Interface 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** | **port** | **powerman** | **registries** | **scp** | **sense**}
no debug ilpower {**cdp** | **event** | **ha** | **port** | **powerman** | **registries** | **scp** | **sense**}

Syntax Description

cdp	Displays PoE Cisco Discovery Protocol (CDP) debug messages.
event	Displays PoE event debug messages.
ha	Displays PoE high-availability 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.

Command Default   Debugging is disabled.

Command Modes   Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	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 member switch, 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 member switch. 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 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 16.6.1	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 member switch, 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 member switch. 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 command has no arguments or keywords.

Command Default Debugging is disabled.

Command Modes Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	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 . To enable debugging on a stack member, you can start a session from the 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 16.6.1	This command was introduced.

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

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 Mbps). You cannot configure half-duplex mode for interfaces operating at 1000 or 10,000 Mbps.

Command Default   For Gigabit Ethernet ports, the default is **auto**.

Command Modes   Interface configuration (config-if)

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.1	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.

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.

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

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

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

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

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

Caution Changing the interface speed and duplex mode configuration might shut down and reenable 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> enable
Device# configure terminal
Device(config)# interface gigabitethernet 1/0/1
Device(config-if)# duplex full
```

errdisable detect cause

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

errdisable detect cause {**all** | **arp-inspection** | **bpduguard shutdown vlan** | **dhcp-rate-limit** | **dtp-flap** | **gbic-invalid** | **inline-power** | **link-flap** | **loopback** | **pagp-flap** | **pppoe-ia-rate-limit** | **psp shutdown vlan** | **security-violation shutdown vlan** | **sfp-config-mismatch**}

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

Syntax Description

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

Command Default

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

Command Modes

Global configuration

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.1	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

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	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(config)# errdisable recovery cause bpduguard
```

errdisable recovery interval

To specify the time to recover from an error-disabled state, use the **errdisable recovery interval** command in global configuration mode. To return to the default setting, use the **no** form of this command.

errdisable recovery interval *timer-interval*
no errdisable recovery interval *timer-interval*

Syntax Description   *timer-interval*   Time to recover from the error-disabled state. The range is 30 to 86400 seconds. The same interval is applied to all causes. The default interval is 300 seconds.

Command Default   The default recovery interval is 300 seconds.

Command Modes   Global configuration

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.1	This command was introduced.

Usage Guidelines

The error-disabled recovery timer is initialized at a random differential from the configured interval value. The difference between the actual timeout value and the configured value can be up to 15 percent of the configured interval.

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

Examples

This example shows how to set the timer to 500 seconds:

```
Device(config)# errdisable recovery interval 500
```

hw-module beacon

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

hw-module beacon { **rp** { **active** | **standby** } | **fan-tray** | **power-supply** *ps-slot-number* | **slot** *slot-number* } { **on** | **off** | **status** }

Syntax Description	**rp** {**active**	**standby**}	Specifies the active or the standby Supervisor to be controlled.
	fan-tray	Specifies the fan tray beacon to be controlled.
	power-supply *ps-slot-number*	Specifies the power supply beacon to be controlled.
	slot *slot-number*	Specifies the slot to be controlled.
	on	Turns the beacon on.
	off	Turns the beacon off.
	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 Everest 16.6.1	This command was introduced.

Usage Guidelines

Use the **hw-module beacon** command to turn on or off the beacon LEDs. You can monitor the power-supply, fan-tray, line card slots, and supervisor units by turning on the respective beacon LEDs. You can also find the status of these units with the **hw-module beacon status** command. Turning on the respective beacon LED helps in identifying the unit on the chassis for administrative purposes.

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 {on | off}** 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 {on | off }** 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.

Use the **hw-module beacon fan-try {on | off | status}** command to enable or disable the fan tray LED or to check the status of the fan tray LED. Blue indicates the fan tray LED is on and black indicates that it is off.

Use the **hw-module beacon power-supply** *ps-slot-number* **{on | off | status}** command to enable or disable the particular power supply LED, or to check its status. Blue indicates the power supply LED is on and black indicates the power supply 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
```

hw-module subslot mode

To control the subscriber line interface (SLI) traffic rate of a device, use the **hw-module subslot mode** command in global configuration mode. To return to the default mode, use the **no** form of this command.

Cisco IOS XE Gibraltar 16.10.x and Earlier Releases

hw-module **subslot** *slot/subslot* **mode** [{**dynamic** | **performance**}]
no hw-module **subslot** *slot/subslot* **mode**

Cisco IOS XE Gibraltar 16.11.1 and Later Releases

hw-module **subslot** *slot/subslot* **mode** [{**dynamic** | **performance** | **static**}]
no hw-module **subslot** *slot/subslot* **mode**

Syntax Description	*slot*	Slot number. The range is from 0 to 10.
	subslot	Subslot number. The range is from 0 to 0.
	dynamic	(Optional) Sets the line card operation modes to dynamic mode.
	performance	(Optional) Sets the line card operation modes to performance mode.
	static	(Optional) Sets the line card operation modes to static mode.

| **Command Default** | • Until Cisco IOS XE Gibraltar 16.10.x release, the default mode is static. |
| | • Starting in Cisco IOS XE Gibraltar 16.11.1 release, the default mode is dynamic. |

Command Modes   Global Configuration (config)

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	This command was introduced.

Usage Guidelines

• **Performance mode**: Allows limited number of front panel interfaces to operate at full 64-byte 10G rate, while keeping the other interfaces in disabled state.

For 7 slot chassis, 8 10G/MGig line card front panel interfaces get activated and provides full 64-byte 10G rate. For 10 slot chassis, 5 front panel interfaces get activated at full 64-byte 10G rate. The other line card interfaces are disabled and do not link up. Disabled front panel interfaces has amber LED on and the **show interfaces** command displays hardware in disabled state.

• **Dynamic mode**: Monitors the system software on how many SLI links are active based on the front panel port link status, and dynamically configures SLI link 64-byte packet max traffic bandwidth.

For 7 slot chassis, when the number of active SLI links exceed 8, system software limits SLI 64-byte packet traffic rate down to 7.5G for all 12 SLIs. For 10 slot chassis, when the number of active SLI links exceed 5, SLI 64-byte packet traffic rate is limited to 6.25G for all 8 SLIs. Otherwise, system software allows full l0G traffic with 64-byte packets on the active SLIs.

• **Static mode**: SLI traffic rate is fixed to 7.5G for both 7 slot chassis and 10 slot chassis.

Examples

The following example shows how to set the line card mode to performance:

