Interface and Hardware Commands

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*

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 Amsterdam 17.1.1	This command was introduced.
	This command was introduced for the Cisco Catalyst 9 Series High Performance Switches.
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
	This command was introduced for the Cisco Catalyst 9 Series Switches.

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

NavigationInterface and Hardware Commands

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.

Starting Cisco IOS XE Gibraltar 16.12.1 release, C9500-48Y4C and C9500-24Y4C do not support half-duplex mode on 1000BASE-T SFP transceivers for 10Mb/s and 100Mb/s speeds.

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
```

enable (interface configuration)

To enable the 100 GigabitEthernet interface, use the **enable** command in interface configuration mode. Use the **no** form of the command to disable a 100 GigabitEthernet interface.

enable

no enable

Command Default

The 100 GigabitEthernet interface is enabled on physical port numbers 25 through 32.

The 100 GigabitEthernet interface is disabled on physical port numbers 1 through 24.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE Fuji 16.8.1a	The command was introduced on the Cisco Catalyst 9500 Series Switches - High Performance.

Usage Guidelines

Use the **enable** command in the interface configuration mode, to enable the 100 GigabitEthernet interface.

Use the **no** version of the command to disable the 100 GigabitEthernet interface.

To display the current state of an interface, enter the **show interface** *interface-id* command in privileged EXEC mode.

The following example shows how to enable interface HundredGigabitEthernet 1/0/40.

When you enable the interface HundredGigabitEthernet 1/0/40, the corresponding 40 GigabitEthernet interfaces, FortyGigabitEthernet 1/0/15 and FortyGigabitEthernet 1/0/16 become inactive.

```
Device> enable
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# interface hundredgigabitethernet 1/0/40
Device(config-if)# enable
```

The following example shows how to disable interface HundredGigabitEthernet 1/0/40 to use interface 40 GigabitEthernet 1/0/16.

When you disable a HundredGigabitEthernet interface, both the corresponding 40 GigabitEthernet interfaces, FortyGigabitEthernet1/015 and FortyGigabitEthernet1/0/16 become active.

```
Device> enable
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Device(config)# interface hundredgigabitethernet 1/0/40
Device(config-if)# no enable
Device(config-if)# exit
```

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 beacon

To control the beacon LED on a device, use the **hw-module beacon** command in the privileged EXEC mode or global configuration mode.

Note   This command description is *not* applicable to the C9500-32C, C9500-32QC, C9500-48Y4C, and C9500-24Y4C models of the Cisco Catalyst 9500 Series Switches.

Cisco IOS XE Fuji 16.8.x and Earlier Releases

hw-module beacon { **off** | **on** } **switch** *switch-number*

Cisco IOS XE Fuji 16.9.1 and Later Releases

hw-module beacon slot { *switch-number* | **active** | **standby** } { **off** | **on** }

Syntax Description		
	off	Turns the beacon off.
	on	Turns the beacon on.
	switch *switch-number*	Specifies the switch to be controlled. • *switch-number*: Switch number. The range is from 1 to 8.
	slot {*switch-number* | **active** | **standby**}	Specifies the switch to be controlled. • *switch-number*: Switch number. The range is from 1 to 8. • **active**: Specifies the active switch. • **standby**: Specifies the standby switch.

Command Default   This command has no default settings.

Command Modes   Global configuration (config) (Cisco IOS XE Fuji 16.8.x and Earlier Releases)

Privileged EXEC (#) (Cisco IOS XE Fuji 16.9.1 and Later Releases)

Command History	Release	Modification
	Cisco IOS XE Everest 16.5.1a	This command was introduced.
	Cisco IOS XE Fuji 16.9.1	This command was modified.

Usage Guidelines   Use this command to enable or disable the switch LED. Blue indicates the switch LED is on and black indicates that it is off.

The following example shows how to switch on the LED beacon of the active switch:

```
Device> enable
Device# hw-module beacon slot active on
```

hw-module beacon

To control the beacon LED on a device, use the **hw-module beacon** command in the privileged EXEC mode.

Note This command description is applicable to the C9500-32C, C9500-32QC, C9500-48Y4C, and C9500-24Y4C models of the Cisco Catalyst 9500 Series Switches.

hw-module beacon { **rp** { **active** | **standby** } | **slot** *slot-number* | **ssd** } { **off** | **on** | **status** }

Syntax Description		
rp {**active**	**standby**}	Specifies the active or the standby Supervisor to be controlled.
slot *slot-number*	Specifies the slot to be controlled.
ssd	Specifies the SSD to be controlled.
off	Turns the beacon off.
on	Turns the beacon on.
status	Displays the status of the beacon.

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.

Usage Guidelines Use the **hw-module beacon slot** *slot-number* command to enable or disable the module slot LED and also check its status. Blue indicates the slot LED is on and black indicates that it is off.

Use the **hw-module beacon rp active {off | on}** command to enable or disable the active supervisor LED. Similarly the standby supervisor LED can be turned on or off with the **hw-module beacon rp standby {off | on}** command. You can check the status of the supervisor LED using the **hw-module beacon rp {active | standby} status** command. Blue indicates the supervisor LED is on and black indicates the supervisor LED is off.

Note If the switch is operating in SVL mode, then select either the active or standby switch. For example: **hw-module beacon switch** {**active** | **standby**}.

The following example shows how to switch on the LED beacon of the active supervisor:

```
Device> enable
Device# hw-module beacon rp active on
```

interface

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

interface {**Auto-Template** *interface-number* | **FortyGigabitEthernet**
switch-number/slot-number/port-number | **GigabitEthernet** *switch-number/slot-number/port-number* |
Group VI *Group VI interface number* | **Internal Interface** *Internal Interface number* | **Loopback**
interface-number **Null** *interface-number* **Port-channel** *interface-number* **TenGigabitEthernet**
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.
	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.
	Group VI *Group VI interface number*	Enables you to configure a Group VI interface. The range is from 0 to 9.
	Internal Interface Internal Interface	Enables you to configure an internal interface.
	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 .
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 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* | **FortyGigabitEthernet** *switch-number/slot-number/port-number* | **GigabitEthernet** *switch-number/slot-number/port-number* | **Group VI** *Group VI interface number* | **Internal Interface** *Internal Interface number* | **Loopback** *interface-number* **Null** *interface-number* **Port-channel** *interface-number* **TenGigabitEthernet** *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.
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.
Group VI *Group VI interface number*	Enables you to configure a Group VI interface. The range is from 0 to 9.
Internal Interface Internal Interface	Enables you to configure an internal interface.
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 .
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
```

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-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 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
```

power supply autoLC shutdown

To enable automatic shutdown control on linecards, use the **power supply autoLC shutdown** command in global configuration mode. This command is enabled by default and cannot be disabled. The `AutoLC shutdown cannot be disabled` message will be displayed if you try to disable it.

power supply autoLC shutdown
no power supply autoLC shutdown

Syntax Description   This command has no arguments or keywords.

Command Default   Automatic shutdown control on linecards is enabled.

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 to enable automatic shutdown on linecards:

```
Device> enable
Device# configure terminal
Device(config)# power supply autoLC shutdown
```

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 environment

To display information about the sensors, and status of fan and power supply, use the **show environment** command in EXEC mode.

show environment { **all** | **counters** | **fan-air-direction** | **history** | **location** | **sensor** | **status** | **summary** | **table** }

Syntax Description		
all	(Optional) Displays the list of sensors.	
counters	(Optional) Displays the operational counters of the sensors.	
fan-air-direction	(Optional) Displays information of the fan tray and power supply fan air direction.	
history	(Optional) Displays history of the sensor state changes.	
location	(Optional) Displays the sensors by location.	
sensor	(Optional) Displays sensor summary.	
status	(Optional) Displays the power supply and fan tray status of the switch.	
summary	(Optional) Displays a summary of all the environment monitoring sensors.	
table	(Optional) Displays sensor state table.	

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.

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

```
Device> show environment all

Sensor List:  Environmental Monitoring
 Sensor          Location        State           Reading
 Temp: UADP_0_0  R1              Normal          52 Celsius
 Temp: UADP_0_1  R1              Normal          50 Celsius
 Temp: UADP_0_2  R1              Normal          50 Celsius
 Temp: UADP_0_3  R1              Normal          52 Celsius
 Temp: UADP_0_4  R1              Normal          51 Celsius
 Temp: UADP_0_5  R1              Normal          52 Celsius
```

```
 Temp: UADP_0_6   R1                        Normal            63 Celsius
 Temp: UADP_0_7   R1                        Normal            54 Celsius
..
<output truncated>
```

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

```
Device> show environment status

Power                                                       Fan States
Supply   Model No               Type  Capacity  Status      1     2
------   --------------------   ----  --------  ------------  -----------
PS1      C9600-PWR-2KWAC        ac    2000 W    active        good  good
PS4      C9600-PWR-2KWAC        ac    2000 W    active        good  good

