the **show shell functions** command to view the built-in macros in the switch software:

```
Device# show shell functions
#User defined functions:

#Built-in functions:
function CISCO_AP_AUTO_SMARTPORT () {
    if [[ $LINKUP == YES ]]; then
        conf t
            interface  $INTERFACE
                macro description $TRIGGER
                switchport trunk encapsulation dot1q
                switchport trunk native vlan $NATIVE_VLAN
                switchport trunk allowed vlan ALL
```

```
                switchport mode trunk
                switchport nonegotiate
                auto qos voip trust
                mls qos trust cos
                if [[ $LIMIT == 0 ]]; then
                  default srr-queue bandwidth limit
                else
                  srr-queue bandwidth limit $LIMIT
                fi
                if [[ $SW_POE == YES ]]; then
                   if [[ $AP125X == AP125X ]]; then
                      macro description AP125X
                      macro auto port sticky
                      power inline port maximum 20000
                   fi
                fi
             exit
        end
    fi
    if [[ $LINKUP == NO ]]; then
        conf t
            interface  $INTERFACE
                no macro description
                no switchport nonegotiate
                no switchport trunk native vlan $NATIVE_VLAN
                no switchport trunk allowed vlan ALL
                no auto qos voip trust
                no mls qos trust cos
                default srr-queue bandwidth limit
                if [[ $AUTH_ENABLED == NO ]]; then
                  no switchport mode
                  no switchport trunk encapsulation
                fi
                if [[ $STICKY == YES ]]; then
                   if [[ $SW_POE == YES ]]; then
                      if [[ $AP125X == AP125X ]]; then
                         no macro auto port sticky
                         no power inline port maximum
                      fi
                   fi
                fi
            exit
        end
    fi
}
<output truncated>
```

show system mtu

To display the global maximum transmission unit (MTU) or maximum packet size set for the switch, use the **show system mtu** command in privileged EXEC mode.

show system mtu

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

For information about the MTU values and the stack configurations that affect the MTU values, see the **system mtu** command.

Examples

This is an example of output from the **show system mtu** command:

```
Device# show system mtu
Global Ethernet MTU is 1500 bytes.
```

show tech-support

To automatically run **show** commands that display system information, use the **show tech-support** command in the privilege EXEC mode.

show tech-support
[**cef** | **cft** | **eigrp** | **evc** | **fnf** | | **ipc** | **ipmulticast** | **ipsec** | **mfib** | **nat** | **nbar** | **onep** | **ospf** | **page** | **password** | **rsvp** | **subscriber** | **vrrp** | **wccp**

Syntax Description

cef	(Optional) Displays CEF related information.
cft	(Optional) Displays CFT related information.
eigrp	(Optional) Displays EIGRP related information.
evc	(Optional) Displays EVC related information.
fnf	(Optional) Displays flexible netflow related information.
ipc	(Optional) Displays IPC related information.
ipmulticast	(Optional) Displays IP multicast related information.
ipsec	(Optional) Displays IPSEC related information.
mfib	(Optional) Displays MFIB related information.
nat	(Optional) Displays NAT related information.
nbar	(Optional) Displays NBAR related information.
onep	(Optional) Displays ONEP related information.
ospf	(Optional) Displays OSPF related information.
page	(Optional) Displays the command output on a single page at a time. Use the Return key to display the next line of output or use the space bar to display the next page of information. If not used, the output scrolls (that is, it does not stop for page breaks). Press the **Ctrl-C** keys to stop the command output.
password	(Optional) Leaves passwords and other security information in the output. If not used, passwords and other security-sensitive information in the output are replaced with the label "<removed>".
rsvp	(Optional) Displays IP RSVP related information.
subscriber	(Optional) Displays subscriber related information.
vrrp	(Optional) Displays VRRP related information.
wccp	(Optional) Displays WCCP related information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was implemented.

Usage Guidelines

The output from the **show tech-support** command is very long. To better manage this output, you can redirect the output to a file (for example, **show tech-support** > *filename*) in the local writable storage file system or the remote file system. Redirecting the output to a file also makes sending the output to your Cisco Technical Assistance Center (TAC) representative easier.

You can use one of the following redirection methods:

- > *filename* - Redirects the output to a file.
- >> *filename* - Redirects the output to a file in append mode.

show tech-support bgp

To automatically run show commands that display BGP related system information, use the **show tech-support bgp** command in the privileged EXEC mode.

show tech-support bgp [**address-family** {**all** | **ipv4** [**flowspec** | **multicast** | **unicast** | [**mdt** | **mvpn**] {**all** | **vrf** *vrf-instance-name*}] |**ipv6** [**flowspec** | **multicast** | **mvpn** {**all** | **vrf** *vrf-instance-name*} | **unicast**] | **l2vpn** [**evpn** | **vpls**] | **link-state** [**link-state**] | [**nsap** | **rtfilter**] [**unicast**] | [**vpnv4** | **vpnv6**] [**flowspec** | **multicast** | **unicast**] {**all** | **vrf** *vrf-instance-name*} }] [**detail**]

Syntax Description

address-family	(Optional) Displays the output for a specified address family.
address-family all	(Optional) Displays the output for all address families.
ipv4	(Optional) Displays the output for IPv4 address family.
ipv6	(Optional) Displays the output for IPv6 address family.
l2vpn	(Optional) Displays the output for L2VPN address family.
link-state	(Optional) Displays the output for Link State address family.
nsap	(Optional) Displays the output for NSAP address family.
rtfilter	(Optional) Displays the output for RT Filter address family.
vpnv4	(Optional) Displays the output for VPNv4 address family.
vpnv6	(Optional) Displays the output for VPNv6 address family.
flowspec	(Optional) Displays the flowspec related information for an address family.
multicast	(Optional) Displays the multicast related information for an address family.
unicast	(Optional) Displays the unicast related information for an address family.
mdt	(Optional) Displays the Multicast Distribution Tree (MDT) related information for an address family.

mvpn	(Optional) Displays the Multicast VPN (MVPN) related information for an address family.
vrf	Displays the information for a VPN Routing/Forwarding instance.
evpn	(Optional) Displays the Ethernet VPN (EVPN) related information for an address family.
vpls	(Optional) Displays the Virtual Private LAN Services (VPLS) related information for an address family.
vrf-instance-name	Specifies the name of the VPN Routing/Forwarding instance.
all	Displays the information about all VPN NLRIs.
detail	(Optional) Displays the detailed routes information.

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Usage Guidelines

The **show tech-support bgp** command is used to display the outputs of various BGP show commands and log them to the show-tech file. The output from the **show tech-support bgp** command is very long. To better manage this output, you can redirect the output to a file (for example, **show tech-support > filename**) in the local writable storage file system or the remote file system. Redirecting the output to a file also makes sending the output to your Cisco Technical Assistance Center (TAC) representative easier.

You can use one of the following redirection methods:

- > filename - Redirects the output to a file.
- >> filename - Redirects the output to a file in append mode.

The following **show** commands run automatically when the **show tech-support bgp** command is used:

- **show clock**
- **show version**
- **show running-config**
- **show process cpu sorted**
- **show process cpu history**
- **show process memory sorted**

The following **show** commands for a specific address family run automnatically when the **show tech-support bgp address-family***address-family-name address-family-modifier* command is used:

- **show bgp** *address-family-name address-family-modifier* **summary**
- **show bgp** *address-family-name address-family-modifier* **detail**
- **show bgp** *address-family-name address-family-modifier* **internal**
- **show bgp** *address-family-name address-family-modifier* **neighbors**
- **show bgp** *address-family-name address-family-modifier* **update-group**
- **show bgp** *address-family-name address-family-modifier* **replication**
- **show bgp** *address-family-name address-family-modifier* **community**
- **show bgp** *address-family-name address-family-modifier* **dampening dampened-paths**
- **show bgp** *address-family-name address-family-modifier* **dampening flap-statistics**
- **show bgp** *address-family-name address-family-modifier* **dampening parameters**
- **show bgp** *address-family-name address-family-modifier* **injected-paths**
- **show bgp** *address-family-name address-family-modifier* **cluster-ids**
- **show bgp** *address-family-name address-family-modifier* **cluster-ids internal**
- **show bgp** *address-family-name address-family-modifier* **peer-group**
- **show bgp** *address-family-name address-family-modifier* **pending-prefixes**
- **show bgp** *address-family-name address-family-modifier* **rib-failure**

In addition to the above commands, the following segment routing specific **show** commands also run when the **show tech-support bgp** command is used:

- **show bgp all binding-sid**
- **show segment-routing client**
- **show segment-routing mpls state**
- **show segment-routing mpls gb**
- **show segment-routing mpls connected-prefix-sid-map protocol ipv4**
- **show segment-routing mpls connected-prefix-sid-map protocol backup ipv4**
- **show mpls traffic-eng tunnel auto-tunnel client bgp**

show tech-support diagnostic

To display diagnostic information for technical support, use the **show tech-support diagnostic** command in privileged EXEC mode.

show tech-support diagnostic

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Usage Guidelines

The output of this command is very long. To better manage this output, you can redirect the output to a file (for example, **show tech-support diagnostic** > **flash:***filename*) in the local writable storage file system or remote file system.

Note For devices that support stacking, this command is executed on every switch that is up. For devices that do not support stacking, this command is executed only on the active switch.

