



Interface and Hardware Commands

- [debug ilpower](#), on page 3
- [debug interface](#), on page 4
- [debug lldp packets](#), on page 5
- [debug platform poe](#), on page 6
- [debug platform software fed switch active punt packet-capture start](#), on page 7
- [duplex](#), on page 8
- [errdisable detect cause](#), on page 10
- [errdisable recovery cause](#), on page 12
- [errdisable recovery interval](#), on page 14
- [interface](#), on page 15
- [interface range](#), on page 17
- [ip mtu](#), on page 19
- [ipv6 mtu](#), on page 20
- [lldp \(interface configuration\)](#), on page 21
- [logging event power-inline-status](#), on page 23
- [mdix auto](#), on page 24
- [network-policy](#), on page 25
- [network-policy profile \(global configuration\)](#), on page 26
- [power inline](#), on page 27
- [power inline police](#), on page 30
- [power supply](#), on page 32
- [show beacon all](#), on page 34
- [show environment](#), on page 35
- [show errdisable detect](#), on page 37
- [show errdisable recovery](#), on page 38
- [show ip interface](#), on page 39
- [show interfaces](#), on page 44
- [show interfaces counters](#), on page 49
- [show interfaces switchport](#), on page 51
- [show interfaces transceiver](#), on page 53
- [show memory platform](#), on page 55
- [show module](#), on page 58
- [show network-policy profile](#), on page 59

- [show platform hardware fed switch forward interface](#), on page 60
- [show platform resources](#), on page 63
- [show platform software audit](#), on page 64
- [show platform software fed switch punt cpuq rates](#), on page 68
- [show platform software fed switch punt packet-capture display](#), on page 70
- [show platform software fed switch punt rates interfaces](#), on page 72
- [show platform software ilpower](#), on page 75
- [show platform software memory](#), on page 77
- [show platform software process list](#), on page 83
- [show platform software process memory](#), on page 87
- [show platform software process slot switch](#), on page 90
- [show platform software status control-processor](#), on page 92
- [show platform software thread list](#), on page 95
- [show processes cpu platform](#), on page 97
- [show processes cpu platform history](#), on page 100
- [show processes cpu platform monitor](#), on page 103
- [show processes memory](#), on page 105
- [show processes memory platform](#), on page 108
- [show processes platform](#), on page 112
- [show system mtu](#), on page 115
- [show tech-support](#) , on page 116
- [show tech-support bgp](#), on page 118
- [show tech-support diagnostic](#), on page 121
- [speed](#), on page 123
- [switchport block](#), on page 125
- [system mtu](#), on page 126
- [voice-signaling vlan \(network-policy configuration\)](#), on page 127
- [voice vlan \(network-policy configuration\)](#), on page 129

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 Fuji 16.9.2	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 stack master. To enable debugging on a stack member, you can start a session from the stack master by using the **session switch-number EXEC** command. Then enter the **debug** command at the command-line prompt of the stack member. You also can use the **remote command stack-member-number LINE EXEC** command on the stack master 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	<i>interface-id</i>	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 <i>interface-number</i>	Displays debug messages for null interfaces. The interface number is always 0 .
	port-channel <i>port-channel-number</i>	Displays debug messages for the specified EtherChannel port-channel interface. The <i>port-channel-number</i> range is 1 to 48.
	vlan <i>vlan-id</i>	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 Fuji 16.9.2	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 stack master. To enable debugging on a stack member, you can start a session from the stack master by using the session switch-number EXEC command. Then enter the debug command at the command-line prompt of the stack member. You also can use the remote command stack-member-number LINE EXEC command on the stack master 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 Fuji 16.9.2	This command was introduced.

Usage Guidelines	<p>The undebug lldp packets command is the same as the no debug lldp packets command.</p> <p>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.</p>
-------------------------	---

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 <i>switch-number</i>	(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 Fuji 16.9.2	This command was introduced.
Usage Guidelines	The undebug platform poe command is the same as the no debug platform poe command.	

debug platform software fed switch active punt packet-capture start

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

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

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

Command Modes	Privileged EXEC (#)
----------------------	---------------------

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

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

Examples

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

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

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

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

duplex

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

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

Syntax Description

auto	Enables automatic duplex configuration. The port automatically detects whether it should run in full- or half-duplex mode, depending on the attached device mode.
full	Enables full-duplex mode.
half	Enables half-duplex mode (only for interfaces operating at 10 or 100 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 Fuji 16.9.2	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 reenables 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 Fuji 16.9.2	This command was introduced.