```
Device> enable
Device# configure terminal
Device(config)# hw-module subslot 1/0 mode performance
```

Related Commands

Command	Description
show hw-module subslot mode	Displays the line card mode of the platform.
show platform hardware iomd portgroups	Displays the port grouping information of the platform.
show platform hardware iomd lc-portmap brief	Displays the line card port map information of the platform.

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 16.6.1	This command was introduced.

Usage Guidelines

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

The following example shows how to configure a tunnel interface:

```
Device# interface Tunnel 15
```

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*	• *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. Enables you to configure a 10-Gigabit Ethernet interface.
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

Command History   *Table 1:*

Release	Modification
Cisco IOS XE Everest 16.6.1	This command was introduced.

Examples

This example shows how you can select a set of VLAN interfaces to be configured :

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

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

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	This command was introduced.

Usage Guidelines This command is supported on 802.1 media types.

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

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

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

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

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

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

logging event power-inline-status

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

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

Syntax Description	This command has no arguments or keywords.
Command Default	Logging of PoE events is enabled.
Command Modes	Interface configuration

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	This command was introduced.

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

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

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

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

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	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
```

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

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	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

Command History	**Release**	**Modification**
	Cisco IOS XE Everest 16.6.1	This command was introduced.

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

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

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

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

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

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

power efficient-ethernet auto

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

power efficient-ethernet auto
no power efficient-ethernet auto

Syntax Description   This command has no arguments or keywords.

Command Default   EEE is disabled.

Command Modes   Interface configuration

Command History	**Release**	**Modification**
	Cisco IOS XE Everest 16.6.1	This command was introduced.

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

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

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

This command does not require a license.

This example shows how to enable EEE for an interface:

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

This example shows how to disable EEE for an interface:

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

power-priority

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

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

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

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

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

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

Command Modes   Switch stack-power configuration

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.1	This command was introduced.

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

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

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

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

Examples

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

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

power inline

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

power inline {**auto** [**max** *max-wattage*] | **never** | **port priority** {**high** | **low**} | **static** [**max** *max-wattage*]}

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

Syntax Description

auto	Enables powered-device detection. If enough power is available, automatically allocates power to the PoE port after device detection. Allocation is first-come, first-serve.
max *max-wattage*	(Optional) Limits the power allowed on the port. The range is 4000 to 30000 mW. If no value is specified, the maximum is allowed.
never	Disables device detection, and disables power to the port.
port	Configures the power priority of the port. The default priority is low.

priority {**high**|**low**}	Sets the power priority of the port. In case of a power supply failure, ports configured as low priority are turned off first and ports configured as high priority are turned off last. The default priority is low.
static	Enables powered-device detection. Pre-allocates (reserves) power for a port before the switch discovers the powered device. This action guarantees that the device connected to the interface receives enough power.

Command Default

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

The maximum wattage is 30,000 mW.

The default port priority is low.

Command Default

Interface configuration

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

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

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

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

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

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

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

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

Examples

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

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

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

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

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

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

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

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

power inline police

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

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

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

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

Command Modes   Interface configuration

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.1	This command was introduced.

Usage Guidelines   This command is supported only on the LAN Base image.

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

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

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

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

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

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

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

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

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

- To configure the device to turn off power to the port and put the port in the error-disabled state, use the **power inline police** interface configuration command.

- To configure the device to generate a syslog message while still providing power to the device, use the **power inline police action log** command.

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

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

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

Examples

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

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

power supply

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

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

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

Command Default

The switch power supply is on.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	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
```

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**}|**fan-tray**　|　**power-supply** *ps-slot-number*　|　**slot** *slot-number* } | **all**}

Syntax Description		
rp {**active**	**standby**}		Specifies the active or the standby Supervisor whose beacon LED status is to be displayed.
slot *slot-num*		Specifies the slot whose beacon LED status is to be displayed.
fan-tray		Specifies that the status of fan tray beacon is to be displayed.
power-supply　*ps-slot-number*		Specifies the power supply 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 on a 7-slot device.

```
Device#show beacon all
Slot#           Beacon Status
--------------------------------
 1                OFF
 2                OFF
 3                OFF
*4                OFF
 5                OFF
 6                OFF
 7                OFF
--------------------------------
Power-Supply#   Beacon Status
--------------------------------
 4                OFF
 8                OFF
```

```
-------------------------------
FANTRAY BEACON:     OFF
Switch#
```

Following is a sample output of *show beacon rp* command on a 7-slot device

```
Device#show beacon rp active
Slot#   Beacon Status
----------------------
 3               ON

Switch#show beacon rp standby
Slot#   Beacon Status
----------------------
 4               OFF
```

The following example displays the status of fantray:

```
Device#show beacon fantray
-------------------------------
FANTRAY BEACON: ON
Switch#
```

show eee

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

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

Command Default	None

Command Modes	User EXEC
	Privileged EXEC

Command History	**Release**	**Modification**
	Cisco IOS XE Everest 16.6.1	This command was introduced.

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

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

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

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

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

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

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

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

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

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

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

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

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

Table 2: show eee status Field Descriptions

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

show environment

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

show environment { **all** | **counters** | **history** | **location** | **sensor** | **status** | **summary** | **table** }

Syntax Description	
all	(Optional) Displays the list of sensors.
counters	(Optional) Displays the operational counters of the sensors.
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 16.6.1	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 16.6.1	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.

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 16.6.1	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.

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

show hardware led

To display the status of hardware components on the device, use the **show hardware led** command in privileged EXEC mode.

show hardware led [**port** [**FortyGigabitEthernet** *interface-number* | **TenGigabitEthernet** *interface-number* | **GigabitEthernet** *interface-number* | **status**]]

Syntax Description

FortyGigabitEthernet *interface-number*	Specifies the FortyGigabit interface whose LED status is to be displayed
TenGigabitEthernet *interface-number*	Specifies the Tengigabit interface whose LED status is to be displayed.
GigabitEthernet *interface-number*	Specifies the One Gigabit interface whose LED status is to be displayed.
status	Displays the status of the ports on the device.

Command History	Release	Modification
	Cisco IOS XE Fuji 16.8.1a	This command was introduced.

Command Default   This command has no default settings.

Command Modes   Privileged EXEC (#)

Usage Guidelines   The **show hardware led** command displays the status of ports on the Line Cards and Supervisors, status of PowerSupply and Fan tray modules, and the status of RJ45 console.

On a Supervisor there are four PORT SET ENABLED LEDs, each representing a group of ports. Port numbers 1 to 4 form Group 1 (G1), Port numbers 5 to 8 form Group 2 (G2), Port number 9 is Group 3 (G3) and Port number 10 is Group 4 (G4). Status of each group for an active or standy supervisor is displayed.

The command displays the following colors to indicate status of the PORT LEDs:

- GREEN—Indicates the interface is up.

- BLACK—Indicates the interface is down.

- AMBER—Indicates the interface ADMIN is down.

The command displays the following colors to indicate the status of Line Cards (LC):

- AMBER—Indicates the LC is booting up.

- GREEN—Indicates the LC is up and running.

- RED—Indicates the LC has a problem or is disabled.

Staus of BEACON LED for fantray, power-supply, line cards and supervisor moodules are indicated by the following colours:

- BLUE—Indicates the Beacon LED is On.

- BLACK—Indicates the Beacon LED is Off.

Status of SYSTEM LED is indicated by the following colors:

- GREEN—Indicates all components are up and running.

- RED—Indicates that temperature exceeds either the critical temperature or the shutdown threshold; or fantray is either removed or has failed.

- ORANGE—Indicates that temperature exceeds the warning threshold; or fantray experiences partial fails; or active power supply failed.

For more information on LEDs refer Cisco Catalyst 9400 Series Switches Hardware Installation Guide.

Sample output of *show hardware led* command

```
Device#show hardware led

SWITCH: C9407R

SYSTEM: GREEN
```

```
Line Card : 1
PORT STATUS: (24) Te1/0/1:BLACK Te1/0/2:BLACK Te1/0/3:BLACK Te1/0/4:BLACK Te1/0/5:BLACK
Te1/0/6:BLACK Te1/0/7:BLACK Te1/0/8:BLACK Te1/0/9:BLACK Te1/0/10:BLACK Te1/0/11:BLACK
Te1/0/12:BLACK Te1/0/13:BLACK Te1/0/14:BLACK Te1/0/15:BLACK Te1/0/16:BLACK Te1/0/17:BLACK
Te1/0/18:BLACK Te1/0/19:BLACK Te1/0/20:BLACK Te1/0/21:BLACK Te1/0/22:BLACK Te1/0/23:BLACK
Te1/0/24:BLACK
BEACON: BLUE

STATUS: GREEN


Line Card : 2
PORT STATUS: (48) Gi2/0/1:ACT_GREEN Gi2/0/2:ACT_GREEN Gi2/0/3:BLACK Gi2/0/4:BLACK
Gi2/0/5:BLACK Gi2/0/6:BLACK Gi2/0/7:BLACK Gi2/0/8:BLACK Gi2/0/9:BLACK Gi2/0/10:BLACK
Gi2/0/11:BLACK Gi2/0/12:BLACK Gi2/0/13:BLACK Gi2/0/14:BLACK Gi2/0/15:BLACK Gi2/0/16:BLACK
Gi2/0/17:BLACK Gi2/0/18:BLACK Gi2/0/19:BLACK Gi2/0/20:BLACK Gi2/0/21:BLACK Gi2/0/22:BLACK
Gi2/0/23:ACT_GREEN Gi2/0/24:BLACK Gi2/0/25:ACT_GREEN Gi2/0/26:BLACK Gi2/0/27:BLACK
Gi2/0/28:BLACK Gi2/0/29:BLACK Gi2/0/30:BLACK Gi2/0/31:BLACK Gi2/0/32:BLACK Gi2/0/33:BLACK
Gi2/0/34:BLACK Gi2/0/35:BLACK Gi2/0/36:BLACK Gi2/0/37:BLACK Gi2/0/38:BLACK Gi2/0/39:BLACK
Gi2/0/40:BLACK Gi2/0/41:BLACK Gi2/0/42:BLACK Gi2/0/43:BLACK Gi2/0/44:BLACK Gi2/0/45:ACT_GREEN
 Gi2/0/46:BLACK Gi2/0/47:BLACK Gi2/0/48:BLACK
BEACON: BLUE