The output of this command displays the output of the following commands:

- **show clock**
- **show version**
- **show running-config**
- **show inventory**
- **show diagnostic bootup level**
- **show diagnostic status**
- **show diagnostic content switch all**
- **show diagnostic result switch all detail**
- **show diagnostic schedule switch all**
- **show diagnostic post**
- **show diagnostic description switch [switch number] test all**
- **show logging onboard switch [switch number] clilog detail**
- **show logging onboard switch [switch number] counter detail**
- **show logging onboard switch [switch number] environment detail**
- **show logging onboard switch [switch number] message detail**

- **show logging onboard switch [switch number] poe detail**
- **show logging onboard switch [switch number] status**
- **show logging onboard switch [switch number] temperature detail**
- **show logging onboard switch [switch number] uptime detail**
- **show logging onboard switch [switch number] voltage detail**

Examples

The following is a sample output from the **show tech-support diagnostic** command:

```
Device# show tech-support diagnostic

.
.
.
------------------ show diagnostic status ------------------

<BU> - Bootup Diagnostics, <HM> - Health Monitoring Diagnostics,

<OD> - OnDemand Diagnostics, <SCH> - Scheduled Diagnostics

====== ================================= ================================ ======
Card   Description                       Current Running Test             Run by
------ --------------------------------- -------------------------------- ------
1      C9300-24P                         N/A                              N/A


2      MODEL UNSET                       N/A                              N/A


3      MODEL UNSET                       N/A                              N/A


4      MODEL UNSET                       N/A                              N/A


5      MODEL UNSET                       N/A                              N/A


6      MODEL UNSET                       N/A                              N/A


7      MODEL UNSET                       N/A                              N/A


====== ================================= ================================ ======
```

```
------------------ show diagnostic content switch all ------------------

switch 1:

  Diagnostics test suite attributes:
    M/C/* - Minimal bootup level test / Complete bootup level test / NA
      B/* - Basic ondemand test / NA
    P/V/* - Per port test / Per device test / NA
    D/N/* - Disruptive test / Non-disruptive test / NA
      S/* - Only applicable to standby unit / NA
      X/* - Not a health monitoring test / NA
      F/* - Fixed monitoring interval test / NA
      E/* - Always enabled monitoring test / NA
      A/I - Monitoring is active / Monitoring is inactive

                                                          Test Interval   Thre-
  ID   Test Name                           Attributes     day hh:mm:ss.ms shold
  ==== ================================== ============   =============== =====
    1) DiagGoldPktTest -----------------> *BPN*X**I       not configured  n/a
    2) DiagThermalTest -----------------> *B*N****A       000 00:01:30.00 5
    3) DiagFanTest ---------------------> *B*N****A       000 00:01:30.00 5
    4) DiagPhyLoopbackTest -------------> *BPD*X**I       not configured  n/a
    5) DiagScratchRegisterTest ---------> *B*N****A       000 00:01:30.00 5
    6) TestUnusedPortLoopback ----------> *BPN****I       not configured  n/a
    7) TestPortTxMonitoring ------------> *BPN****A       000 00:01:30.00 1
    8) DiagPoETest ---------------------> ***D*X**I       not configured  n/a
    9) DiagStackCableTest --------------> ***D*X**I       not configured  n/a
   10) DiagMemoryTest ------------------> *B*D*X**I       not configured  n/a


switch 2:

  Diagnostics test suite attributes:
```

```
    M/C/* - Minimal bootup level test / Complete bootup level test / NA
      B/* - Basic ondemand test / NA
    P/V/* - Per port test / Per device test / NA
    D/N/* - Disruptive test / Non-disruptive test / NA
      S/* - Only applicable to standby unit / NA
      X/* - Not a health monitoring test / NA
      F/* - Fixed monitoring interval test / NA
      E/* - Always enabled monitoring test / NA
      A/I - Monitoring is active / Monitoring is inactive

                                                          Test Interval   Thre-
  ID   Test Name                           Attributes     day hh:mm:ss.ms shold
  ==== ================================== ============   =============== =====
    1) DiagGoldPktTest ----------------> *BPN*X**I       not configured  n/a
    2) DiagThermalTest ----------------> *B*N****A       000 00:01:30.00 5
    3) DiagFanTest --------------------> *B*N****A       000 00:01:30.00 5
    4) DiagPhyLoopbackTest ------------> *BPD*X**I       not configured  n/a
    5) DiagScratchRegisterTest ---------> *B*N****A       000 00:01:30.00 5
    6) TestUnusedPortLoopback ----------> *BPN****I       not configured  n/a
    7) TestPortTxMonitoring ------------> *BPN****A       000 00:01:30.00 1
    8) DiagPoETest ---------------------> ***D*X**I       not configured  n/a
    9) DiagStackCableTest --------------> ***D*X**I       not configured  n/a
   10) DiagMemoryTest ------------------> *B*D*X**I       not configured  n/a
.
.
.
------------------ show logging onboard switch 4 clilog detail ------------------


--------------------------------------------------------------------------------
CLI LOGGING SUMMARY INFORMATION
--------------------------------------------------------------------------------
COUNT COMMAND
--------------------------------------------------------------------------------
No summary data to display
```

```
--------------------------------------------------------------------------------

--------------------------------------------------------------------------------

CLI LOGGING CONTINUOUS INFORMATION

--------------------------------------------------------------------------------

MM/DD/YYYY HH:MM:SS COMMAND

--------------------------------------------------------------------------------


No continuous data

--------------------------------------------------------------------------------



------------------ show logging onboard switch 5 clilog detail ------------------


--------------------------------------------------------------------------------

CLI LOGGING SUMMARY INFORMATION

--------------------------------------------------------------------------------

COUNT COMMAND

--------------------------------------------------------------------------------

No summary data to display

--------------------------------------------------------------------------------

--------------------------------------------------------------------------------

CLI LOGGING CONTINUOUS INFORMATION

--------------------------------------------------------------------------------

MM/DD/YYYY HH:MM:SS COMMAND

--------------------------------------------------------------------------------


No continuous data

--------------------------------------------------------------------------------


.
.
.
```

show tech-support poe

To display the output of all the PoE-related troubleshooting commands, use the **show tech-support poe** command in privileged EXEC mode. This command displays the output of the following commands:

- **show clock**
- **show version**
- **show running-config**
- **show log**
- **show interface**
- **show interface status**
- **show controllers ethernet-controller**
- **show controllers power inline**
- **show cdp neighbors detail**
- **show llpd neighbors detail**
- **show post**
- **show platform software ilpower details**
- **show platform software ilpower system** *switch-id*
- **show power inline**
- **show power inline** *interface-id* **detail**
- **show power inline police**
- **show power inline priority**
- **show platform software trace message platform-mgr switch** *switch-number R0*
- **show platform software trace message fed switch** *switch-number*
- **show platform hardware fed switch** *switch-number* **fwd-asic register read** *register-name pimdeviceid*
- **show platform frontend-controller manager 0** *switch-number*
- **show platform frontend-controller subordinate 0** *switch-number*
- **show platform frontend-controller version 0** *switch-number*
- **show stack-power budgeting**
- **show stack-power detail**

Command Default This command has no arguments or keywords.