Usage Guidelines	<p>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.</p>
-------------------------	--

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 | uddld}

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 | uddld}

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 Fuji 16.9.2	This command was introduced.

Usage Guidelines

A cause (such as all or BPDU 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 Fuji 16.9.2	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
```

interface

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

interface {**AccessTunnel** *interface-number* | **Auto-Template** *interface-number* | **GigabitEthernet** *switch-number/slot-number/port-number* | **Internal Interface** *Internal Interface number* | **LISP** *interface-number* | **Loopback** *interface-number* | **Null** *interface-number* | **Port-channel** *interface-number* | **TenGigabitEthernet** *switch-number/slot-number/port-number* | **TwentyFiveGigE** *switch-number/slot-number/port-number* | **Tunnel** *interface-number* | **Vlan** *interface-number* }

Syntax Description

AccessTunnel <i>interface-number</i>	Enables you to configure an access tunnel interface.
Auto-Template <i>interface-number</i>	Enables you to configure a auto-template interface. The range is from 1 to 999.
GigabitEthernet <i>switch-number/slot-number/port-number</i>	<p>Enables you to configure a Gigabit Ethernet IEEE 802.3z interface.</p> <ul style="list-style-type: none"> • <i>switch-number</i> — Switch ID. The range is from 1 to 8. • <i>slot-number</i> — Slot number. The range is from 0 to 1. • <i>port-number</i> — Port number. The range is from 1 to 48.
LISP <i>interface-number</i>	Enables you to configure a LISP interface.
Loopback <i>interface-number</i>	Enables you to configure a loopback interface. The range is from 0 to 2147483647.
Null <i>interface-number</i>	Enables you to configure a null interface. The default value is 0.
Port-channel <i>interface-number</i>	Enables you to configure a port-channel interface. The range is from 1 to 128.
TenGigabitEthernet <i>switch-number/slot-number/port-number</i>	<p>Enables you to configure a 10-Gigabit Ethernet interface.</p> <ul style="list-style-type: none"> • <i>switch-number</i> — Switch ID. The range is from 1 to 8. • <i>slot-number</i> — Slot number. The range is from 0 to 1. • <i>port-number</i> — Port number. The ranges are 1 to 4, 17 to 24, and 37 to 48.

TwentyFiveGigE <i>switch-number/slot-number/port-number</i>	<p>Enables you to configure a 25-Gigabit Ethernet interface.</p> <ul style="list-style-type: none"> • <i>switch-number</i> — Switch ID. The range is from 1 to 8. • <i>slot-number</i> — Slot number. Value is 1. • <i>port-number</i> — Port number. The range is from 1 to 2.
Tunnel <i>interface-number</i>	Enables you to configure a tunnel interface. The range is from 0 to 2147483647.
Vlan <i>interface-number</i>	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 Fuji 16.9.2	This command was introduced.
	Cisco IOS XE Gibraltar 16.11.1	The TwentyFiveGigE keyword was added to the command.

Usage Guidelines

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

The range for uplink ports is 0-4.

The range for multi-Gigabit Ethernet ports on 24-port switches is 17-24.

The range for multi-Gigabit Ethernet ports on 48-port switches is 41-48.

Examples

The following example shows how to configure a tunnel interface:

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

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

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

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

interface range

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

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

Syntax	Description
GigabitEthernet <i>switch-number/slot-number/port-number</i>	<p>Enables you to configure a Gigabit Ethernet IEEE 802.3z interface.</p> <ul style="list-style-type: none"> • <i>switch-number</i> — Switch ID. The range is from 1 to 8. • <i>slot-number</i> — Slot number. The range is from 0 to 1. • <i>port-number</i> — Port number. The range is from 0 to 48.
Loopback <i>interface-number</i>	<p>Enables you to configure a loopback interface. The range is from 0 to 2147483647.</p>
Port-channel <i>interface-number</i>	<p>Enables you to configure a port-channel interface. The range is from 1 to 48.</p>
TenGigabitEthernet <i>switch-number/slot-number/port-number</i>	<p>Enables you to configure a 10-Gigabit Ethernet interface.</p> <ul style="list-style-type: none"> • <i>switch-number</i> — Switch ID. The range is from 1 to 8. • <i>slot-number</i> — Slot number. The range is from 0 to 1. • <i>port-number</i> — Port number. The ranges are 1 to 4, 17 to 24, and 37 to 48.