PS Current Configuration Mode : Combined
PS Current Operating State     : none

Power supplies currently active    : 2
Power supplies currently available : 2

Fantray : good
Power consumed by Fantray : 300 Watts
Fantray airflow direction : side-to-side
Fantray beacon LED: off
Fantray status LED: green
```

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.
			This is not applicable for Cisco Catalyst 9500 Series High-Performance switches.

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 1: 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.

Field	Description
IP Flow switching	Shows whether Flow switching is enabled for this interface.
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 2: show ip interface brief Field Descriptions

Field	Description
Interface	Type of interface.
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.
		This is not applicable for Cisco Catalyst 9500 Series High-Performance switches.
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

```
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 fortyGigabitEthernet6/0/2 description

Interface                    Status          Protocol Description
Fo1/0/2                      up              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 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
Fo1/0/2              err-disabled   gbic-invalid
Fo2/0/3              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
```

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.
	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.
```

Port	Temperature (Celsius)	High Alarm Threshold (Celsius)	High Warn Threshold (Celsius)	Low Warn Threshold (Celsius)	Low Alarm Threshold (Celsius)
Gi1/1/1	29.9	74.0	70.0	0.0	-4.0

Port	Voltage (Volts)	High Alarm Threshold (Volts)	High Warn Threshold (Volts)	Low Warn Threshold (Volts)	Low Alarm Threshold (Volts)
Gi1/1/1	3.28	3.60	3.50	3.10	3.00

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

Port	Optical Receive Power (dBm)	High Alarm Threshold (dBm)	High Warn Threshold (dBm)	Low Warn Threshold (dBm)	Low Alarm Threshold (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
9500-32QC-SVL#show inv
NAME: "Switch 1 Chassis", DESCR: "Cisco Catalyst 9500 Series Chassis"
PID: C9500-32QC        , VID: V00  , SN: CAT2144L10V

NAME: "Switch 1 Power Supply Module 0", DESCR: "Cisco Catalyst 9500 Series 650W AC Power
Supply"
PID: C9K-PWR-650WAC-R  , VID: V00  , SN: ART2148F53T

NAME: "Switch 1 Power Supply Module 1", DESCR: "Cisco Catalyst 9500 Series 650W AC Power
Supply"
PID: C9K-PWR-650WAC-R  , VID: V01  , SN: ART2151FC04

NAME: "Switch 1 Fan Tray 0", DESCR: "Cisco Catalyst 9500 Series Fan Tray"
PID: C9K-T1-FANTRAY    , VID:      , SN:

NAME: "Switch 1 Fan Tray 1", DESCR: "Cisco Catalyst 9500 Series Fan Tray"
PID: C9K-T1-FANTRAY    , VID:      , SN:

NAME: "Switch 1 Slot 1 Supervisor", DESCR: "Cisco Catalyst 9500 Series Router"
PID: C9500-32QC        , VID: V00  , SN: CAT2144L10V

NAME: "FortyGigabitEthernet1/0/2", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M     , VID: A0   , SN: JPC2144034J-A

NAME: "FortyGigabitEthernet1/0/4", DESCR: "QSFP 40GE SR4"
PID: QSFP-40G-SR4       , VID: 03   , SN: AVP1824S0YQ

NAME: "FortyGigabitEthernet1/0/5", DESCR: "QSFP 40GE AOC3M"
PID: QSFP-H40G-AOC3M     , VID: D    , SN: FIW211101UL-B

NAME: "FortyGigabitEthernet1/0/8", DESCR: "QSFP 40GE AOC3M"
PID: QSFP-H40G-AOC3M     , VID: D    , SN: FIW211101N6-B

NAME: "FortyGigabitEthernet1/0/10", DESCR: "QSFP 40GE AOC3M"
PID: QSFP-H40G-AOC3M     , VID: A    , SN: DTS2045A271-B

NAME: "FortyGigabitEthernet1/0/11", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M     , VID: D    , SN: TED2047K013-B

NAME: "FortyGigabitEthernet1/0/15", DESCR: "QSFP 40GE AOC3M"
PID: QSFP-H40G-AOC3M     , VID: D    , SN: FIS1922011T-B

NAME: "FortyGigabitEthernet1/0/16-qsa", DESCR: "CVR 10GE SFP "
PID: CVR-QSFP-SFP10G     , VID: V01  , SN: DTY204604UN

NAME: "FortyGigabitEthernet1/0/16", DESCR: "10GE CU3M"
PID: SFP-H10GB-CU3M     , VID: R    , SN: TED1739B9HY

NAME: "FortyGigabitEthernet1/0/18", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M     , VID: D    , SN: TED2047K10U-A

NAME: "FortyGigabitEthernet1/0/19", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M     , VID: D    , SN: TED2030K4U6-B

NAME: "FortyGigabitEthernet1/0/22", DESCR: "QSFP 40GE CU5M"
PID: QSFP-H40G-CU5M     , VID: A0   , SN: JPC203508YN-B