Command Modes Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

This example shows the output from the **show tech-support poe** command:

```
Device# show tech-support poe

------------------ show clock ------------------


*17:39:28.741 PDT Wed Aug 22 2018

------------------ show version ------------------
Cisco IOS XE Software, Version Version 16.10.01
Cisco IOS Software [Gibraltar], Catalyst L3 Switch Software (CAT9K_LITE_IOSXE), Version
16.10.1, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2018 by Cisco Systems, Inc.
Compiled Wed 13-Jun-18 05:27 by mcpre


Cisco IOS-XE software, Copyright (c) 2005-2018 by cisco Systems, Inc.
All rights reserved.  Certain components of Cisco IOS-XE software are
licensed under the GNU General Public License ("GPL") Version 2.0.  The
software code licensed under GPL Version 2.0 is free software that comes
with ABSOLUTELY NO WARRANTY.  You can redistribute and/or modify such
GPL code under the terms of GPL Version 2.0.  For more details, see the
documentation or "License Notice" file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.


ROM: IOS-XE ROMMON
BOOTLDR: System Bootstrap, Version 8.4 DEVELOPMENT SOFTWARE
Switch uptime is 49 minutes
Uptime for this control processor is 53 minutes
System returned to ROM by Image Install
System image file is "flash:packages.conf"
Last reload reason: Image Install



This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.


Technology Package License Information:

------------------------------------------------------------------------------
Technology-package                                          Technology-package
Current                       Type                             Next reboot
```

```
-------------------------------------------------------------------------------
network-essentials      Smart License                    network-essentials
None                    Subscription Smart License       None

cisco C9300-24T (ARM64) processor with 519006K/3071K bytes of memory.
Processor board ID JPG220200A8
1 Virtual Ethernet interface
56 Gigabit Ethernet interfaces
2048K bytes of non-volatile configuration memory.
2000996K bytes of physical memory.
819200K bytes of Crash Files at crashinfo:.
819200K bytes of Crash Files at crashinfo-2:.
1941504K bytes of Flash at flash:.
1941504K bytes of Flash at flash-2:.
0K bytes of WebUI ODM Files at webui:.

Base Ethernet MAC Address          : 00:bf:77:62:62:80
Motherboard Assembly Number        : 73-18700-2
Motherboard Serial Number          : JAE220202YB
Model Revision Number              : 15
Motherboard Revision Number        : 07
Model Number                       : C9300-24T
System Serial Number               : JPG220200A8


Switch Ports Model              SW Version        SW Image              Mode
------ ----- -----              ----------        ----------            ----
*    1 24    C9300-24T          16.10.1           CAT9K_LITE_IOSXE      INSTALL

------------------ show running-config ------------------


Building configuration...

Current configuration : 22900 bytes
!
! Last configuration change at 14:59:57 PDT Mon Sep 11 2017
!
version 16.3
no service pad
service timestamps debug datetime msec localtime show-timezone
service timestamps log datetime msec localtime show-timezone
service compress-config
no platform punt-keepalive disable-kernel-core
platform shell
!
hostname stack9-mixed2
!
!
vrf definition Mgmt-vrf
 !
 address-family ipv4
 exit-address-family
 !
 address-family ipv6
 exit-address-family
!
no logging monitor
!
no aaa new-model
boot system switch all flash:packages.conf
clock timezone PDT -7 0
stack-mac persistent timer 4
switch 1 provision ws-c3850-24xs
```

```
!
stack-power stack Powerstack-11
 mode redundant strict
!
stack-power switch 1
 stack Powerstack-11
!
ip routing
!
crypto pki trustpoint TP-self-signed-2636786964
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-2636786964
 revocation-check none
 rsakeypair TP-self-signed-2636786964
!
crypto pki certificate chain TP-self-signed-2636786964
 certificate self-signed 01
  30820330 30820218 A0030201 02020101 300D0609 2A864886 F70D0101 05050030
  31312F30 2D060355 04031326 494F532D 53656C66 2D536967 6E65642D 43657274
  69666963 6174652D 32363336 37383639 3634301E 170D3137 30333137 31383331
  31325A17 0D323030 31303130 30303030 305A3031 312F302D 06035504 03132649
  4F532D53 656C662D 5369676E 65642D43 65727469 66696361 74652D32 36333637
  38363936 34308201 22300D06 092A8648 86F70D01 01010500 0382010F 00308201
  0A028201 0100E7C5 F498308A 83FF02DB 48AC4428 2F738E43 8587DD2E D1D43918
  7921617F 563890D7 35707C69 413D9F6D A160A6E2 D741C0B3 8E2969EA 9E732EA8
  D3BD6B75 3465C0E6 0FAC1055 340903A5 0EF67AE4 271D73BF F6C91B39 A13C2423
  9250D266 86E07FBC B41851AC 2B03B570 73300C09 0D1B15D1 E56DDA9A 4D39CDF2
  0C7A0831 C634DFE8 3EA55909 D9EEFEA7 B0EB872E 0E91CA86 B90965CC 326780EA
  28274CB1 EB13CA17 08959E01 8F9D25EC 4F8CE767 394E345C E870D776 10758D21
  9D6BD6CD D7619DD0 28B1E6CB D1032A62 DC215510 BA58895E D3724D3C 2A8481D4
  5E5129F5 65CE9105 47DCFD46 1AA7E20E 1D20E4DD 7C786428 83ACCDCE C5900822
  F85AF081 FF130203 010001A3 53305130 0F060355 1D130101 FF040530 030101FF
  301F0603 551D2304 18301680 149EE39D 6B4CC129 72868658 69880994 7AC71912
  04301D06 03551D0E 04160414 9EE39D6B 4CC12972 86865869 8809947A C7191204
  300D0609 2A864886 F70D0101 05050003 82010100 C42EAF92 1D2324B9 2B0153DD
  A85E607E FA9FA0AD BB677982 B5DAC3F7 DE938EC9 6F948385 9916A359 AF2BBA86
  06F04B7E 5B736DD7 CDD89067 1887C177 9241CDF5 0943000D D940F982 55F3DD8A
  9E52167E 64074D23 A1E93445 1B60E4A0 D923F5FA 19064241 E575D6B9 7E1CCE9C
  3957A4C7 67F86FE4 3CC37107 B003873A 3D986787 7DF29056 29D42E30 4AE1D7AC
  3DABD1E8 940DDDF9 C14DCE35 71C79000 A7AF6B28 AD050608 4E7B16CB 7ED8D32E
  FB4B5FF8 CDA2FFCD 3FDAFEF6 AC279A80 03A7FC31 FEB27C2F D7AEFCAE 1B01850F
  AEEAC787 1F1B6BBB 380AA70F CACE89AF 3B0096B6 05906C96 8D004FDC D35AECFC
  A644C0AF 4F874C6D 67F5769E A6147323 D199FE63
        quit
!
errdisable recovery cause inline-power
errdisable recovery interval 30
license boot level ipservicesk9
diagnostic bootup level minimal
spanning-tree mode rapid-pvst
spanning-tree extend system-id
!
redundancy
 mode sso
!
class-map match-any system-cpp-police-topology-control
  description Topology control
class-map match-any system-cpp-police-sw-forward
  description Sw forwarding, L2 LVX data, LOGGING
class-map match-any system-cpp-default
  description EWLC control, EWCL data
!
policy-map port_child_policy
 class non-client-nrt-class
```

```
  bandwidth remaining ratio 10
policy-map system-cpp-policy
 class system-cpp-police-data
  police rate 600 pps
 class system-cpp-police-sys-data
  police rate 100 pps
!
interface Port-channel1
 no switchport
 no ip address
!
interface GigabitEthernet0/0
 vrf forwarding Mgmt-vrf
 ip address 10.5.49.131 255.255.255.0
 negotiation auto
!
interface FortyGigabitEthernet1/1/1
!
interface TenGigabitEthernet1/0/1
!
interface FortyGigabitEthernet2/1/1
 shutdown
!
interface TenGigabitEthernet2/1/1
 shutdown
!
interface GigabitEthernet3/0/40
 shutdown
!
interface GigabitEthernet9/0/1
 power inline port poe-ha
!
interface GigabitEthernet9/0/11
 power inline port priority high
!
interface Vlan1
 no ip address
!
ip forward-protocol nd
ip http server
ip http authentication local
ip http secure-server
!
ip tftp source-interface GigabitEthernet0/0
ip route 20.20.20.0 255.255.255.0 2.2.2.3
ip ssh time-out 60
ip ssh authentication-retries 2
ip ssh version 2
ip ssh server algorithm encryption aes128-ctr aes192-ctr aes256-ctr
ip ssh client algorithm encryption aes128-ctr aes192-ctr aes256-ctr
!
ip access-list extended AutoQos-4.0-wlan-Acl-Bulk-Data
 permit tcp any any eq 22
 permit tcp any any eq 465
 permit tcp any any eq 143
 permit tcp any any eq 993
 permit tcp any any eq 995
 permit tcp any any eq 1914
 permit tcp any any eq ftp
 permit tcp any any eq ftp-data
 permit tcp any any eq smtp
 permit tcp any any eq pop3
ip access-list extended AutoQos-4.0-wlan-Acl-MultiEnhanced-Conf
 permit udp any any range 16384 32767
```

```
 permit tcp any any range 50000 59999
ip access-list extended AutoQos-4.0-wlan-Acl-Scavanger
 permit tcp any any range 2300 2400
 permit udp any any range 2300 2400
 permit tcp any any range 6881 6999
 permit tcp any any range 28800 29100
 permit tcp any any eq 1214
 permit udp any any eq 1214
 permit tcp any any eq 3689
 permit udp any any eq 3689
 permit tcp any any eq 11999
ip access-list extended AutoQos-4.0-wlan-Acl-Signaling
 permit tcp any any range 2000 2002
 permit tcp any any range 5060 5061
 permit udp any any range 5060 5061
ip access-list extended AutoQos-4.0-wlan-Acl-Transactional-Data
 permit tcp any any eq 443
 permit tcp any any eq 1521
 permit udp any any eq 1521
 permit tcp any any eq 1526
 permit udp any any eq 1526
 permit tcp any any eq 1575
 permit udp any any eq 1575
 permit tcp any any eq 1630
 permit udp any any eq 1630
 permit tcp any any eq 1527
 permit tcp any any eq 6200
 permit tcp any any eq 3389
 permit tcp any any eq 5985
 permit tcp any any eq 8080
!
control-plane
 service-policy input system-cpp-policy
!
!
no vstack
!
line con 0
 exec-timeout 0 0
 stopbits 1
 speed 115200
line aux 0
 stopbits 1
line vty 0 4
 login
line vty 5 15
 login
!
!
mac address-table notification mac-move
wsma agent exec
 profile httplistener
 profile httpslistener
!
wsma agent config
 profile httplistener
 profile httpslistener
!
wsma agent filesys
 profile httplistener
 profile httpslistener
!
wsma agent notify
 profile httplistener
```

```
 profile httpslistener
!
!
wsma profile listener httplistener
 transport http
!
wsma profile listener httpslistener
 transport https
!
ap dot11 airtime-fairness policy-name Default 0
ap group default-group
ap hyperlocation ble-beacon 0
ap hyperlocation ble-beacon 1
ap hyperlocation ble-beacon 2
ap hyperlocation ble-beacon 3
ap hyperlocation ble-beacon 4
end
------------------ show log ------------------



Syslog logging: enabled (0 messages dropped, 16 messages rate-limited, 0 flushes, 0 overruns,
 xml disabled, filtering disabled)


No Active Message Discriminator.




No Inactive Message Discriminator.



    Console logging: disabled

    Monitor logging: level debugging, 0 messages logged, xml disabled,

                     filtering disabled

    Buffer logging:  level debugging, 782 messages logged, xml disabled,

                    filtering disabled

    Exception Logging: size (4096 bytes)

    Count and timestamp logging messages: disabled

    File logging: disabled

    Persistent logging: disabled


No active filter modules.
```

```
    Trap logging: level informational, 310 message lines logged

        Logging Source-Interface:       VRF Name:


Log Buffer (4096 bytes):

rev) PD Class      : Class 3/

    (curr/prev) PD Priority   : low/unknown

    (curr/prev) Power Type   : Type 2 PSE/Type 2 PSE

    (curr/prev) mdi_pwr_support: 15/0

    (curr/prev Power Pair)     : Signal/

    (curr/prev) PSE Pwr Source : Primary/Unknown

Aug 22 17:17:28.966 PDT: %LINK-3-UPDOWN: Interface FiveGigabitEthernet1/0/1, changed state
 to down

Aug 22 17:17:29.196 PDT: %ILPOWER-5-POWER_GRANTED: Interface Fi1/0/1: Power granted

Aug 22 17:17:47.209 PDT: %SYS-5-CONFIG_I: Configured from console by console

Aug 22 17:17:50.200 PDT: %ILPOWER-7-DETECT: Interface Fi1/0/1: Power Device detected: IEEE
 PD

Aug 22 17:17:51.822 PDT: %ILPOWER-5-POWER_GRANTED: Interface Fi1/0/1: Power granted

Aug 22 17:17:52.321 PDT: ilpower delete power from pd linkdown Fi1/0/1

Aug 22 17:17:52.321 PDT: Ilpower interface (Fi1/0/1), delete allocated power 15400

Aug 22 17:17:52.321 PDT: Ilpower interface (Fi1/0/1) setting ICUT_OFF threshold to 0.

Aug 22 17:17:52.321 PDT:  ilpower_notify_lldp_power_via_mdi_tlv Fi1/0/1 pwr alloc 0

Aug 22 17:17:52.321 PDT: Fi1/0/1 AUTO PORT PWR Alloc 130 Request 130

Aug 22 17:17:52.321 PDT: Fi1/0/1: LLDP NOTIFY TLV:

    (curr/prev) PSE Allocation(mW): 13000/0

    (curr/prev) PD Request(mW)    : 13000/0

    (curr/prev) PD Class      : Class 3/

    (curr/prev) PD Priority   : low/unknown

    (curr/prev) Power Type   : Type 2 PSE/Type 2 PSE

    (curr/prev) mdi_pwr_support: 15/0

    (curr/prev Power Pair)     : Signal/

    (curr/prev) PSE Pwr Source : Primary/Unknown

Aug 22 17:17:52.321 PDT: ILP notify LLDB-TLV: lldp power class tlv:
```

```
Aug 22 17:17:52.321 PDT:     (curr/prev) pwr value 15400/0

Aug 22 17:17:52.322 PDT: %SYS-5-CONFIG_I: Configured from console by console

Aug 22 17:17:54.323 PDT: %LINK-5-CHANGED: Interface FiveGigabitEthernet1/0/1, changed state
 to administratively down

Aug 22 17:18:11.981 PDT: ILP notify LLDB-TLV: lldp power class tlv:

Aug 22 17:18:11.981 PDT:     (curr/prev) pwr value 15400/0

Aug 22 17:18:11.982 PDT: %SYS-5-CONFIG_I: Configured from console by console

Aug 22 17:18:13.207 PDT: %ILPOWER-7-DETECT: Interface Fi1/0/1: Power Device detected: IEEE
 PD

Aug 22 17:18:13.207 PDT: (Fi1/0/1) data power pool 1