TwentyFiveGigE <i>switch-number/slot-number/port-number</i>	<p>Enables you to configure a 25-Gigabit Ethernet interface.</p> <ul style="list-style-type: none"> • <i>switch-number</i> — Switch ID. The range is from 1 to 8. • <i>slot-number</i> — Slot number. Value is 1. • <i>port-number</i> — Port number. The range is from 1 to 2.
Tunnel <i>interface-number</i>	<p>Enables you to configure a tunnel interface. The range is from 0 to 2147483647.</p>

interface range

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 Fuji 16.9.2	This command was introduced.
	Cisco IOS XE Gibraltar 16.11.1	The TwentyFiveGigE keyword was added to the command.

Usage Guidelines

The range for uplink ports is 0-4.

The range for multi-Gigabit Ethernet ports on 24-port switches is 17-24.

The range for multi-Gigabit Ethernet ports on 48-port switches is 41-48.

Examples

This example shows how you can configure interface range:

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

ip mtu

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

ip mtu *bytes*
no ip mtu *bytes*

Syntax Description	<i>bytes</i> MTU size, in bytes. The range is from 68 up to the system MTU value (in bytes).	
Command Default	The default IP MTU size for frames received and sent on all switch interfaces is 1500 bytes.	
Command Modes	Interface configuration	
Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.
Usage Guidelines	The upper limit of the IP value is based on the switch or switch stack configuration and refers to the currently applied system MTU value. For more information about setting the MTU sizes, see the system mtu global configuration command.	
	To return to the default IP MTU setting, you can apply the default ip mtu command or the no ip mtu command on the interface.	
	You can verify your setting by entering the show ip interface <i>interface-id</i> or show interfaces <i>interface-id</i> privileged EXEC command.	
	The following example sets the maximum IP packet size for VLAN 200 to 1000 bytes:	
	<pre>Device(config)# interface vlan 200 Device(config-if)# ip mtu 1000</pre>	
	The following example sets the maximum IP packet size for VLAN 200 to the default setting of 1500 bytes:	
	<pre>Device(config)# interface vlan 200 Device(config-if)# default ip mtu</pre>	
	This is an example of partial output from the show ip interface <i>interface-id</i> command. It displays the current IP MTU setting for the interface.	
	<pre>Device# show ip interface gigabitethernet4/0/1 GigabitEthernet4/0/1 is up, line protocol is up Internet address is 18.0.0.1/24 Broadcast address is 255.255.255.255 Address determined by setup command MTU is 1500 bytes Helper address is not set</pre>	
	<output truncated>	

ipv6 mtu

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

ipv6 mtu *bytes*
no ipv6 mtu *bytes*

Syntax Description	<i>bytes</i> MTU size, in bytes. The range is from 1280 up to the system MTU value (in bytes).	
Command Default	The default IPv6 MTU size for frames received and sent on all switch interfaces is 1500 bytes.	
Command Modes	Interface configuration	
Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.
Usage Guidelines	<p>The upper limit of the IPv6 MTU value is based on the switch or switch stack configuration and refers to the currently applied system MTU value. For more information about setting the MTU sizes, see the system mtu global configuration command.</p> <p>To return to the default IPv6 MTU setting, you can apply the default ipv6 mtu command or the no ipv6 mtu command on the interface.</p> <p>You can verify your setting by entering the show ipv6 interface <i>interface-id</i> or show interface <i>interface-id</i> privileged EXEC command.</p> <p>The following example sets the maximum IPv6 packet size for an interface to 2000 bytes:</p> <pre>Device(config)# interface gigabitethernet4/0/1 Device(config-if)# ipv6 mtu 2000</pre> <p>The following example sets the maximum IPv6 packet size for an interface to the default setting of 1500 bytes:</p> <pre>Device(config)# interface gigabitethernet4/0/1 Device(config-if)# default ipv6 mtu</pre> <p>This is an example of partial output from the show ipv6 interface <i>interface-id</i> command. It displays the current IPv6 MTU setting for the interface.</p> <pre>Device# show ipv6 interface gigabitethernet4/0/1 GigabitEthernet4/0/1 is up, line protocol is up Internet address is 18.0.0.1/24 Broadcast address is 255.255.255.255 Address determined by setup command MTU is 1500 bytes Helper address is not set</pre> <p><output truncated></p>	

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.
<i>tlv</i>		String that identifies the TLV element. Valid values are the following: <ul style="list-style-type: none"> • 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 Fuji 16.9.2	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 Fuji 16.9.2	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) #
```

mdix auto

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

mdix auto
no mdix auto

Syntax Description	This command has no arguments or keywords.
---------------------------	--