NAME: "FortyGigabitEthernet1/0/24", DESCR: "QSFP 40GE CU3M"
```

```
PID: QSFP-H40G-CU3M      , VID: D    , SN: TED2047K13Y-A

NAME: "FortyGigabitEthernet1/0/25", DESCR: "QSFP 100GE CU3M"
PID: QSFP-100G-CU3M      , VID: A    , SN: APF20412069-A

NAME: "FortyGigabitEthernet1/0/28", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M      , VID: A0   , SN: JPC214402J7-A

NAME: "FortyGigabitEthernet1/0/30", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M      , VID: D    , SN: TED2047K13Z-B

NAME: "FortyGigabitEthernet1/0/32", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M      , VID: 01   , SN: LCC1922G2E8-A

NAME: "HundredGigE1/0/33", DESCR: "QSFP 100GE CU3M"
PID: QSFP-100G-CU3M      , VID: A    , SN: APF20412159-A

NAME: "HundredGigE1/0/47", DESCR: "QSFP 100GE CU3M"
PID: QSFP-100G-CU3M      , VID: A    , SN: APF21010360-B

NAME: "HundredGigE1/0/48", DESCR: "QSFP 100GE CU1M"
PID: QSFP-100G-CU1M      , VID: A    , SN: APF21450009-A

NAME: "Switch 2 Chassis", DESCR: "Cisco Catalyst 9500 Series Chassis"
PID: C9500-32QC          , VID: V00  , SN: CAT2144L10L

NAME: "Switch 2 Power Supply Module 0", DESCR: "Cisco Catalyst 9500 Series 650W AC Power
Supply"
PID: C9K-PWR-650WAC-R    , VID: V00  , SN: ART2141FAZ4

NAME: "Switch 2 Fan Tray 4", DESCR: "Cisco Catalyst 9500 Series Fan Tray"
PID: C9K-T1-FANTRAY      , VID:      , SN:

NAME: "Switch 2 Fan Tray 5", DESCR: "Cisco Catalyst 9500 Series Fan Tray"
PID: C9K-T1-FANTRAY      , VID:      , SN:

NAME: "Switch 2 Slot 1 Supervisor", DESCR: "Cisco Catalyst 9500 Series Router"
PID: C9500-32QC          , VID: V00  , SN: CAT2144L10L

NAME: "SATA disk", DESCR: "disk0 Drive"
PID: C9K-F1-SSD-240G     , VID: V00  , SN: CAT2144L1J0

NAME: "FortyGigabitEthernet2/0/4", DESCR: "QSFP 40GE SR4"
PID: QSFP-40G-SR4        , VID: 03   , SN: AVP1824S0YS

NAME: "FortyGigabitEthernet2/0/6", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M      , VID: D    , SN: TED2047K0ZN-B

NAME: "FortyGigabitEthernet2/0/7", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M      , VID: D    , SN: TED2047K0ZN-A

NAME: "FortyGigabitEthernet2/0/8", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M      , VID: D    , SN: TED2030K4U6-A

NAME: "FortyGigabitEthernet2/0/9", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M      , VID: A0   , SN: JPC2144034J-B

NAME: "FortyGigabitEthernet2/0/10", DESCR: "QSFP 40GE AOC10M"
PID: QSFP-H40G-AOC10M    , VID: A    , SN: DTS2101A050-B

NAME: "FortyGigabitEthernet2/0/11", DESCR: "QSFP 40GE CU5M"
PID: QSFP-H40G-CU5M      , VID: A0   , SN: JPC203508R1-B

NAME: "FortyGigabitEthernet2/0/13", DESCR: "QSFP 40GE CU3M"
```

```
                     PID: QSFP-H40G-CU3M      , VID: D    , SN: TED2047K13Y-B

                     NAME: "FortyGigabitEthernet2/0/14", DESCR: "QSFP 40GE CU2M"
                     PID: QSFP-H40G-CU2M      , VID: A0   , SN: JPC2039000Z-A

                     NAME: "FortyGigabitEthernet2/0/15", DESCR: "QSFP 40GE AOC3M"
                     PID: QSFP-H40G-AOC3M     , VID: A    , SN: DTS2045A271-A

                     NAME: "FortyGigabitEthernet2/0/17", DESCR: "QSFP 40GE AOC3M"
                     PID: QSFP-H40G-AOC3M     , VID: D    , SN: FIW211101N6-A

                     NAME: "FortyGigabitEthernet2/0/18", DESCR: "QSFP 40GE CU3M"
                     PID: QSFP-H40G-CU3M      , VID: D    , SN: TED2047K013-A