Aug 22 17:18:13.207 PDT: Ilpower PD device 3 class 6 from interface (Fi1/0/1)

Aug 22 17:18:13.207 PDT: (Fi1/0/1) state auto

Aug 22 17:18:13.207 PDT: (Fi1/0/1) data power pool: 1, pool 1

Aug 22 17:18:13.207 PDT: (Fi1/0/1) curr pwr usage 15400

Aug 22 17:18:13.207 PDT: (Fi1/0/1) req pwr 15400

Aug 22 17:18:13.207 PDT: (Fi1/0/1) total pwr 610000

Aug 22 17:18:13.207 PDT: (Fi1/0/1) power_status OK

Aug 22 17:18:13.207 PDT: ilpower new power from pd discovery Fi1/0/1, power_status ok

Aug 22 17:18:13.207 PDT: Ilpower interface (Fi1/0/1) power status change, allocated power
15400

Aug 22 17:18:13.207 PDT: ILP notify LLDB-TLV: lldp power class tlv:

Aug 22 17:18:13.207 PDT:     (curr/prev) pwr value 15400/0

Aug 22 17:18:13.208 PDT:  ilpower_notify_lldp_power_via_mdi_tlv Fi1/0/1 pwr alloc 15400

Aug 22 17:18:13.208 PDT: Fi1/0/1 AUTO PORT PWR Alloc 130 Request 130

Aug 22 17:18:13.208 PDT: Fi1/0/1: LLDP NOTIFY TLV:

    (curr/prev) PSE Allocation(mW): 13000/0

    (curr/prev) PD Request(mW)    : 13000/0

    (curr/prev) PD Class      : Class 3/

    (curr/prev) PD Priority   : low/unknown

    (curr/prev) Power Type    : Type 2 PSE/Type 2 PSE

    (curr/prev) mdi_pwr_support: 15/0

    (curr/prev Power Pair)     : Signal/

    (curr/prev) PSE Pwr Source : Primary/Unknown

Aug 22 17:18:13.981 PDT: %LINK-3-UPDOWN: Interface FiveGigabitEthernet1/0/1, changed state
```

```
 to down

Aug 22 17:18:14.207 PDT: %ILPOWER-5-POWER_GRANTED: Interface Fi1/0/1: Power granted

Aug 22 17:18:32.180 PDT: %SYS-5-LOG_CONFIG_CHANGE: Console logging disabled

Aug 22 17:18:32.242 PDT: %SYS-5-CONFIG_I: Configured from console by console

Aug 22 17:47:45.133 PDT: %SYS-5-CONFIG_I: Configured from console by console

Aug 22 17:47:45.717 PDT: %SYS-5-CONFIG_I: Configured from console by console

Aug 22 17:47:45.000 PDT: %SYS-6-CLOCKUPDATE: System clock has been updated from 17:47:45
PDT Wed Aug 22 2018 to 17:47:45 PDT Wed Aug 22 2018, configured from console by console.


------------------ show interface status ------------------



Port         Name               Status       Vlan       Duplex  Speed Type

Fi1/0/1                         notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/2                         notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/3                         notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/4                         notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/5                         notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/6                         notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/7                         notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/8                         notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/9                         notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/10                        notconnect   100          auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/11                        notconnect   100          auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/12                        notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/13                        notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/14                        notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/15                        notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/16                        notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/17                        notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/18                        notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX

Fi1/0/19                        notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
```

```
Fi1/0/20                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/21                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/22                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/23                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/24                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/25                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/26                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/27                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/28                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/29                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/30                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/31                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/32                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/33                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/34                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/35                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/36                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/37                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/38                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/39                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/40                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/41                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/42                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/43                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/44                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/45                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/46                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/47                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Fi1/0/48                  notconnect   1            auto   auto 100/1000/2.5G/5GBaseTX
Te1/1/1                    notconnect   1              auto   auto unknown
Te1/1/2                    notconnect   1              auto   auto unknown
Te1/1/3                    notconnect   1              auto   auto unknown
```

```
Te1/1/4                         notconnect   1            auto   auto unknown
Po1                             notconnect   unassigned   auto   auto N/A
Po100                           notconnect   unassigned   auto   auto N/A
------------------ show controllers ethernet-controller phy detail ------------------



Fi1/0/1 (if_id: 7)
-----------------------------------------------

 00e0 : 1140                  Control Register :  0001 0001 0100 0000
 00e1 : 7969                    Control Status :  0111 1001 0110 1001
 00e2 : ae02                         Phy ID 1 :  1010 1110 0000 0010
 00e3 : 5161                         Phy ID 2 :  0101 0001 0110 0001
 00e4 : 9181    Auto-Negotiation Advertisement :  1001 0001 1000 0001
 00e5 : c1e1     Auto-Negotiation Link Partner :  1100 0001 1110 0001
 00e6 : 006f    Auto-Negotiation Expansion Reg :  0000 0000 0110 1111
 00e7 : 0000       Next Page Transmit Register :  0000 0000 0000 0000
 00e8 : 6801   Link Partner Next page Register :  0110 1000 0000 0001
 00e9 : 0600              PHY Control Register :  0000 0110 0000 0000
 00ea : 3800                PHY Control Status :  0011 1000 0000 0000
 00f0 : 0001              PHY Specific Control :  0000 0000 0000 0001
 00f1 : 2301               PHY Specific Status :  0010 0011 0000 0001
 0000 : 3000               AN Control Register :  0011 0000 0000 0000
 0001 : 002d                 AN Control Status :  0000 0000 0010 1101
 0010 : 9181                 AN Advertisement :  1001 0001 1000 0001
 0013 : c1e1                  AN Link Partner :  1100 0001 1110 0001
 0016 : 2001             AN Next Page Transmit :  0010 0000 0000 0001
 0019 : 0000         AN Link Partner Next page :  0000 0000 0000 0000
 0020 : 21e3               AN Specific Control :  0010 0001 1110 0011
 0021 : 0000                AN Specific Status :  0000 0000 0000 0000
 000d : 4032                     Global Status :  0100 0000 0011 0010
```

```
 003b : 8400              MGBASE-T LED Control :  1000 0100 0000 0000
 003c : 0040          MGBASE-T LED Ctrl status :  0000 0000 0100 0000
 003d : 0000     MGBASE-T LED Ctrl High status :  0000 0000 0000 0000

------------------ show cdp neighbors detail ------------------

% CDP is not enabled

------------------ show lldp neighbors detail ------------------

% LLDP is not enabled
------------------ show post ------------------



Stored system POST messages:

Switch 1
---------

POST: MBIST Tests : Begin
POST: MBIST Tests : End, Status Passed

POST: CRYPTO Tests : Begin
POST: CRYPTO Tests : End, Status Passed

POST: PHY Loopback: loopback Test : Begin
POST: PHY Loopback: loopback Test : End, Status Passed

POST: Inline Power Controller Tests : Begin
POST: Inline Power Controller Tests : End, Status Passed

POST: Thermal, Temperature Tests : Begin
```

```
POST: Thermal, Temperature Tests : End, Status Passed


POST: Thermal, Fan Tests : Begin

POST: Thermal, Fan Tests : End, Status Passed


POST: SIF Tests : Begin

POST: SIF Tests : End, Status Passed

------------------ show power inline ------------------




Module   Available     Used     Remaining
           (Watts)     (Watts)    (Watts)
------   ---------   --------   ---------
1            610.0       15.4       594.6
Interface Admin  Oper       Power   Device              Class Max
                            (Watts)
--------- ------ ---------- ------- ------------------- ----- ----
Fi1/0/1   auto   on         15.4    Ieee PD             3     60.0
Fi1/0/2   auto   off        0.0     n/a                 n/a   60.0
Fi1/0/3   auto   off        0.0     n/a                 n/a   60.0
Fi1/0/4   auto   off        0.0     n/a                 n/a   60.0
Fi1/0/5   auto   off        0.0     n/a                 n/a   60.0
Fi1/0/6   auto   off        0.0     n/a                 n/a   60.0
Fi1/0/7   auto   off        0.0     n/a                 n/a   60.0
Fi1/0/8   auto   off        0.0     n/a                 n/a   60.0
Fi1/0/9   auto   off        0.0     n/a                 n/a   60.0
Fi1/0/10  auto   off        0.0     n/a                 n/a   60.0
Fi1/0/11  auto   off        0.0     n/a                 n/a   60.0
Fi1/0/12  auto   off        0.0     n/a                 n/a   60.0
Fi1/0/13  auto   off        0.0     n/a                 n/a   60.0
Fi1/0/14  auto   off        0.0     n/a                 n/a   60.0
```

```
Fi1/0/15  auto   off        0.0     n/a                n/a   60.0
Fi1/0/16  auto   off        0.0     n/a                n/a   60.0
Fi1/0/17  auto   off        0.0     n/a                n/a   60.0
Fi1/0/18  auto   off        0.0     n/a                n/a   60.0
Fi1/0/19  auto   off        0.0     n/a                n/a   60.0
Fi1/0/20  auto   off        0.0     n/a                n/a   60.0
Fi1/0/21  auto   off        0.0     n/a                n/a   60.0
Fi1/0/22  auto   off        0.0     n/a                n/a   60.0
Fi1/0/23  auto   off        0.0     n/a                n/a   60.0
Fi1/0/24  auto   off        0.0     n/a                n/a   60.0
Fi1/0/25  auto   off        0.0     n/a                n/a   60.0
Fi1/0/26  auto   off        0.0     n/a                n/a   60.0
Fi1/0/27  auto   off        0.0     n/a                n/a   60.0
Fi1/0/28  auto   off        0.0     n/a                n/a   60.0
Fi1/0/29  auto   off        0.0     n/a                n/a   60.0
Fi1/0/30  auto   off        0.0     n/a                n/a   60.0
Fi1/0/31  auto   off        0.0     n/a                n/a   60.0
Fi1/0/32  auto   off        0.0     n/a                n/a   60.0
Fi1/0/33  auto   off        0.0     n/a                n/a   60.0
Fi1/0/34  auto   off        0.0     n/a                n/a   60.0
Fi1/0/35  auto   off        0.0     n/a                n/a   60.0
Fi1/0/36  auto   off        0.0     n/a                n/a   60.0
Fi1/0/37  auto   off        0.0     n/a                n/a   60.0
Fi1/0/38  auto   off        0.0     n/a                n/a   60.0
Fi1/0/39  auto   off        0.0     n/a                n/a   60.0
Fi1/0/40  auto   off        0.0     n/a                n/a   60.0
Fi1/0/41  auto   off        0.0     n/a                n/a   60.0
Fi1/0/42  auto   off        0.0     n/a                n/a   60.0
Fi1/0/43  auto   off        0.0     n/a                n/a   60.0
Fi1/0/44  auto   off        0.0     n/a                n/a   60.0
Fi1/0/45  auto   off        0.0     n/a                n/a   60.0
Fi1/0/46  auto   off        0.0     n/a                n/a   60.0
```

```
Fi1/0/47  auto   off        0.0     n/a                n/a    60.0
Fi1/0/48  auto   off        0.0     n/a                n/a    60.0

------------------ show power inline police ------------------



Module   Available     Used     Remaining
           (Watts)     (Watts)    (Watts)
------   ---------   --------   ---------
1            610.0       15.4       594.6
Interface Admin  Oper       Admin      Oper       Cutoff Oper