Command Default	Auto-MDIX is enabled.
------------------------	-----------------------

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines	<p>When auto-MDIX is enabled, the interface automatically detects the required cable connection type (straight-through or crossover) and configures the connection appropriately.</p> <p>When you enable auto-MDIX on an interface, you must also set the interface speed and duplex to auto so that the feature operates correctly.</p> <p>When auto-MDIX (and autonegotiation of speed and duplex) is enabled on one or both of the connected interfaces, link up occurs, even if the cable type (straight-through or crossover) is incorrect.</p> <p>Auto-MDIX is supported on all 10/100 and 10/100/1000 Mb/s interfaces and on 10/100/1000BASE-TX small form-factor pluggable (SFP) module interfaces. It is not supported on 1000BASE-SX or -LX SFP module interfaces.</p>
-------------------------	---

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

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


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 Fuji 16.9.2	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	<i>profile-number</i> 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 Fuji 16.9.2	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 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 <i>max-wattage</i>		(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	<p>The default is auto (enabled).</p> <p>The maximum wattage is 30,000 mW.</p> <p>The default port priority is low.</p>	
Command Default	Interface configuration	

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	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 Fuji 16.9.2	This command was introduced.
Usage Guidelines	This command is supported only on Power over Ethernet (PoE)-capable ports. If you enter this command on a device or port that does not support PoE, an error message appears.	
	In a switch stack, this command is supported on all switches or ports in the stack that support PoE and real-time power-consumption monitoring.	
	When policing of the real-time power consumption is enabled, the device takes action when a powered device consumes more power than the allocated maximum amount.	
	When PoE is enabled, the device senses the real-time power consumption of the powered device. This feature is called <i>power monitoring</i> or <i>power sensing</i> . The device also polices the power usage with the <i>power policing</i> 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 LLDP 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 *I_{max}* 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

<i>stack-member-number</i>	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 Fuji 16.9.2	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** } | **slot** *slot-number* } | **all** }

Syntax Description	rp { active standby }	Specifies the active or the standby Switch whose beacon LED status is to be displayed.
	slot <i>slot-num</i>	Specifies the slot whose beacon LED status is to be displayed.
	all	Displays the status of all beacon LEDs.
Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.
Command Default	This command has no default settings.	
Command Modes	Privileged EXEC (#)	
Usage Guidelines	Use the command show beacon all to know the status of all beacon LEDs.	

Sample output of *show beacon all* command.

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

Sample output of *show beacon rp* command.

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

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

show environment

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

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

Syntax Description		
all		Displays the fan and temperature environmental status and the status of the internal power supplies.
fan		Displays the switch fan status.
power		Displays the internal power status of the active switch.
stack		Displays all environmental status for each switch in the stack or for the specified switch. This keyword is available only on stacking-capable switches.
temperature		Displays the switch temperature status.

Command Default None

Command Modes User EXEC (>)
Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

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

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

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

On the C9200CX-12P-2X2G, C9200CX-8P-2X2G, and C9200CX-12T-2X2G models of the Cisco Catalyst 9200CX Series Switches, the **show environment temperature** command does not display the correct value of 74 for yellow threshold system temperature if the device is upgraded from an older release where the supported value is 71. To fix this, run the **no system environment temperature threshold yellow** command.

Examples

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

```
Device> show environment all
```

```
Switch 1 FAN 1 is OK
Switch 1 FAN 2 is OK
Switch 1 FAN 3 is OK
FAN PS-1 is NOT PRESENT
```

show environment

```

FAN PS-2 is OK
Switch 1: SYSTEM TEMPERATURE is OK
Inlet Temperature Value: 25 Degree Celsius
Temperature State: GREEN
Yellow Threshold : 46 Degree Celsius
Red Threshold    : 56 Degree Celsius

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

```

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

```
Device> show environment power
```

```

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

```

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

```
Device# show environment stack
```

```

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

```

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

```
Device> show environment temperature
```

```

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

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

```

Table 1: States in the show environment temperature status Command Output

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

show errdisable detect

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

show errdisable detect

Syntax Description	This command has no arguments or keywords.
---------------------------	--

Command Default	None
------------------------	------

Command Modes	User EXEC Privileged EXEC
----------------------	------------------------------

Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>Cisco IOS XE Fuji 16.9.2</td><td>This command was introduced.</td></tr></table>	Release	Modification	Cisco IOS XE Fuji 16.9.2	This command was introduced.
Release	Modification				
Cisco IOS XE Fuji 16.9.2	This command was introduced.				