STATUS: GREEN


SUPERVISOR: ACTIVE
PORT STATUS: (10) Te3/0/1:BLACK Te3/0/2:BLACK Te3/0/3:BLACK Te3/0/4:BLACK Te3/0/5:BLACK
Te3/0/6:BLACK Te3/0/7:BLACK Te3/0/8:BLACK Fo3/0/9:BLACK Fo3/0/10:BLACK

BEACON: BLUE

GROUP LED: UPLINK-G1:GREEN UPLINK-G2:BLACK UPLINK-G3:BLACK UPLINK-G4:BLACK


SUPERVISOR: STANDBY
PORT STATUS: (10) Te4/0/1:BLACK Te4/0/2:BLACK Te4/0/3:BLACK Te4/0/4:BLACK Te4/0/5:BLACK
Te4/0/6:BLACK Te4/0/7:BLACK Te4/0/8:BLACK Fo4/0/9:BLACK Fo4/0/10:BLACK

BEACON: BLUE

GROUP LED: UPLINK-G1:BLACK UPLINK-G2:BLACK UPLINK-G3:GREEN UPLINK-G4:BLACK


Line Card : 5
PORT STATUS: (48) Gi5/0/1:BLACK Gi5/0/2:BLACK Gi5/0/3:BLACK Gi5/0/4:BLACK Gi5/0/5:BLACK
Gi5/0/6:BLACK Gi5/0/7:BLACK Gi5/0/8:BLACK Gi5/0/9:BLACK Gi5/0/10:BLACK Gi5/0/11:BLACK
Gi5/0/12:BLACK Gi5/0/13:BLACK Gi5/0/14:BLACK Gi5/0/15:BLACK Gi5/0/16:BLACK Gi5/0/17:BLACK
Gi5/0/18:BLACK Gi5/0/19:BLACK Gi5/0/20:BLACK Gi5/0/21:BLACK Gi5/0/22:BLACK Gi5/0/23:ACT_GREEN
 Gi5/0/24:BLACK Gi5/0/25:ACT_GREEN Gi5/0/26:BLACK Gi5/0/27:BLACK Gi5/0/28:BLACK Gi5/0/29:BLACK
 Gi5/0/30:BLACK Gi5/0/31:BLACK Gi5/0/32:BLACK Gi5/0/33:BLACK Gi5/0/34:BLACK Gi5/0/35:BLACK
 Gi5/0/36:BLACK Gi5/0/37:BLACK Gi5/0/38:BLACK Gi5/0/39:BLACK Gi5/0/40:BLACK Gi5/0/41:ACT_GREEN
 Gi5/0/42:BLACK Gi5/0/43:BLACK Gi5/0/44:BLACK Gi5/0/45:ACT_GREEN Gi5/0/46:BLACK Gi5/0/47:BLACK
 Gi5/0/48:ACT_GREEN
BEACON: BLUE
STATUS: GREEN

Line Card : 6
PORT STATUS: (48) Gi6/0/1:BLACK Gi6/0/2:BLACK Gi6/0/3:BLACK Gi6/0/4:BLACK Gi6/0/5:BLACK
Gi6/0/6:BLACK Gi6/0/7:BLACK Gi6/0/8:BLACK Gi6/0/9:BLACK Gi6/0/10:BLACK Gi6/0/11:BLACK
Gi6/0/12:BLACK Gi6/0/13:BLACK Gi6/0/14:BLACK Gi6/0/15:BLACK Gi6/0/16:BLACK Gi6/0/17:BLACK
Gi6/0/18:BLACK Gi6/0/19:BLACK Gi6/0/20:BLACK Gi6/0/21:BLACK Gi6/0/22:BLACK Gi6/0/23:BLACK
```

```
Gi6/0/24:BLACK Gi6/0/25:BLACK Gi6/0/26:BLACK Gi6/0/27:BLACK Gi6/0/28:BLACK Gi6/0/29:BLACK
Gi6/0/30:BLACK Gi6/0/31:BLACK Gi6/0/32:BLACK Gi6/0/33:BLACK Gi6/0/34:BLACK Gi6/0/35:BLACK
Gi6/0/36:BLACK Gi6/0/37:BLACK Gi6/0/38:BLACK Gi6/0/39:BLACK Gi6/0/40:BLACK Gi6/0/41:ACT_GREEN
 Gi6/0/42:BLACK Gi6/0/43:BLACK Gi6/0/44:BLACK Gi6/0/45:BLACK Gi6/0/46:BLACK Gi6/0/47:BLACK
 Gi6/0/48:BLACK
BEACON: BLUE
STATUS: GREEN

Line Card : 7
PORT STATUS: (48) Gi7/0/1:BLACK Gi7/0/2:BLACK Gi7/0/3:BLACK Gi7/0/4:BLACK Gi7/0/5:BLACK
Gi7/0/6:BLACK Gi7/0/7:BLACK Gi7/0/8:BLACK Gi7/0/9:BLACK Gi7/0/10:BLACK Gi7/0/11:BLACK
Gi7/0/12:BLACK Gi7/0/13:BLACK Gi7/0/14:BLACK Gi7/0/15:BLACK Gi7/0/16:BLACK Gi7/0/17:BLACK
Gi7/0/18:BLACK Gi7/0/19:BLACK Gi7/0/20:BLACK Gi7/0/21:BLACK Gi7/0/22:BLACK Gi7/0/23:BLACK
Gi7/0/24:BLACK Te7/0/25:BLACK Te7/0/26:BLACK Te7/0/27:BLACK Te7/0/28:BLACK Te7/0/29:BLACK
Te7/0/30:BLACK Te7/0/31:BLACK Te7/0/32:BLACK Te7/0/33:BLACK Te7/0/34:BLACK Te7/0/35:BLACK
Te7/0/36:BLACK Te7/0/37:BLACK Te7/0/38:BLACK Te7/0/39:BLACK Te7/0/40:BLACK Te7/0/41:BLACK
Te7/0/42:BLACK Te7/0/43:BLACK Te7/0/44:BLACK Te7/0/45:BLACK Te7/0/46:BLACK Te7/0/47:BLACK
Te7/0/48:BLACK
BEACON: BLUE
STATUS: GREEN