          State  State      Police     Police     Power  Power
--------- ------ ---------- ---------- ---------- ------ -----
Fi1/0/1   auto   on         none       n/a        n/a    9.3
Fi1/0/2   auto   off        none       n/a        n/a    n/a
Fi1/0/3   auto   off        none       n/a        n/a    n/a
Fi1/0/4   auto   off        none       n/a        n/a    n/a
Fi1/0/5   auto   off        none       n/a        n/a    n/a
Fi1/0/6   auto   off        none       n/a        n/a    n/a
Fi1/0/7   auto   off        none       n/a        n/a    n/a
Fi1/0/8   auto   off        none       n/a        n/a    n/a
Fi1/0/9   auto   off        none       n/a        n/a    n/a
Fi1/0/10  auto   off        none       n/a        n/a    n/a
Fi1/0/11  auto   off        none       n/a        n/a    n/a
Fi1/0/12  auto   off        none       n/a        n/a    n/a
Fi1/0/13  auto   off        none       n/a        n/a    n/a
Fi1/0/14  auto   off        none       n/a        n/a    n/a
Fi1/0/15  auto   off        none       n/a        n/a    n/a
Fi1/0/16  auto   off        none       n/a        n/a    n/a
Fi1/0/17  auto   off        none       n/a        n/a    n/a
Fi1/0/18  auto   off        none       n/a        n/a    n/a
```

```
Fi1/0/19  auto   off        none       n/a        n/a    n/a
Fi1/0/20  auto   off        none       n/a        n/a    n/a
Fi1/0/21  auto   off        none       n/a        n/a    n/a
Fi1/0/22  auto   off        none       n/a        n/a    n/a
Fi1/0/23  auto   off        none       n/a        n/a    n/a
Fi1/0/24  auto   off        none       n/a        n/a    n/a
Fi1/0/25  auto   off        none       n/a        n/a    n/a
Fi1/0/26  auto   off        none       n/a        n/a    n/a
Fi1/0/27  auto   off        none       n/a        n/a    n/a
Fi1/0/28  auto   off        none       n/a        n/a    n/a
Fi1/0/29  auto   off        none       n/a        n/a    n/a
Fi1/0/30  auto   off        none       n/a        n/a    n/a
Fi1/0/31  auto   off        none       n/a        n/a    n/a
Fi1/0/32  auto   off        none       n/a        n/a    n/a
Fi1/0/33  auto   off        none       n/a        n/a    n/a
Fi1/0/34  auto   off        none       n/a        n/a    n/a
Fi1/0/35  auto   off        none       n/a        n/a    n/a
Fi1/0/36  auto   off        none       n/a        n/a    n/a
Fi1/0/37  auto   off        none       n/a        n/a    n/a
Fi1/0/38  auto   off        none       n/a        n/a    n/a
Fi1/0/39  auto   off        none       n/a        n/a    n/a
Fi1/0/40  auto   off        none       n/a        n/a    n/a
Fi1/0/41  auto   off        none       n/a        n/a    n/a
Fi1/0/42  auto   off        none       n/a        n/a    n/a
Fi1/0/43  auto   off        none       n/a        n/a    n/a
Fi1/0/44  auto   off        none       n/a        n/a    n/a
Fi1/0/45  auto   off        none       n/a        n/a    n/a
Fi1/0/46  auto   off        none       n/a        n/a    n/a
Fi1/0/47  auto   off        none       n/a        n/a    n/a
Fi1/0/48  auto   off        none       n/a        n/a    n/a
--------- ------ ---------- ---------- ---------- ------ -----
Totals:                                                  9.3
```

```
------------------ show power inline priority ------------------


Interface  Admin  Oper       Admin
           State  State      Priority
---------- ------ ---------- ----------

Fi1/0/1    auto   on         low
Fi1/0/2    auto   off        low
Fi1/0/3    auto   off        low
Fi1/0/4    auto   off        low
Fi1/0/5    auto   off        low
Fi1/0/6    auto   off        low
Fi1/0/7    auto   off        low
Fi1/0/8    auto   off        low
Fi1/0/9    auto   off        low
Fi1/0/10   auto   off        low
Fi1/0/11   auto   off        low
Fi1/0/12   auto   off        low
Fi1/0/13   auto   off        low
Fi1/0/14   auto   off        low
Fi1/0/15   auto   off        low
Fi1/0/16   auto   off        low
Fi1/0/17   auto   off        low
Fi1/0/18   auto   off        low
Fi1/0/19   auto   off        low
Fi1/0/20   auto   off        low
Fi1/0/21   auto   off        low
Fi1/0/22   auto   off        low
Fi1/0/23   auto   off        low
Fi1/0/24   auto   off        low
Fi1/0/25   auto   off        low
```

```
Fi1/0/26   auto   off        low
Fi1/0/27   auto   off        low
Fi1/0/28   auto   off        low
Fi1/0/29   auto   off        low
Fi1/0/30   auto   off        low
Fi1/0/31   auto   off        low
Fi1/0/32   auto   off        low
Fi1/0/33   auto   off        low
Fi1/0/34   auto   off        low
Fi1/0/35   auto   off        low
Fi1/0/36   auto   off        low
Fi1/0/37   auto   off        low
Fi1/0/38   auto   off        low
Fi1/0/39   auto   off        low
Fi1/0/40   auto   off        low
Fi1/0/41   auto   off        low
Fi1/0/42   auto   off        low
Fi1/0/43   auto   off        low
Fi1/0/44   auto   off        low
Fi1/0/45   auto   off        low
Fi1/0/46   auto   off        low
Fi1/0/47   auto   off        low
Fi1/0/48   auto   off        low
------------------ show interface ------------------
Vlan1 is administratively down, line protocol is down , Autostate Enabled
  Hardware is Ethernet SVI, address is f8b7.e24f.37c7 (bia f8b7.e24f.37c7)
  MTU 1500 bytes, BW 1000000 Kbit/sec, DLY 10 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive not supported
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output never, output hang never
```

```
  Last clearing of "show interface" counters never
  Input queue: 0/375/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts (0 IP multicasts)
     0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 packets output, 0 bytes, 0 underruns
     0 output errors, 1 interface resets
     0 unknown protocol drops
     0 output buffer failures, 0 output buffers swapped out
GigabitEthernet0/0 is up, line protocol is up
  Hardware is RP management port, address is f8b7.e24f.3780 (bia f8b7.e24f.3780)
  Internet address is 10.8.40.172/16
  MTU 1500 bytes, BW 100000 Kbit/sec, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full Duplex, 100Mbps, link type is auto, media type is RJ45
  output flow-control is unsupported, input flow-control is unsupported
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:00, output 00:01:47, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/2531/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 5000 bits/sec, 3 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     1636640 packets input, 321164654 bytes, 0 no buffer
```

```
     Received 0 broadcasts (0 IP multicasts)
     0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 watchdog, 0 multicast, 0 pause input
     7641 packets output, 2207212 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     1414 unknown protocol drops
     0 babbles, 0 late collision, 0 deferred
     0 lost carrier, 0 no carrier, 0 pause output
     0 output buffer failures, 0 output buffers swapped out
     0 carrier transitions
FiveGigabitEthernet1/0/1 is down, line protocol is down (notconnect)
  Hardware is Five Gigabit Ethernet, address is f8b7.e24f.3781 (bia f8b7.e24f.3781)
  MTU 1500 bytes, BW 5000000 Kbit/sec, DLY 10 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Auto-duplex, Auto-speed, media type is 100/1000/2.5G/5GBaseTX
  input flow-control is on, output flow-control is unsupported
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/2000/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts (0 multicasts)
     0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 watchdog, 0 multicast, 0 pause input
```

```
     0 input packets with dribble condition detected
     0 packets output, 0 bytes, 0 underruns
     0 output errors, 0 collisions, 29 interface resets
     0 unknown protocol drops
     0 babbles, 0 late collision, 0 deferred
     0 lost carrier, 0 no carrier, 0 pause output
     0 output buffer failures, 0 output buffers swapped out
------------------ show controllers power inline module 1 ------------------


  Alchemy instance 0, address 0

 Pending event flag    : N N N N N N N N N N N N N N N N
 Current State         : 51 11 11 11 11 11 11 11
 Current Event         : 10 00 00 00 00 00 00 00
 Timers                : 00 19 19 1B 1B 1D 1D 1F 1F 21 21 23 23 25 25 27
 Error State           : 00 00 00 00 00 00 00 00
 Error Code            : 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 Power Status          : Y N N N N N N N N N N N N N N N
 Auto Config           : Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y
 Disconnect            : N N N N N N N N N N N N N N N N
 Detection Status      : 40 00 00 00 00 00 00 00
 Current Class         : 30 00 00 00 00 00 00 00
 Tweetie debug         : FF 00 00 00
 POE Commands pending at sub:
     Command 0 on each port : 00 00 00 00 00 00 00 00
     Command 1 on each port : 00 00 00 00 00 00 00 00
     Command 2 on each port : 00 00 00 00 00 00 00 00
     Command 3 on each port : 00 00 00 00 00 00 00 00
  Alchemy instance 1, address 7
------------------ show stack-power budgeting ------------------
```

```
Power Stack           Stack   Stack    Total   Rsvd    Alloc   Unused  Num  Num
Name                  Mode    Topolgy  Pwr(W)  Pwr(W)  Pwr(W)  Pwr(W)  SW   PS
--------------------  ------  -------  ------  ------  ------  ------  ---  ---
Powerstack-1          SP-PS   Stndaln  1100    30      475     595     1    1

    Power Stack           PS-A   PS-B   Power     Alloc     Avail   Consumd Pwr
SW  Name                  (W)    (W)    Budgt(W)  Power(W)  Pwr(W)  Sys/PoE(W)
--  --------------------  -----  -----  --------  --------  ------  -----------
1   Powerstack-1          0      1100   1070      475       595     145  /9
--  --------------------  -----  -----  --------  --------  ------  -----------
Totals:                                          475       595     145  /9


------------------ show stack-power detail ------------------

Power Stack           Stack   Stack    Total   Rsvd    Alloc   Unused  Num  Num
Name                  Mode    Topolgy  Pwr(W)  Pwr(W)  Pwr(W)  Pwr(W)  SW   PS
--------------------  ------  -------  ------  ------  ------  ------  ---  ---
Powerstack-1          SP-PS   Stndaln  1100    30      475     595     1    1

Power stack name: Powerstack-1
    Stack mode: Power sharing
    Stack topology: Standalone
    Switch 1:
        Power budget: 1070
        Power allocated: 475
        Low port priority value: 22
        High port priority value: 13
        Switch priority value: 4
        Port 1 status: Shut
        Port 2 status: Shut
        Neighbor on port 1: 0000.0000.0000
```

```
        Neighbor on port 2: 0000.0000.0000

------------------ show controllers power inline module 1 ------------------


  Alchemy instance 0, address 0

 Pending event flag    : N N N N N N N N N N N
 Current State         : 00 00 10 93 D8 E8
 Current Event         : 11 11 14 00 00 00
 Timers                : 22 00 00 00 00 00 00 00 00 00 00 00
 Error State           : 14 14 14 14 14 14
 Error Code            : 00 00 00 00 00 00 00 00 00 00 00 00
 Power Status          : N N N N N N N N N N N
 Auto Config           : N N N N N N N N N N N
 Disconnect            : N N N N N N N N N N N
 Detection Status      : F0 00 10 00 00 00
 Current Class         : 00 00 00 00 00 00
 Tweetie debug         : 00 00 00 00
 POE Commands pending at sub:
     Command 0 on each port : 00 00 00 00 00 00
     Command 1 on each port : 00 00 00 00 00 00
     Command 2 on each port : 00 00 00 00 00 00
     Command 3 on each port : 00 00 00 00 00 00
  Alchemy instance 1, address E

 Pending event flag    : N N N N N N N N N N N
 Current State         : 00 00 10 93 D8 E8
 Current Event         : 11 11 11 00 00 00
 Timers                : 2A 00 00 00 00 00 00 00 00 00 00 00
 Error State           : 26 26 26 26 26 2A
 Error Code            : 00 00 00 00 00 00 00 00 00 00 00 00
 Power Status          : N N N N N N N N N N N
 Auto Config           : N N N N N N N N N N N
 Disconnect            : N N N N N N N N N N N
 Detection Status      : F0 00 00 00 00 00
 Current Class         : 00 00 00 00 00 00
 Tweetie debug         : 00 00 00 00
 POE Commands pending at sub:
     Command 0 on each port : 00 00 00 00 00 00
     Command 1 on each port : 00 00 00 00 00 00
     Command 2 on each port : 00 00 00 00 00 00
     Command 3 on each port : 00 00 00 00 00 00

------------------ show stack-power detail ------------------


Power Stack           Stack   Stack    Total   Rsvd    Alloc   Unused  Num  Num
Name                  Mode    Topolgy  Pwr(W)  Pwr(W)  Pwr(W)  Pwr(W)  SW   PS
--------------------  ------  -------  ------  ------  ------  ------  ---  ---
Powerstack-1          SP-PS   Stndaln  1100    30      475     595     1    1


Power stack name: Powerstack-1

    Stack mode: Power sharing

    Stack topology: Standalone
```

```
    Switch 1:

        Power budget: 1070

        Power allocated: 475

        Low port priority value: 22

        High port priority value: 13