Usage Guidelines	<p>A gbic-invalid error reason refers to an invalid small form-factor pluggable (SFP) module.</p> <p>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.</p> <p>You can configure error-disabled detection in these modes:</p> <ul style="list-style-type: none">• 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 Fuji 16.9.2	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 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	<i>type</i>	(Optional) Interface type.
	<i>number</i>	(Optional) Interface number.
	brief	(Optional) Displays a summary of the usability status information for each interface.
	Note	The output of the show ip interface brief command displays information of all the available interfaces whether or not the corresponding network module for these interfaces are connected. These interfaces can be configured if the network module is connected. Run the show interface status command to see which network modules are connected.
Command Default	The full usability status is displayed for all interfaces configured for IP.	
Command Modes	Privileged EXEC (#)	
Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	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
```

show ip interface

```
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 unreachable 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 unreachable 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 2: 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 unreachable	Shows whether unreachable messages will be sent on this interface.
ICMP mask replies	Shows whether mask replies will be sent on this interface.
IP fast switching	Shows whether fast switching is enabled for this interface. It is generally enabled on serial interfaces, such as this one.
IP Flow switching	Shows whether Flow switching is enabled for this interface.

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

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

```
Device# show ip interface brief
```

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

<output truncated>

Table 3: show ip interface brief Field Descriptions

Field	Description
Interface	Type of interface.

Field	Description
IP-Address	IP address assigned to the interface.
OK?	"Yes" means that the IP Address is valid. "No" means that the IP Address is not valid.
Method	<p>The Method field has the following possible values:</p> <ul style="list-style-type: none"> • 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	<p>Shows the status of the interface. Valid values and their meanings are:</p> <ul style="list-style-type: none"> • 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** | **inactive**}] | **trunk**}]

Syntax Description		
<i>interface-id</i>	(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 <i>vlan-id</i>	(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 <i>number</i>	(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. Note The output of the show interfaces description command displays information of all the available interfaces whether or not the corresponding network module for these interfaces are connected. These interfaces can be configured if the network module is connected. Run the show interface status command to see which network modules are connected.	
etherchannel	(Optional) Displays interface EtherChannel information.	
flowcontrol	(Optional) Displays interface flow control information.	
private-vlan mapping	(Optional) Displays private-VLAN mapping information for the VLAN switch virtual interfaces (SVIs). This keyword is not available if the switch is running the LAN base feature set.	

pruning	(Optional) Displays trunk VTP pruning information for the interface.
stats	(Optional) Displays the input and output packets by switching the path for the interface.
status	(Optional) Displays the status of the interface. A status of unsupported in the Type field means that a non-Cisco small form-factor pluggable (SFP) module is inserted in the module slot.
err-disabled	(Optional) Displays interfaces in an error-disabled state.
inactive	(Optional) Displays interfaces in an inactive state.
trunk	(Optional) Displays interface trunk information. If you do not specify an interface, only information for active trunking ports appears.



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

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	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 be useful for knowing when a dead interface failed.

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

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

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

```
Device# show interfaces accounting
```

```
Vlan1
      Protocol  Pkts In   Chars In   Pkts Out   Chars Out
      IP          0         0           6         378

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

GigabitEthernet1/0/1
      Protocol  Pkts In   Chars In   Pkts Out   Chars Out
No traffic sent or received on this interface.
GigabitEthernet1/0/2
      Protocol  Pkts In   Chars In   Pkts Out   Chars Out
No traffic sent or received on this interface.
```

<output truncated>

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

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

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

Device# **show interfaces etherchannel**

Port-channel34:

Age of the Port-channel = 28d:18h:51m:46s

Logical slot/port = 12/34 Number of ports = 0

GC = 0x00000000 HotStandBy port = null

Passive port list =

Port state = Port-channel L3-Ag Ag-Not-Inuse

Protocol = -

Port security = Disabled

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

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

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

Port Vlans traffic requested of neighbor
 Gil/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
Gil/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
Gil/0/1	on	802.1q	other	10

Port Vlans allowed on trunk
 Gil/0/1 none

Port Vlans allowed and active in management domain

```
Gi1/0/1    none
```

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

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

```
Device# show interfaces description
```

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

```
<output truncated>
```