                     NAME: "FortyGigabitEthernet2/0/19", DESCR: "QSFP 40GE AOC3M"
                     PID: QSFP-H40G-AOC3M     , VID: D    , SN: FIW211101UL-A

                     NAME: "FortyGigabitEthernet2/0/20", DESCR: "QSFP 40GE AOC3M"
                     PID: QSFP-H40G-AOC3M     , VID: D    , SN: FIS1922011T-A

                     NAME: "FortyGigabitEthernet2/0/21-qsa", DESCR: "CVR 10GE SFP "
                     PID: CVR-QSFP-SFP10G     , VID: V01  , SN: DTY20460528

                     NAME: "FortyGigabitEthernet2/0/21", DESCR: "10GE CU3M"
                     PID: SFP-H10GB-CU3M      , VID: B2   , SN: LRM204581VA

                     NAME: "FortyGigabitEthernet2/0/28", DESCR: "QSFP 40GE CU3M"
                     PID: QSFP-H40G-CU3M      , VID: A0   , SN: JPC214402J7-B

                     NAME: "FortyGigabitEthernet2/0/30", DESCR: "QSFP 40GE CU3M"
                     PID: QSFP-H40G-CU3M      , VID: D    , SN: TED2047K13Z-A

                     NAME: "FortyGigabitEthernet2/0/32", DESCR: "QSFP 40GE CU3M"
                     PID: QSFP-H40G-CU3M      , VID: 01   , SN: LCC1922G2E8-B

                     NAME: "HundredGigE2/0/33", DESCR: "QSFP 100GE CU3M"
                     PID: QSFP-100G-CU3M      , VID: A    , SN: APF21010653-B

                     NAME: "HundredGigE2/0/47", DESCR: "QSFP 100GE CU3M"
                     PID: QSFP-100G-CU3M      , VID: A    , SN: APF21010360-A

                     NAME: "HundredGigE2/0/48", DESCR: "QSFP 100GE CU1M"
                     PID: QSFP-100G-CU1M      , VID: A    , SN: APF21450009-B
```

Table 3: 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 "Switch 1 Chassis"
NAME: "Switch 1 Chassis", DESCR: "Cisco Catalyst 9500 Series Chassis"
PID: C9500-32QC        , VID: V00  , SN: CAT2144L10V

NAME: "Switch 1 Power Supply Module 0", DESCR: "Cisco Catalyst 9500 Series 650W AC Power
Supply"
PID: C9K-PWR-650WAC-R  , VID: V00  , SN: ART2148F53T

NAME: "Switch 1 Power Supply Module 1", DESCR: "Cisco Catalyst 9500 Series 650W AC Power
Supply"
PID: C9K-PWR-650WAC-R  , VID: V01  , SN: ART2151FC04

NAME: "Switch 1 Fan Tray 0", DESCR: "Cisco Catalyst 9500 Series Fan Tray"
PID: C9K-T1-FANTRAY    , VID:      , SN:

NAME: "Switch 1 Fan Tray 1", DESCR: "Cisco Catalyst 9500 Series Fan Tray"
PID: C9K-T1-FANTRAY    , VID:      , SN:

NAME: "Switch 1 Slot 1 Supervisor", DESCR: "Cisco Catalyst 9500 Series Router"
PID: C9500-32QC        , VID: V00  , SN: CAT2144L10V

NAME: "FortyGigabitEthernet1/0/2", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M       , VID: A0  , SN: JPC2144034J-A

NAME: "FortyGigabitEthernet1/0/4", DESCR: "QSFP 40GE SR4"
PID: QSFP-40G-SR4         , VID: 03  , SN: AVP1824S0YQ

NAME: "FortyGigabitEthernet1/0/5", DESCR: "QSFP 40GE AOC3M"
PID: QSFP-H40G-AOC3M      , VID: D   , SN: FIW211101UL-B

NAME: "FortyGigabitEthernet1/0/8", DESCR: "QSFP 40GE AOC3M"
PID: QSFP-H40G-AOC3M      , VID: D   , SN: FIW211101N6-B

NAME: "FortyGigabitEthernet1/0/10", DESCR: "QSFP 40GE AOC3M"
PID: QSFP-H40G-AOC3M      , VID: A   , SN: DTS2045A271-B

NAME: "FortyGigabitEthernet1/0/11", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M       , VID: D   , SN: TED2047K013-B

NAME: "FortyGigabitEthernet1/0/15", DESCR: "QSFP 40GE AOC3M"
PID: QSFP-H40G-AOC3M      , VID: D   , SN: FIS1922011T-B

NAME: "FortyGigabitEthernet1/0/16-qsa", DESCR: "CVR 10GE SFP "
PID: CVR-QSFP-SFP10G      , VID: V01  , SN: DTY204604UN

NAME: "FortyGigabitEthernet1/0/16", DESCR: "10GE CU3M"
PID: SFP-H10GB-CU3M       , VID: R   , SN: TED1739B9HY

NAME: "FortyGigabitEthernet1/0/18", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M       , VID: D   , SN: TED2047K10U-A
```

```
NAME: "FortyGigabitEthernet1/0/19", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M      , VID: D    , SN: TED2030K4U6-B

NAME: "FortyGigabitEthernet1/0/22", DESCR: "QSFP 40GE CU5M"
PID: QSFP-H40G-CU5M      , VID: A0   , SN: JPC203508YN-B

NAME: "FortyGigabitEthernet1/0/24", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M      , VID: D    , SN: TED2047K13Y-A

NAME: "FortyGigabitEthernet1/0/25", DESCR: "QSFP 100GE CU3M"
PID: QSFP-100G-CU3M      , VID: A    , SN: APF20412069-A

NAME: "FortyGigabitEthernet1/0/28", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M      , VID: A0   , SN: JPC214402J7-A

NAME: "FortyGigabitEthernet1/0/30", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M      , VID: D    , SN: TED2047K13Z-B

NAME: "FortyGigabitEthernet1/0/32", DESCR: "QSFP 40GE CU3M"
PID: QSFP-H40G-CU3M      , VID: 01   , SN: LCC1922G2E8-A

NAME: "HundredGigE1/0/33", DESCR: "QSFP 100GE CU3M"
PID: QSFP-100G-CU3M      , VID: A    , SN: APF20412159-A

NAME: "HundredGigE1/0/47", DESCR: "QSFP 100GE CU3M"
PID: QSFP-100G-CU3M      , VID: A    , SN: APF21010360-B

NAME: "HundredGigE1/0/48", DESCR: "QSFP 100GE CU1M"
PID: QSFP-100G-CU1M      , VID: A    , SN: APF21450009-A
```