        Switch priority value: 4

        Port 1 status: Shut

        Port 2 status: Shut

        Neighbor on port 1: 0000.0000.0000

        Neighbor on port 2: 0000.0000.0000

------------------ show platform software ilpower details ------------------


ILP Port Configuration for interface Te2/0/1
    Initialization Done:   Yes
    ILP Supported:         Yes
    ILP Enabled:           Yes
    POST:                  Yes
    Detect On:             No
    Powered Device Detected            Yes
    Powered Device Class Done          No
    Cisco Powered Device:              No
    Power is On:           No
    Power Denied:          No
    Powered Device Type:               Null
    Powerd Device Class:              Null
    Power State:           Off
    Current State:         NGWC_ILP_DETECTING_S
    Previous State:        NGWC_ILP_DETECTING_S
    Requested Power in milli watts:       0
    Short Circuit Detected:                 0
    Short Circuit Count:             0
    Cisco Powerd Device Detect Count: 0
    Spare Pair mode:       0
    Spare Pair Architecture:       1
    Signal Pair Power allocation in milli watts: 0
    Spare Pair Power On:   0
    Powered Device power state:        0
    Timer:
        Power Good:        Stopped
        Power Denied:      Stopped
        Cisco Powered Device Detect:   Stopped
        IEEE Detect:       Stopped
        IEEE Short:        Stopped
        Link Down:         Stopped
        Voltage sense:            Stopped

------------------ show platform software ilpower system 3 ------------------


ILP System Configuration
    Slot:                3
    ILP Supported:       Yes
    Total Power:         1101000
```

```
    Used Power:           49400
    Initialization Done:  Yes
    Post Done:            Yes
    Post Result Logged:   No
    Post Result:          Success
    Power Summary:
        Module:           0
        Power Total:      1101000
        Power Used:       49400
        Power Threshold:  0
        Operation Status: On
    Pool:                 3
    Pool Valid:           Yes
    Total Power:          1101000
    Power Usage:          49400

------------------ show platform hardware fed switch 1 fwd-asic register read register-name
 pimdeviceid ------------------




For asic 0 core 0




------------------ show platform software trace message platform-mgr switch 1 R0
------------------







------------------ show platform software trace message fed switch 1 ------------------

------------------ show power inline Gi9/0/16 detail ------------------


 Interface: Gi9/0/16
 Inline Power Mode: auto
 Operational status: off
 Device Detected: no
 Device Type: n/a
 IEEE Class: n/a
 Discovery mechanism used/configured: Ieee and Cisco
 Police: off

 Power Allocated
 Admin Value: 60.0
 Power drawn from the source: 0.0
 Power available to the device: 0.0

 Actual consumption
 Measured at the port: 0.0
 Maximum Power drawn by the device since powered on: 0.0

 Absent Counter: 0
 Over Current Counter: 0
 Short Current Counter: 0
```

```
 Mosfet Counter: 0
 Invalid Signature Counter: 0
 Power Denied Counter: 0

 Power Negotiation Used: None
 LLDP Power Negotiation --Sent to PD--      --Rcvd from PD--
   Power Type:          -                    -
   Power Source:        -                    -
   Power Priority:      -                    -
   Requested Power(W):  -                    -
   Allocated Power(W):  -                    -

Four-Pair PoE Supported: Yes
Spare Pair Power Enabled: No
Four-Pair PD Architecture: N/A

------------------ show power inline Te8/0/1 detail ------------------


Interface Te8/0/1: inline power not supported

------------------ show power inline police ------------------


Module   Available     Used     Remaining
          (Watts)     (Watts)    (Watts)
------   ---------    --------   ---------
1             n/a        n/a         n/a
Interface Admin  Oper       Admin      Oper       Cutoff Oper
          State  State      Police     Police     Power  Power
--------- ------ ---------- ---------- ---------- ------ -----
--------- ------ ---------- ---------- ---------- ------ -----
Totals:                                                  0.0


Module   Available     Used     Remaining
          (Watts)     (Watts)    (Watts)
------   ---------    --------   ---------
2          1050.0        0.0      1050.0
Interface Admin  Oper       Admin      Oper       Cutoff Oper
          State  State      Police     Police     Power  Power
--------- ------ ---------- ---------- ---------- ------ -----
Te2/0/1   auto   off        none       n/a        n/a    n/a
Te2/0/2   auto   off        none       n/a        n/a    n/a
Te2/0/3   auto   off        none       n/a        n/a    n/a
Te2/0/4   auto   off        none       n/a        n/a    n/a
Te2/0/5   auto   off        none       n/a        n/a    n/a
Te2/0/6   auto   off        none       n/a        n/a    n/a
Te2/0/7   auto   off        none       n/a        n/a    n/a
Te2/0/8   auto   off        none       n/a        n/a    n/a
Te2/0/9   auto   off        none       n/a        n/a    n/a
Te2/0/10  auto   off        none       n/a        n/a    n/a
Te2/0/11  auto   off        none       n/a        n/a    n/a
Te2/0/12  auto   off        none       n/a        n/a    n/a
Te2/0/13  auto   off        none       n/a        n/a    n/a
Te2/0/14  auto   off        none       n/a        n/a    n/a
Te2/0/15  auto   off        none       n/a        n/a    n/a
Te2/0/16  auto   off        none       n/a        n/a    n/a
Te2/0/17  auto   off        none       n/a        n/a    n/a
Te2/0/18  auto   off        none       n/a        n/a    n/a
Te2/0/19  auto   off        none       n/a        n/a    n/a
Te2/0/20  auto   off        none       n/a        n/a    n/a
Te2/0/21  auto   off        none       n/a        n/a    n/a
```

```
Te2/0/22  auto   off        none       n/a        n/a    n/a
Te2/0/23  auto   off        none       n/a        n/a    n/a
Te2/0/24  auto   off        none       n/a        n/a    n/a
--------- ------ ---------- ---------- ---------- ------ -----
Totals:                                                   0.0


Module   Available     Used     Remaining
          (Watts)     (Watts)    (Watts)
------   ---------   --------   ---------
3          1131.0       49.4      1081.6
Interface Admin  Oper       Admin      Oper       Cutoff Oper
          State  State      Police     Police     Power  Power
--------- ------ ---------- ---------- ---------- ------ -----
Gi3/0/1   auto   off        none       n/a        n/a    n/a
Gi3/0/2   auto   off        none       n/a        n/a    n/a
Gi3/0/3   auto   off        none       n/a        n/a    n/a
Gi3/0/4   auto   off        none       n/a        n/a    n/a
Gi3/0/5   auto   off        none       n/a        n/a    n/a
Gi3/0/6   auto   off        none       n/a        n/a    n/a
Gi3/0/7   auto   off        none       n/a        n/a    n/a
Gi3/0/8   auto   off        none       n/a        n/a    n/a
Gi3/0/9   auto   off        none       n/a        n/a    n/a
Gi3/0/10  auto   off        none       n/a        n/a    n/a
Gi3/0/11  auto   off        none       n/a        n/a    n/a
Gi3/0/12  auto   off        none       n/a        n/a    n/a
Gi3/0/13  auto   on         none       n/a        n/a    3.6
Gi3/0/14  auto   on         none       n/a        n/a    7.0
Gi3/0/15  auto   off        none       n/a        n/a    n/a
Gi3/0/16  auto   on         none       n/a        n/a    3.7
Gi3/0/17  auto   on         none       n/a        n/a    3.7
Gi3/0/18  auto   off        none       n/a        n/a    n/a
Gi3/0/19  auto   on         none       n/a        n/a    3.7
Gi3/0/20  auto   off        none       n/a        n/a    n/a
Gi3/0/21  auto   on         none       n/a        n/a    3.7
Gi3/0/22  auto   off        none       n/a        n/a    n/a
Gi3/0/23  auto   off        none       n/a        n/a    n/a
Gi3/0/24  auto   off        none       n/a        n/a    n/a
Gi3/0/25  auto   off        none       n/a        n/a    n/a
Gi3/0/26  auto   off        none       n/a        n/a    n/a
Gi3/0/27  auto   off        none       n/a        n/a    n/a
Gi3/0/28  auto   off        none       n/a        n/a    n/a
Gi3/0/29  auto   off        none       n/a        n/a    n/a
Gi3/0/30  auto   off        none       n/a        n/a    n/a
Gi3/0/31  auto   off        none       n/a        n/a    n/a
Gi3/0/32  auto   off        none       n/a        n/a    n/a
Gi3/0/33  auto   off        none       n/a        n/a    n/a
Gi3/0/34  auto   off        none       n/a        n/a    n/a
Gi3/0/35  auto   on         none       n/a        n/a    2.3
Gi3/0/36  auto   off        none       n/a        n/a    n/a
Gi3/0/37  auto   off        none       n/a        n/a    n/a
Gi3/0/38  auto   off        none       n/a        n/a    n/a
Gi3/0/39  auto   off        none       n/a        n/a    n/a
Gi3/0/40  auto   off        none       n/a        n/a    n/a
Gi3/0/41  auto   off        none       n/a        n/a    n/a
Gi3/0/42  auto   off        none       n/a        n/a    n/a
Gi3/0/43  auto   off        none       n/a        n/a    n/a
Gi3/0/44  auto   off        none       n/a        n/a    n/a
Gi3/0/45  auto   off        none       n/a        n/a    n/a
Gi3/0/46  auto   off        none       n/a        n/a    n/a
Gi3/0/47  auto   off        none       n/a        n/a    n/a
Gi3/0/48  auto   off        none       n/a        n/a    n/a
--------- ------ ---------- ---------- ---------- ------ -----
Totals:                                                  27.7
```

```
------------------ show platform frontend-controller manager 0 1 ------------------


 showing manager info: 1
Tx cmd cnt SYS   App             24681
Rx cmd cnt SYS   App             24681
Tx cmd ignore SYS   App          0
Tx cmd Q full SYS   App          0
Tx cmd cnt SYS   App             17706
Rx cmd cnt SYS   App             11804
Tx cmd ignore SYS   App          0
Tx cmd Q full SYS   App          0
Tx cmd cnt SYS   App             0
Rx cmd cnt SYS   App             0
Tx cmd ignore SYS   App          0
Tx cmd Q full SYS   App          0
Tx cmd cnt POE   App             0
Rx cmd cnt POE   App             0
Tx cmd ignore POE   App          0
Tx cmd Q full POE   App          0
Tx cmd cnt FRUFE App             0
Rx cmd cnt FRUFE App             0
Tx cmd ignore FRUFE App          0
Tx cmd Q full FRUFE App          0
Tx cmd cnt SYS   App             1744
Rx cmd cnt SYS   App             993
Tx cmd ignore SYS   App          0
Tx cmd Q full SYS   App          0
Tx cmd cnt IMAGE App             13809
Rx cmd cnt IMAGE App             13808
Tx cmd ignore IMAGE App          0
Tx cmd Q full IMAGE App          0
Tx cmd cnt STACK App             0
Rx cmd cnt STACK App             0
Tx cmd ignore STACK App          0
Tx cmd Q full STACK App          0
Tx cmd cnt J2A   App             0
Rx cmd cnt J2A   App             0
Tx cmd ignore J2A   App          0
Tx cmd Q full J2A   App          0
Tx cmd cnt THERM App             0
Rx cmd cnt THERM App             0
Tx cmd ignore THERM App          0
Tx cmd Q full THERM App          0
Tx cmd cnt GPIO  App             0
Rx cmd cnt GPIO  App             255
Tx cmd ignore GPIO  App          255
Tx cmd Q full GPIO  App          255
Tx cmd cnt POE_E App             -369383984
Rx cmd cnt POE_E App             -369346528
Tx cmd ignore POE_E App          -1826379312
Tx cmd Q full POE_E App          -394693324
Tx cmd cnt DMSG  App             0
Rx cmd cnt DMSG  App             0
Tx cmd ignore DMSG  App          0
Tx cmd Q full DMSG  App          255
Tx reg cnt                       16
Rx reg cnt                       16
Tx reg ignore                    0
Tx reg Q full                    0
Rx invalid frame                 0
Rx invalid App                   748
Rx invalid Seq                   0
```

```
Rx invalid checksum               0
Nack cnt                          0
Send Break count                  0
Early Send Break count            0
Retransmission cnt                0

------------------ show platform frontend-controller subordinate 0 1 ------------------


 showing sub info: 1
State                 OK
Last Reset Reason     UNKNOWN REASON
UART FE Error         0
UART PE Error         0
UART DOR Error        0
Rx Buf Overflow       0
Rx Buf Underflow      0
Tx Buf Full           0
Rx Bad Endbyte        0
PLE Invalid App       0
PLE Disabled App      0
PLE Invalid Data      0
PLE Invalid Flags     0
PLE App Error         0
PLE Lost Ctxt         0
PLE Invalid Reg       0
PLE Invalid Reg Len   0
PLE Invalid Msg Len   0
SLE Poe No Port       0
SLE I2C Busy          0
SLE I2C Error         0
SLE I2C Timeout       0
SLE Invalid Reg Len   0
SLE Msg Underrun      0

------------------ show platform frontend-controller version 0 1 ------------------


Switch 1 MCU:
Software Version   0.109
System Type        6
Device Id          2
Device Revision    0
Hardware Version   41
Bootloader Version 16
```