RJ45 CONSOLE: GREEN
FANTRAY STATUS: GREEN
FANTRAY BEACON: BLUE
POWER-SUPPLY 1 BEACON: BLUE
POWER-SUPPLY 2 BEACON: BLUE
```

show hw-module subslot mode

To display the line card mode of the platform, use the **show hw-module subslot mode** command in privileged EXEC mode.

show hw-module subslot *slot/subslot* **mode**

Syntax Description

slot	Slot number. The range is from 0 to 10.
subslot	Subslot number. The range is from 0 to 0.

Command Modes Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	This command was introduced.

Examples The following is sample output from the **show hw-module subslot mode** command:

```
Device# show hw-module subslot 1/0 mode

subslot [1/0] mode: dynamic
```

show idprom fan-tray

To display the serial number for the fan-tray component and the chassis, use the **show idprom fan-tray** command in privileged EXEC mode.

```
show idprom fan-tray
```

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	This command was introduced.
Cisco IOS XE Fuji 16.8.1a	The output of the command was enhanced to include Chassis Serial Number in the command output.

The following is sample output from the **show idprom fan-tray** command:

```
Device#show idprom fan tray
Fan Tray Idprom:

Controller Type         : 3196
Hardware Revision       : 0.1
Top Assy. Revision      : 24
Deviation Number        : 0
PCB Serial Number       : FXS2006018B
Chassis Serial Number   : FXS2009Q09Z
RMA Test History        : 00
RMA Number              : 0-0-0-0
RMA History             : 00
CLEI Code               : 0
ECI Number              : 0
Product Identifier (PID) : WS-XFAN7
Version Identifier (VID) : V00
Manufacturing Test Data  : 00 00 00 00 00 00 00 00
Field Diagnostics Data   : 00 00 00 00 00 00 00 00
Environment Monitor Data : 03 00 00 00 15 E1 5E 00
                           A9
Environment Monitor Data : 00 06 00 FA
```

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.

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 16.6.1	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 3: show ip interface Field Descriptions

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

Field	Description
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 4: 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.

Field	Description
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*] | **debounce** | **description** | **etherchannel** | **flowcontrol** | **private-vlan mapping** | **pruning** | **stats** | **status** [{**err-disabled**}] | **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 48.
	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.
		This option is not available if you entered a specific interface ID.
	description	(Optional) Displays the administrative status and description set for interfaces.
	etherchannel	(Optional) Displays interface EtherChannel information.
	flowcontrol	(Optional) Displays interface flow control information.
	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.
	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 16.6.1	This command 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.

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

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

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

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

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

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

Port     Vlans traffic requested of neighbor
Gi1/0/2  1-3
```

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

```
Device# show interfaces vlan 1 stats

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

```
                 Total      1165354    136205310      570800      91731594
```

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

```
Device# show interfaces status err-disabled

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

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

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

Port Vlans pruned for lack of request by neighbor


Device# show interfaces gigabitethernet1/0/1 trunk

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

Port        Vlans allowed on trunk
Gi1/0/1     none

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

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

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** *stack-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 *stack-member-number*	(Optional) Displays counters for the specified stack member.	
	Note	In this command, the **module** keyword refers to the stack member number. The module number that is part of the interface ID is always zero.

| **protocol status** | (Optional) Displays the status of protocols enabled on interfaces. |
| **trunk** | (Optional) Displays trunk counters. |

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

Command Default None

Command Modes Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	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 stack member 2. It displays all counters for the specified switch in the stack.

```
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. 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 16.6.1	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.

Note   Private VLANs are not supported in this release, so those fields are not applicable.

```
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.

Field	Description
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 16.6.1	This command was introduced.

Examples

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

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

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

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

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

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>
```

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.

Usage Guidelines

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

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

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

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

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

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

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

```
Device# show inventory
NAME: "Chassis", DESCR: "Cisco Catalyst 9400 Series 7 Slot Chassis"
PID: C9407R            , VID: V01  , SN: FXS2128Q13X

NAME: "Slot 2 - Linecard", DESCR: "Cisco Catalyst 9400 Series 48-Port UPOE 10/100/1000
(RJ-45)"
PID: C9400-LC-48U      , VID: V01  , SN: JAE213102KS

NAME: "Slot 5 - Linecard", DESCR: "Cisco Catalyst 9400 Series 48-Port UPOE 10/100/1000
(RJ-45)"
PID: C9400-LC-48U      , VID: V01  , SN: JAE2132070M

NAME: "Slot 3 - Supervisor", DESCR: "Cisco Catalyst 9400 Series Supervisor 1 Module"
PID: C9400-SUP-1       , VID:      , SN:

NAME: "TenGigabitEthernet3/0/1", DESCR: "10GE CU5M"
PID: N/A               , VID: T    , SN: TED2116C4SV

NAME: "Slot 4 - Supervisor", DESCR: "Cisco Catalyst 9400 Series Supervisor 1 Module"
PID: C9400-SUP-1       , VID: V01  , SN: JAE221703LD

NAME: "TenGigabitEthernet4/0/1", DESCR: "10GE CU5M"
PID: N/A               , VID: T    , SN: TED2116C4EG

NAME: "Power Supply Module 1", DESCR: "Cisco Catalyst 9400 Series 3200W AC Power Supply"
PID: C9400-PWR-3200AC  , VID: V01  , SN: DTM212200X2

NAME: "Fan Tray", DESCR: "Cisco Catalyst 9400 Series 7 Slot Chassis Fan Tray"
PID: C9407-FAN         , VID: V01  , SN: FXS212206DG
```

Table 5: 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. You can request even more specific UDI information with the *entity* argument value enclosed in quotation marks.