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

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.

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 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 Amsterdam 17.1.1	This command was introduced.
	This command was introduced for the Cisco C Performance Switches.
Cisco IOS XE Gibraltar 16.12.1	This command was introduced.
	This command was introduced for the Cisco C Switches.

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 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'
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'
    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'
*****************************************************************************
```

show platform hardware fed switch fwd-asic counters tla

To display the register information of a counter from the forwarding ASIC, use the **show platform hardware fed switch fwd-asic counters tla** command in the Privileged EXEC mode.

show platform hardware fed switch {*switch_num* | **active** | **standby**} **fwd-asic counters tla** *tla_counter*{**detail** | **drop** | **statistics**} [**asic** *asic_num*] **output** *location:filename*

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.

tla_tla_counter_	_tla_counter_ can be any of the following Three Letter Acronym (TLA) counters: • AQM Active Queue Management • ASE ACL Search Engine • DPP DopplerE Point to Point • EGR Egress Global Resolution • EPF Egress Port FIFO • ESM Egress Scheduler Module • EQC Egress Queue Controller • FPE Flexible Parser • FPS Flexible Pipe Stage • FSE Fib Search Engine • IGR Ingress Global Resolution • IPF Ingress Port FIFO • IQS Ingress Queues and Scheduler • MSC Macsec Engine • NFL Netflow • NIF Network Interface • PBC Packet Buffer Complex • PIM Protocol Independent Multicast • PLC Policer • RMU Recirculation Multiplexer Unit • RRE Reassembly Engine • RWE Rewrite Engine • SEC Security Engine • SIF Stack Interface • SPQ Supervisor Packet Queuing Engine • SQS Stack Queues And Scheduler • SUP Supervisor Interface
detail	Displays the contents of the registers of all non-zero counters.
drop	Displays the contents of the registers of all non-zero drop counters.
statistics	Displays the contents of the registers of all non-zero statistical counters.

asci *asic_num*	(Optional) Specifies the ASIC.
output *location:filename*	Specifies an output file to which the contents of the counters registers are to be dumped.

Command Modes   Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.5.1a	This command was introduced.
Cisco IOS XE Amsterdam 17.3.1	The command output was modified to be presented in a readable tabular format. The size of the output file was also reduced by not printing fields that had zero values.
	The **change** keyword was deprecated.

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.

Note   Some TLAs may not have any registers to display as part of **drop** or **statistics** options because of the lack of these drop or statistics registers for them. In such a case, a message, No <detail|drop|statistics> counters to display for tla <TLA_NAME> is displayed and no output file is generated.

Example

This is an example output from the **show platform hardware fed active fwd-asic counters tla aqm** command.