speed

To specify the speed of a port, use the **speed** command in interface configuration mode. To return to the default value, use the **no** form of this command.

Note Available configuration options depend on the switch model and transceiver module installed. Options include 10, 100, 1000, 2500, 5000, 10000, 25000, 40000, 100000

speed {**10** | **100** | **1000** | **2500** | **5000** | **auto** [{**10** | **100** | **1000** | **2500** | **5000**}] | **nonegotiate**}
no speed

Syntax Description

10	Specifies that the port runs at 10 Mbps.
100	Specifies that the port runs at 100 Mbps.
1000	Specifies that the port runs at 1000 Mbps. This option is valid and visible only on 10/100/1000 Mb/s ports.
2500	Specifies that the port runs at 2500 Mbps. This option is valid and visible only on multi-Gigabit-supported Ethernet ports.
5000	Specifies that the port runs at 5000 Mbps. This option is valid and visible only on multi-Gigabit-supported Ethernet ports.
auto	Detects the speed at which the port should run, automatically, based on the port at the other end of the link. If you use the **10**, **100**, **1000**, **2500**, or **5000** keyword with the **auto** keyword, the port autonegotiates only at the specified speeds.
nonegotiate	Disables autonegotiation, and the port runs at 1000 Mbps.

Command Default

The default is **auto**.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

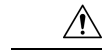
You cannot configure speed on 10-Gigabit Ethernet ports.

Except for the 1000BASE-T small form-factor pluggable (SFP) modules, you can configure the speed to not negotiate (**nonegotiate**) when an SFP module port is connected to a device that does not support autonegotiation.

The keywords, **2500** and **5000** are visible only on multi-Gigabit (m-Gig) Ethernet supporting devices.

If the speed is set to **auto**, the switch negotiates with the device at the other end of the link for the speed setting, and then forces the speed setting to the negotiated value. The duplex setting remains configured on each end of the link, which might result in a duplex setting mismatch.