```
9407R#show inv "Slot 2 Linecard"
NAME: "Slot 2 Linecard", DESCR: "Cisco Catalyst 9400 Series 48-Port UPOE 10/100/1000 (RJ-45)"
PID: C9400-LC-48U     , VID: V01  , SN: JAE213102KS
```

show logg onboard slot

To display the status of a line card use the **show logg onboard slot** *slot-num* **state** command in the global configuration mode.

show logg onboard slot *slot-num* **state**

Syntax Description

slot-num	Specifies the line card.
state	Displays the status of the line card.

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 this command to monitor the state of a line card. The status is AMBER during the boot-up of the line card; RED when the linecard is disabled or has a problem; GREEN when the linecard is up and running.

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 16.6.1	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 16.6.1	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 16.6.1	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 16.6.1	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 16.6.1	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 16.6.1	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 fed active forward

To display device-specific hardware information, use the **show platform hardware fed active** command.

This topic elaborates only the forwarding-specific options, that is, the options available with the **show platform hardware fed** {**active** | **standby** } **forward** command.

The output of the **show platform hardware fed active forward** displays all the details about the forwarding decision taken for the packet.

show platform hardware fed {**active** | **standby**} **forward**

Syntax Description	{ | **active** | **standby** } The switch for which you want to display information. You have the following options : • **active**—Displays information relating to the active switch. • **standby**—Displays information relating to the standby switch, if available.
	forward Displays packet forwarding information.

Command Modes   Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	This command was introduced.

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

show platform hardware iomd lc-portmap brief

To display the line card port map information of the platform, use the **show platform hardware iomd lc-portmap brief** command in privileged EXEC mode.

show platform hardware iomd *slot/card* **lc-portmap brief**

Syntax Description

slot	Slot number. The range is from 0 to 10.
card	Card number. The range is from 0 to 0.

Command Modes   Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	This command was introduced.

Examples

The following is sample output from the **show platform hardware iomd lc-portmap brief** command:

```
Device# show platform hardware iomd 1/0 lc-portmap brief

id  1 asic 0 port  0 intl_port_sup0  8 intl_port_sup1  0 max_speed DEV_PORT_SPEED_10G
id  2 asic 0 port  1 intl_port_sup0  8 intl_port_sup1  0 max_speed DEV_PORT_SPEED_10G
id  3 asic 0 port  2 intl_port_sup0  8 intl_port_sup1  0 max_speed DEV_PORT_SPEED_10G
id  4 asic 0 port  3 intl_port_sup0 10 intl_port_sup1  2 max_speed DEV_PORT_SPEED_10G
id  5 asic 0 port  4 intl_port_sup0 10 intl_port_sup1  2 max_speed DEV_PORT_SPEED_10G
id  6 asic 0 port  5 intl_port_sup0 10 intl_port_sup1  2 max_speed DEV_PORT_SPEED_10G
id  7 asic 1 port  6 intl_port_sup0  9 intl_port_sup1  1 max_speed DEV_PORT_SPEED_10G
id  8 asic 1 port  7 intl_port_sup0  9 intl_port_sup1  1 max_speed DEV_PORT_SPEED_10G
id  9 asic 1 port  8 intl_port_sup0  9 intl_port_sup1  1 max_speed DEV_PORT_SPEED_10G
id 10 asic 1 port  9 intl_port_sup0 10 intl_port_sup1  2 max_speed DEV_PORT_SPEED_10G
id 11 asic 1 port 10 intl_port_sup0 10 intl_port_sup1  2 max_speed DEV_PORT_SPEED_10G
id 12 asic 1 port 11 intl_port_sup0 10 intl_port_sup1  2 max_speed DEV_PORT_SPEED_10G
id 13 asic 2 port 12 intl_port_sup0  8 intl_port_sup1  0 max_speed DEV_PORT_SPEED_10G
id 14 asic 2 port 13 intl_port_sup0  8 intl_port_sup1  0 max_speed DEV_PORT_SPEED_10G
id 15 asic 2 port 14 intl_port_sup0  8 intl_port_sup1  0 max_speed DEV_PORT_SPEED_10G
id 16 asic 2 port 15 intl_port_sup0 10 intl_port_sup1  2 max_speed DEV_PORT_SPEED_10G
id 17 asic 2 port 16 intl_port_sup0 10 intl_port_sup1  2 max_speed DEV_PORT_SPEED_10G
id 18 asic 2 port 17 intl_port_sup0 10 intl_port_sup1  2 max_speed DEV_PORT_SPEED_10G
id 19 asic 3 port 18 intl_port_sup0  8 intl_port_sup1  0 max_speed DEV_PORT_SPEED_10G
id 20 asic 3 port 19 intl_port_sup0  8 intl_port_sup1  0 max_speed DEV_PORT_SPEED_10G
```

```
id 21 asic 3 port 20 intl_port_sup0  8 intl_port_sup1  0 max_speed DEV_PORT_SPEED_10G
id 22 asic 3 port 21 intl_port_sup0 10 intl_port_sup1  2 max_speed DEV_PORT_SPEED_10G
id 23 asic 3 port 22 intl_port_sup0 10 intl_port_sup1  2 max_speed DEV_PORT_SPEED_10G
id 24 asic 3 port 23 intl_port_sup0 10 intl_port_sup1  2 max_speed DEV_PORT_SPEED_10G
```

show platform hardware iomd portgroups

To display the port grouping information of the platform, use the **show platform hardware iomd portgroups** command in privileged EXEC mode.

show platform hardware iomd *slot/card* **portgroups**

Syntax Description

slot	Slot number. The range is from 0 to 10.
card	Card number. The range is from 0 to 0.

Command Modes   Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	This command was introduced.

Examples

The following is sample output from the **show platform hardware iomd portgroups** command:

```
Device# show platform hardware iomd 1/0 portgroups

Port   Interface                 Status   Interface  Group Max
Group                                     Bandwith   Bandwidth

1      TenGigabitEthernet1/0/1      up       10G
1      TenGigabitEthernet1/0/2      up       10G
1      TenGigabitEthernet1/0/3      down     10G        10G

2      TenGigabitEthernet1/0/4      up       10G
2      TenGigabitEthernet1/0/5      down     10G
2      TenGigabitEthernet1/0/6      down     10G        10G

3      TenGigabitEthernet1/0/7      up       10G
3      TenGigabitEthernet1/0/8      down     10G
3      TenGigabitEthernet1/0/9      down     10G        10G

4      TenGigabitEthernet1/0/10     up       10G
4      TenGigabitEthernet1/0/11     down     10G
4      TenGigabitEthernet1/0/12     down     10G        10G

5      TenGigabitEthernet1/0/13     up       10G
5      TenGigabitEthernet1/0/14     down     10G
5      TenGigabitEthernet1/0/15     down     10G        10G

6      TenGigabitEthernet1/0/16     down     10G
6      TenGigabitEthernet1/0/17     up       10G
6      TenGigabitEthernet1/0/18     down     10G        10G
```

```
7      TenGigabitEthernet1/0/19        down       10G
7      TenGigabitEthernet1/0/20        down       10G
7      TenGigabitEthernet1/0/21        down       10G         10G

8      TenGigabitEthernet1/0/22        down       10G
8      TenGigabitEthernet1/0/23        down       10G
8      TenGigabitEthernet1/0/24        down       10G         10G
```

show platform resources

To display platform resource information, use the **show platform reources** command in privileged EXEC mode.

show platform resources

This command has no arguments or keywords.

Command Modes   Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	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 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 16.6.1	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 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**}]

<table>
<tr><td rowspan="15">Syntax Description</td><td>switch switch-number</td><td>Displays information about the switch. Valid values for switch-number argument are from 0 to 9.</td></tr>
<tr><td>active</td><td>Displays information about the active instance of the switch.</td></tr>
<tr><td>standby</td><td>Displays information about the standby instance of the switch.</td></tr>
<tr><td>0</td><td>Displays information about the shared port adapters (SPA) Interface Processor slot 0.</td></tr>
<tr><td>F0</td><td>Displays information about the Embedded Service Processor (ESP) slot 0.</td></tr>
<tr><td>R0</td><td>Displays information about the Route Processor (RP) slot 0.</td></tr>
<tr><td>name process-name</td><td>(Optional) Displays information about the specified process. Enter the process name.</td></tr>
<tr><td>process-id process-ID</td><td>(Optional) Displays information about the specified process ID. Enter the process ID.</td></tr>
<tr><td>sort</td><td>(Optional) Displays information sorted according to processes.</td></tr>
<tr><td>memory</td><td>(Optional) Displays information sorted according to memory.</td></tr>
<tr><td>summary</td><td>(Optional) Displays a summary of the process memory of the host device.</td></tr>
</table>

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 16.6.1	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 6: 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 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
		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 switch active R0 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 16.6.1	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 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 16.6.1	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 16.6.1	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 7: 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 per Cisco IOS XE process, use the **show processes memory platform** command in privileged EXEC mode.

show processes memory platform [{**detailed** {**name** *process-name* | **process-id** *process-ID*} [{**location** | **maps** [{**location**}] | **smaps** [{**location**}]}] | **location** | **sorted** [{**location**}]}] **switch** {*switch-number* | **active** | **standby**} {**0** | **F0** | **R0**}

Syntax Description

detailed *process-name*	(Optional) Displays detailed memory information for a specified Cisco IOS XE process.
name *process-name*	(Optional) Matches the Cisco IOS XE process name.

process-id *process-ID*	(Optional) Matches the Cisco IOS XE process ID.
location	(Optional) Displays information about the FRU location.
maps	(Optional) Displays memory maps of a process.
smaps	(Optional) Displays smaps of a process.
sorted	(Optional) Displays the sorted output based on the total memory used by Cisco IOS XE processes.
switch *switch-number*	Displays information about the device.
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 SPA-Inter-Processor slot 0.
F0	Displays information about the Embedded Service Processor (ESP) slot 0.
R0	Displays information about the Route Processor (RP) slot 0.

Command Modes   Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.6.1	The command was introduced.

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

```
Switch# show processes memory platform

System memory: 3976852K total, 2761580K used, 1215272K free,
Lowest: 1215272K
    Pid    Text    Data   Stack  Dynamic      RSS    Total              Name
-------------------------------------------------------------------------------
      1    1246    4400     132     1308     4400     8328            systemd
     96     233    2796     132      132     2796    12436    systemd-journal
    105     284    1796     132      176     1796     5208      systemd-udevd
    707      52    2660     132      172     2660    11688          in.telnetd
    744     968    3264     132     1700     3264     5800           brelay.sh
    835      52    2660     132      172     2660    11688          in.telnetd
    863     968    3264     132     1700     3264     5800           brelay.sh
    928     968    3996     132     2312     3996     6412         reflector.sh
    933     968    3976     132     2312     3976     6412          droputil.sh
    934     968    2140     132      528     2140     4628              oom.sh
    936     173     936     132      132      936     3068               xinetd
    945     968    1472     132      132     1472     4168          libvirtd.sh
    947     592   43164     132     3096    43164   154716                 repm
```