```
Device#show platform hardware fed active fwd-asic counters tla aqm detail output flash:aqm
command to get counters for tla AQM succeeded
Device#
Device# more flash:aqm
====================================================================================================

 asic | core | Register Name            | Fields                                    | value
====================================================================================================

  0     0       AqmRepTransitUsageCnt[0][0]
                                         totalCntHighMark                  : 0x4
                                         transitWait4DoneHighMark          : 0x2
  0     1       AqmRepTransitUsageCnt[0][0]
                                         totalCntHighMark                  : 0x2
                                         transitWait4DoneHighMark          : 0x2
====================================================================================================

 asic | core | Register Name            | Fields                                    | value
====================================================================================================

  0     0       AqmGlobalHardBufCnt[0][0]
```

```
                                                highWaterMark                   : 0x3
===============================================================================================

 asic | core | Register Name           | Fields                              | value
===============================================================================================

   0      0     AqmRedQueueStats[0][673]
                                          acceptByteCnt2                       : 0x4e44e
                                          acceptFrameCnt2                      : 0x5e1
   0      0     AqmRedQueueStats[0][674]
                                          acceptByteCnt1                       : 0x88
                                          acceptByteCnt2                       : 0xa7c
                                          acceptFrameCnt1                      : 0x2
                                          acceptFrameCnt2                      : 0x16
   0      0     AqmRedQueueStats[0][676]
                                          acceptByteCnt2                       : 0xfbf06
                                          acceptFrameCnt2                      : 0x2440
   0      0     AqmRedQueueStats[0][677]
                                          acceptByteCnt2                       : 0xcc
                                          acceptFrameCnt2                      : 0x3
   0      0     AqmRedQueueStats[0][687]
                                          acceptByteCnt2                       : 0x2caea0
                                          acceptFrameCnt2                      : 0xa836
   0      0     AqmRedQueueStats[0][691]
                                          acceptByteCnt2                       : 0x2dc
                                          acceptFrameCnt2                      : 0x6
   0      0     AqmRedQueueStats[0][692]
                                          acceptByteCnt2                       : 0xc518
                                          acceptFrameCnt2                      : 0x2e6
```

show platform hardware fed active fwd-asic resource tcam utilization

To display hardware information about the Ternary Content Addressable Memory (TCAM) usage, use the **show platform hardware fed active fwd-asic resource tcam utilization** command in privileged EXEC mode.

show platform hardware fed active fwd-asic resource tcam utilization[{*asic-number* }]

Syntax Description	

asic-number	ASIC number. Valid values are from 0 to 7.

Command Modes   Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Amsterdam 17.2.1	This command was introduced in a release prior to Cisco IOS XE Amsterdam 17.2.1 .

Usage Guidelines   On stackable switches, this command has the **switch** keyword, **show platform hardware fed switch active fwd-asic resource tcam utilization**. On non-stackable switches, the **switch** keyword is not available.

Example

The following is sample output from the **show platform hardware fed active fwd-asic resource tcam utilization** command:

```
Device# show platform hardware fed active fwd-asic resource tcam utilization

Codes: EM - Exact_Match, I - Input, O - Output, IO - Input & Output, NA - Not Applicable

CAM Utilization for ASIC  [0]
 Table                    Subtype      Dir      Max      Used     %Used     V4        V6
MPLS     Other

----------------------------------------------------------------------------------------

 OPENFLOW Table0          TCAM         I        5000     5        0%        3         0
     0        2
 OPENFLOW Table0 Ext.     EM           I        8192     3        0%        0         0
     0        3
 OPENFLOW Table1          TCAM         I        3600     1        0%        1         0
     0        0
 OPENFLOW Table1 Ext.     EM           I        8192     1        0%        0         0
     0        1
 OPENFLOW Table2          TCAM         I        3500     1        0%        1         0
     0        0
 OPENFLOW Table2 Ext.     EM           I        8192     1        0%        0         0
     0        1
 OPENFLOW Table3 Ext.     EM           I        8192     0        0%        0         0
     0        0
 OPENFLOW Table4 Ext.     EM           I        8192     0        0%        0         0
     0        0
```

```
OPENFLOW Table5 Ext.   EM          I         8192         0        0%         0          0
      0         0
OPENFLOW Table6 Ext.   EM          I         8192         0        0%         0          0
      0         0
OPENFLOW Table7 Ext.   EM          I         8192         0        0%         0          0
      0         0
```

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

Table 4: show platform hardware fed active fwd-asic resource tcam utilization Field Descriptions

Field	Description
Table	OpenFlow table numbers.
Subtype	What are the different subtypes available?
Dir	
Max	
Used	
%Used	
V4	
V6	
MPLS	
Other	

show platform resources

To display platform resource information, use the **show platform reorces** 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 5: 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   040000140002000F   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**]

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.

Syntax Description (above table, first column)

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 6: 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 7: **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 active**—The active switch.

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 8: 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:

```
Device# 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 9: 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 10: 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 11: 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 12: 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.