If both ends of the line support autonegotiation, we highly recommend the default autonegotiation settings. If one interface supports autonegotiation and the other end does not, use the auto setting on the supported side, but set the duplex and speed on the other side.



Caution Changing the interface speed and duplex mode configuration might shut down and re-enable the interface during the reconfiguration.

For guidelines on setting the switch speed and duplex parameters, see the "Configuring Interface Characteristics" chapter in the software configuration guide for this release.

Verify your settings using the **show interfaces** privileged EXEC command.

Examples

The following example shows how to set speed on a port to 100 Mbps:

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# speed 100
```

The following example shows how to set a port to autonegotiate at only 10 Mbps:

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# speed auto 10
```

The following example shows how to set a port to autonegotiate at only 10 or 100 Mbps:

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# speed auto 10 100
```

stack-power

To configure StackPower parameters for the power stack or for a switch in the power stack, use the **stack power** command in global configuration mode. To return to the default setting, use the **no** form of the command,

Note Cisco Catalyst 9300L Series Switches do not support this command.

stack-power {**stack** *power-stack-name* | **switch** *stack-member-number*}
no stack-power {**stack** *power-stack-name* | **switch** *stack-member-number*}

Syntax Description

stack *power-stack-name*	Specifies the name of the power stack. The name can be up to 31 characters. Entering these keywords followed by a carriage return enters power stack configuration mode.
switch *stack-member-number*	Specifies the switch number in the stack (1 to 4) to enter switch stack-power configuration mode for the switch.

Command Default

There is no default.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

When you enter the **stack-power stack** *power stack name* command, you enter power stack configuration mode, and these commands are available:

- **default**—Returns a command to its default setting.
- **exit**—Exits ARP access-list configuration mode.
- **mode**—Sets the power mode for the power stack. See the **mode** command.
- **no**—Negates a command or returns to default settings.

If you enter the **stack-power switch** *switch-number* command with a switch number that is not participating in StackPower, you receive an error message.

When you enter the **stack-power switch** *switch-number* command with the number of a switch participating in StackPower, you enter switch stack power configuration mode, and these commands are available:

- **default**—Returns a command to its default setting.
- **exit**—Exits switch stack power configuration mode.
- **no**—Negates a command or returns to default settings.
- **power-priority**—Sets the power priority for the switch and the switch ports. See the **power-priority** command.

- **stack-id** *name*—Enters the name of the power stack to which the switch belongs. If you do not enter the power stack-ID, the switch does not inherit the stack parameters. The name can be up to 31 characters.
- **standalone**—Forces the switch to operate in standalone power mode. This mode shuts down both stack power ports.

Examples

This example removes switch 2, which is connected to the power stack, from the power pool and shutting down both power ports:

```
Device(config)# stack-power switch 2
Device(config-switch-stackpower)# standalone
Device(config-switch-stackpower)# exit
```

switchport block

To prevent unknown multicast or unicast packets from being forwarded, use the **switchport block** command in interface configuration mode. To allow forwarding unknown multicast or unicast packets, use the **no** form of this command.

switchport block {**multicast** | **unicast**}
no switchport block {**multicast** | **unicast**}

Syntax Description

multicast	Specifies that unknown multicast traffic should be blocked. **Note** Only pure Layer 2 multicast traffic is blocked. Multicast packets that contain IPv4 or IPv6 information in the header are not blocked.
unicast	Specifies that unknown unicast traffic should be blocked.

Command Default

Unknown multicast and unicast traffic is not blocked.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

By default, all traffic with unknown MAC addresses is sent to all ports. You can block unknown multicast or unicast traffic on protected or nonprotected ports. If unknown multicast or unicast traffic is not blocked on a protected port, there could be security issues.

With multicast traffic, the port blocking feature blocks only pure Layer 2 packets. Multicast packets that contain IPv4 or IPv6 information in the header are not blocked.

Blocking unknown multicast or unicast traffic is not automatically enabled on protected ports; you must explicitly configure it.

For more information about blocking packets, see the software configuration guide for this release.

This example shows how to block unknown unicast traffic on an interface:

```
Device(config-if)# switchport block unicast
```

You can verify your setting by entering the **show interfaces** *interface-id* **switchport** privileged EXEC command.

system mtu

To set the global maximum packet size or MTU size for switched packets on Gigabit Ethernet and 10-Gigabit Ethernet ports, use the **system mtu** command in global configuration mode. To restore the global MTU value to its default value, use the **no** form of this command.

system mtu *bytes*
no system mtu

Syntax Description

bytes	The global MTU size in bytes. The range is 1500 to 9198 bytes; the default is 1500 bytes.

Command Default

The default MTU size for all ports is 1500 bytes.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

You can verify your setting by entering the **show system mtu** privileged EXEC command.

The switch does not support the MTU on a per-interface basis.

If you enter a value that is outside the allowed range for the specific type of interface, the value is not accepted.

Examples

This example shows how to set the global system MTU size to 6000 bytes:

```
Device(config)# system mtu 6000
Global Ethernet MTU is set to 6000 bytes.
Note: this is the Ethernet payload size, not the total
Ethernet frame size, which includes the Ethernet
header/trailer and possibly other tags, such as ISL or
802.1q tags.
```

voice-signaling vlan (network-policy configuration)

To create a network-policy profile for the voice-signaling application type, use the **voice-signaling vlan** command in network-policy configuration mode. To delete the policy, use the **no** form of this command.

voice-signaling vlan {*vlan-id* [{**cos** *cos-value* | **dscp** *dscp-value*}] | **dot1p** [{**cos** *l2-priority* | **dscp** *dscp*}] | **none** | **untagged**}

Syntax Description

vlan-id	(Optional) The VLAN for voice traffic. The range is 1 to 4094.
cos *cos-value*	(Optional) Specifies the Layer 2 priority class of service (CoS) for the configured VLAN. The range is 0 to 7; the default is 5.
dscp *dscp-value*	(Optional) Specifies the differentiated services code point (DSCP) value for the configured VLAN. The range is 0 to 63; the default is 46.
dot1p	(Optional) Configures the phone to use IEEE 802.1p priority tagging and to use VLAN 0 (the native VLAN).
none	(Optional) Does not instruct the Cisco IP phone about the voice VLAN. The phone uses the configuration from the phone key pad.
untagged	(Optional) Configures the phone to send untagged voice traffic. This is the default for the phone.

Command Default

No network-policy profiles for the voice-signaling application type are defined.

The default CoS value is 5.

The default DSCP value is 46.

The default tagging mode is untagged.

Command Modes

Network-policy profile configuration

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **network-policy profile** global configuration command to create a profile and to enter network-policy profile configuration mode.

The voice-signaling application type is for network topologies that require a different policy for voice signaling than for voice media. This application type should not be advertised if all of the same network policies apply as those advertised in the voice policy TLV.

When you are in network-policy profile configuration mode, you can create the profile for voice-signaling by specifying the values for VLAN, class of service (CoS), differentiated services code point (DSCP), and tagging mode.

These profile attributes are contained in the Link Layer Discovery Protocol for Media Endpoint Devices (LLDP-MED) network-policy time-length-value (TLV).

To return to privileged EXEC mode from the network-policy profile configuration mode, enter the **exit** command.

This example shows how to configure voice-signaling for VLAN 200 with a priority 2 CoS:

```
(config)# network-policy profile 1
(config-network-policy)# voice-signaling vlan 200 cos 2
```

This example shows how to configure voice-signaling for VLAN 400 with a DSCP value of 45:

```
(config)# network-policy profile 1
(config-network-policy)# voice-signaling vlan 400 dscp 45
```

This example shows how to configure voice-signaling for the native VLAN with priority tagging:

```
(config-network-policy)# voice-signaling vlan dot1p cos 4
```

voice vlan (network-policy configuration)

To create a network-policy profile for the voice application type, use the **voice vlan** command in network-policy configuration mode. To delete the policy, use the **no** form of this command.

voice vlan {*vlan-id* [{**cos** *cos-value* | **dscp** *dscp-value*}] | **dot1p** [{**cos** *l2-priority* | **dscp** *dscp*}] | **none** | **untagged**}

Syntax Description

vlan-id	(Optional) The VLAN for voice traffic. The range is 1 to 4094.
cos *cos-value*	(Optional) Specifies the Layer 2 priority class of service (CoS) for the configured VLAN. The range is 0 to 7; the default is 5.
dscp *dscp-value*	(Optional) Specifies the differentiated services code point (DSCP) value for the configured VLAN. The range is 0 to 63; the default is 46.
dot1p	(Optional) Configures the phone to use IEEE 802.1p priority tagging and to use VLAN 0 (the native VLAN).
none	(Optional) Does not instruct the Cisco IP phone about the voice VLAN. The phone uses the configuration from the phone key pad.
untagged	(Optional) Configures the phone to send untagged voice traffic. This is the default for the phone.

Command Default

No network-policy profiles for the voice application type are defined.

The default CoS value is 5.

The default DSCP value is 46.

The default tagging mode is untagged.

Command Modes

Network-policy profile configuration

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.

Usage Guidelines

Use the **network-policy profile** global configuration command to create a profile and to enter network-policy profile configuration mode.

The voice application type is for dedicated IP telephones and similar devices that support interactive voice services. These devices are typically deployed on a separate VLAN for ease of deployment and enhanced security through isolation from data applications.

When you are in network-policy profile configuration mode, you can create the profile for voice by specifying the values for VLAN, class of service (CoS), differentiated services code point (DSCP), and tagging mode.

These profile attributes are contained in the Link Layer Discovery Protocol for Media Endpoint Devices (LLDP-MED) network-policy time-length-value (TLV).

To return to privileged EXEC mode from the network-policy profile configuration mode, enter the **exit** command.

This example shows how to configure the voice application type for VLAN 100 with a priority 4 CoS:

```
(config)# network-policy profile 1
(config-network-policy)# voice vlan 100 cos 4
```

This example shows how to configure the voice application type for VLAN 100 with a DSCP value of 34:

```
(config)# network-policy profile 1
(config-network-policy)# voice vlan 100 dscp 34
```

This example shows how to configure the voice application type for the native VLAN with priority tagging:

```
(config-network-policy)# voice vlan dot1p cos 4
```