```
        954         45        932        132        132        932       3132             rpcbind
        986        482       3476        132        132       3476     169288             libvirtd
        988         66        940        132        132        940       2724           rpc.statd
        993        968        928        132        132        928       4232     boothelper_evt.
       1017         21        640        132        132        640       2500          inotifywait
       1089        102       1200        132        132       1200       3328          rpc.mountd
       1328          9       2940        132        148       2940      13844                rotee
       1353         39        532        132        132        532       2336                sleep
!
!
!
```

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

```
Switch# show processes memory platform location switch active R0

System memory: 3976852K total, 2762844K used, 1214008K free,
Lowest: 1214008K
    Pid       Text       Data      Stack    Dynamic        RSS      Total              Name
-------------------------------------------------------------------------------
      1       1246       4400        132       1308       4400       8328            systemd
     96        233       2796        132        132       2796      12436     systemd-journal
    105        284       1796        132        176       1796       5208       systemd-udevd
    707         52       2660        132        172       2660      11688          in.telnetd
    744        968       3264        132       1700       3264       5800           brelay.sh
    835         52       2660        132        172       2660      11688          in.telnetd
    863        968       3264        132       1700       3264       5800           brelay.sh
    928        968       3996        132       2312       3996       6412         reflector.sh
    933        968       3976        132       2312       3976       6412          droputil.sh
!
!
!
```

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

```
Switch# show processes memory platform sorted

System memory: 3976852K total, 2762884K used, 1213968K free,
Lowest: 1213968K
    Pid       Text       Data      Stack    Dynamic        RSS      Total              Name
-------------------------------------------------------------------------------
   9655       3787     264964        136      18004     264964    2675968                 wcm
  17261        324     248588        132     103908     248588    2093076      fed main event
   7885     149848     684864        136         80     684864    1853548      linux_iosd-imag
  17891        398      75772        136       1888      75772     958240             sif_mgr
  17067       1087      77912        136       1796      77912     702184        platform_mgr
   4268        391     102084        136       5596     102084     482656           cli_agent
   4856        357      93388        132       3680      93388     340052                 dbm
  29842       8722      64428        132       8056      64428     297068       fman_fp_image
   5960       9509      76088        136       3200      76088     287156             fman_rp
!
!
!
```

The following is sample output from the **show processes memory platform sorted location switch active R0** command:

```
Switch# show processes memory platform sorted location switch active R0

System memory: 3976852K total, 2763584K used, 1213268K free,
```

```
Lowest: 1213268K
    Pid     Text      Data    Stack   Dynamic       RSS     Total             Name
--------------------------------------------------------------------------------
   9655     3787    264968      136     18004    264968   2675968              wcm
  17261      324    249020      132    103908    249020   2093076   fed main event
   7885   149848    684912      136        80    684912   1853548   linux_iosd-imag
  17891      398     75884      136      1888     75884    958240          sif_mgr
  17067     1087     77820      136      1796     77820    702184     platform_mgr
   4268      391    102084      136      5596    102084    482656        cli_agent
   4856      357     93388      132      3680     93388    340052              dbm
  29842     8722     64428      132      8056     64428    297068    fman_fp_image
   5960     9509     76088      136      3200     76088    287156          fman_rp
!
!
!
```

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 16.6.1	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:

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 Gibraltar 16.10.1	This command was enhanced to display the output of the **show logging onboard uptime** command
Cisco IOS XE Everest 16.6.1	This command was implemented on the Cisco Catalyst 9400 Series Switches

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.

speed

To specify the speed of a 10/100/1000/2500/5000 Mbps port, use the **speed** command in interface configuration mode. To return to the default value, use the **no** form of this command.

speed {**10** | **100** | **1000** | **2500** | **5000** | **auto** [{**10** | **100** | **1000** | **2500** | **5000**}] | **nonegotiate**}
no speed

Syntax Description		
10	Specifies that the port runs at 10 Mbps.	
100	Specifies that the port runs at 100 Mbps.	
1000	Specifies that the port runs at 1000 Mbps. This option is valid and visible only on 10/100/1000 Mb/s ports.	
2500	Specifies that the port runs at 2500 Mbps. This option is valid and visible only on multi-Gigabit-supported Ethernet ports.	
5000	Specifies that the port runs at 5000 Mbps. This option is valid and visible only on multi-Gigabit-supported Ethernet ports.	
auto	Detects the speed at which the port should run, automatically, based on the port at the other end of the link. If you use the **10**, **100**, **1000**, **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

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.1	This command was introduced.

Usage Guidelines You cannot configure speed on 10-Gigabit Ethernet ports.

Except for the 1000BASE-T small form-factor pluggable (SFP) modules, you can configure the speed to not negotiate (**nonegotiate**) when an SFP module port is connected to a device that does not support autonegotiation.

The new keywords, **2500** and **5000** are visible only on multi-Gigabit (m-Gig) Ethernet supporting devices.

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

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

⚠

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

For guidelines on setting the switch speed and duplex parameters, see the "Configuring Interface Characteristics" chapter in the software configuration guide for this release.

Verify your settings using the **show interfaces** privileged EXEC command.

Examples

The following example shows how to set speed on a port to 100 Mbps:

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# speed 100
```

The following example shows how to set a port to autonegotiate at only 10 Mbps:

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# speed auto 10
```

The following example shows how to set a port to autonegotiate at only 10 or 100 Mbps:

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# speed auto 10 100
```

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

Command History	**Release**	**Modification**
	Cisco IOS XE Everest 16.6.1	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

Syntax Description	*bytes*

Command Default	The default MTU size for all ports is 1500 bytes.

Command Modes	Global configuration

Command History	**Release**	**Modification**
	Cisco IOS XE Everest 16.6.1	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.

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 16.6.1	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 16.6.1	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
```