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.

Release	Modification
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 13: 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 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 automatnatically 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**

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


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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 C9500-12Q (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                       : C9500-12Q
System Serial Number               : JPG220200A8


Switch Ports Model            SW Version       SW Image          Mode
------ ----- -----            ----------       ----------        ----
*    1 12    C9500-12Q        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 16.10
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 FortyGigabitEthernet1/0/1, changed state
 to down

Aug 22 17:17:29.196 PDT: %ILPOWER-5-POWER_GRANTED: Interface Fo1/0/1: 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 Fo1/0/1: Power Device detected: IEEE
 PD

Aug 22 17:17:51.822 PDT: %ILPOWER-5-POWER_GRANTED: Interface Fo1/0/1: Power granted

Aug 22 17:17:52.321 PDT: ilpower delete power from pd linkdown Fo1/0/1

Aug 22 17:17:52.321 PDT: Ilpower interface (Fo1/0/1), delete allocated power 15400

Aug 22 17:17:52.321 PDT: Ilpower interface (Fo1/0/1) setting ICUT_OFF threshold to 0.

Aug 22 17:17:52.321 PDT:  ilpower_notify_lldp_power_via_mdi_tlv Fo1/0/1 pwr alloc 0

Aug 22 17:17:52.321 PDT: Fo1/0/1 AUTO PORT PWR Alloc 130 Request 130

Aug 22 17:17:52.321 PDT: Fo1/0/1: 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 Fo1/0/1: Power Device detected: IEEE
 PD

Aug 22 17:18:13.207 PDT: (Fo1/0/1) data power pool 1

Aug 22 17:18:13.207 PDT: Ilpower PD device 3 class 6 from interface (Fo1/0/1)

Aug 22 17:18:13.207 PDT: (Fo1/0/1) state auto

Aug 22 17:18:13.207 PDT: (Fo1/0/1) data power pool: 1, pool 1

Aug 22 17:18:13.207 PDT: (Fo1/0/1) curr pwr usage 15400

Aug 22 17:18:13.207 PDT: (Fo1/0/1) req pwr 15400

Aug 22 17:18:13.207 PDT: (Fo1/0/1) total pwr 610000

Aug 22 17:18:13.207 PDT: (Fo1/0/1) power_status OK

Aug 22 17:18:13.207 PDT: ilpower new power from pd discovery Fo1/0/1, power_status ok

Aug 22 17:18:13.207 PDT: Ilpower interface (Fo1/0/1) 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 Fo1/0/1 pwr alloc 15400

Aug 22 17:18:13.208 PDT: Fo1/0/1 AUTO PORT PWR Alloc 130 Request 130

Aug 22 17:18:13.208 PDT: Fo1/0/1: 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 FoveGigabitEthernet1/0/1, changed state
 to down

Aug 22 17:18:14.207 PDT: %ILPOWER-5-POWER_GRANTED: Interface Fo1/0/1: 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 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
 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 N
 Auto Config           : N N N N N N N N N N N N
 Disconnect            : N 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 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 N
 Auto Config           : N N N N N N N N N N N N
 Disconnect            : N 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 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 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** | **10000** | **25000** | **40000** | **100000** | **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.
10000	Specifies that the port runs at 10000 Mbps operation.
25000	Specifies that the port runs at 25000 Mbps operation.
40000	Specifies that the port runs at 40000 Mbps operation.
100000	Specifies that the port runs at 100000 Mbps operation.
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.
	Cisco IOS XE Fuji 16.9.2	Support for **10000** and **25000** Mbps options with dual-rate transceivers was introduced.

Release	Modification
Cisco IOS XE Gibraltar 16.12.1	Support for **40000**and **100000** Mbps options with dual-rate transceivers 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.

When you install dual-rate transceiver modules (on supported switch models), entering the the **speed** command displays the dual configuration options that are available with the transceiver module. For information about such transceiver modules and device compatibility, see: the Transceiver Module Group (TMG) Compatibility Matrix.

⚠️ **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
```

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:

```
Device(config)# network-policy profile 1
Device(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:

```
Device(config)# network-policy profile 1
Device(config-network-policy)# voice-signaling vlan 400 dscp 45
```

This example shows how to configure voice-signaling for the native VLAN with priority tagging:

```
Device(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:

```
Device(config)# network-policy profile 1
Device(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:

```
Device(config)# network-policy profile 1
Device(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:

```
Device(config-network-policy)# voice vlan dot1p cos 4
```