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		
<i>interface-id</i>	(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 <i>stack-member-number</i>	(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 Fuji 16.9.2	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	<i>interface-id</i>	(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 <i>number</i>	(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 Fuji 16.9.2	This command was introduced.
Usage Guidelines	Use the show interface switchport module <i>number</i> 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
```

show interfaces switchport

```

Administrative private-vlan trunk mappings: none
Operational private-vlan: none
Trunking VLANs Enabled: 11-20
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL

```

```

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

```

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

show interfaces transceiver

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

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

Syntax Description	<i>interface-id</i>	(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 Fuji 16.9.2	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.
```

	Temperature	High Alarm	High Warn	Low Warn	Low Alarm
Port	(Celsius)	Threshold	Threshold	Threshold	Threshold
-----	-----	-----	-----	-----	-----
Gil1/1/1	29.9	74.0	70.0	0.0	-4.0
		High Alarm	High Warn	Low Warn	Low Alarm
		Threshold	Threshold	Threshold	Threshold
		(Volts)	(Volts)	(Volts)	(Volts)
-----	-----	-----	-----	-----	-----
Gil1/1/1	3.28	3.60	3.50	3.10	3.00

show interfaces transceiver

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

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

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 current	Voltage
-----	-----	-----	-----	-----	-----
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 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 Fuji 16.9.2	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
```

show memory platform

```

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	<i>switch-num</i> (Optional) Number of the switch.	
Command Default	None	
Command Modes	User EXEC (>) Privileged EXEC (#)	
Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.
Usage Guidelines	Entering the show module command without the <i>switch-num</i> argument is the same as entering the show module all command.	

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	<i>profile-number</i> (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 Fuji 16.9.2	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 switch forward interface

To debug forwarding information and to trace the packet path in the hardware forwarding plane, use the **show platform hardware fed switch *switch_number* forward interface** command. This command simulates a user-defined packet and retrieves the forwarding information from the hardware forwarding plane. A packet is generated on the ingress port based on the packet parameters that you have specified in this command. You can also provide a complete packet from the captured packets stored in a PCAP file.

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

show platform hardware fed switch {*switch_num* | **active | **standby**} forward interface** *interface-type interface-number* **source-mac-address** *destination-mac-address* {*protocol-number* | **arp** | **cos** | **ipv4** | **ipv6** | **mpls**}

show platform hardware fed switch {*switch_num* | **active | **standby**} forward interface** *interface-type interface-number* **pcap** *pcap-file-name* **number** *packet-number* **data**

show platform hardware fed switch {*switch_num* | **active | **standby**} forward interface** *interface-type interface-number* **vlan** *vlan-id* **source-mac-address** *destination-mac-address* {*protocol-number* | **arp** | **cos** | **ipv4** | **ipv6** | **mpls**}

Syntax Description

switch { <i>switch_num</i> active standby }	The switch on which packet tracing has to be scheduled. The input port should be available on this switch. You have the following options : <ul style="list-style-type: none"> • <i>switch_num</i>—ID of the switch on which the ingress port is present. • active—indicates the active switch on which the the ingress port is present. • standby—indicates the standby switch on which the ingress port is present. <p>Note This keyword is not supported.</p>
interface <i>interface-type interface-number</i>	The input interface on which packet trace is simulated.
<i>source-mac-address</i>	The source MAC address of the packet you want to simulate.
<i>destination-mac-address</i>	The MAC address of the destination interface in hexadecimal format.
<i>protocol-number</i>	The number assigned to any L3 protocol.
arp	The Address Resolution Protocol (ARP) parameters.
ipv4	The IPv4 packet parameters.
ipv6	The IPv6 packet parameters.
mpls	The Multiprotocol Label Switching (MPLS) label parameters.

cos	The class of service (CoS) number from 0 to 7 to set priority.
pcap <i>pcap-file-name</i>	Name of the pcap file in internal flash (flash:). Ensure that the file already exists in flash:.
number <i>packet-number</i>	Specifies the packet number in the pcap file.
vlan <i>vlan-id</i>	VLAN id of the dot1q header in the simulated packet. The range is 1 to 4096.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.
Cisco IOS XE Fuji 16.9.1	The command was enhanced to support MPLS/ARP/VxLAN packet parameters and trace packets captured in a PCAP file.
Cisco IOS XE Gibraltar 16.10.1	The command was enhanced to support data capture across a stack.

Usage Guidelines

Do not use this command unless a technical support representative asks you to. Use this command only when you are working directly with a technical support representative while troubleshooting a problem.

This command supports the following packet types:

- Non-IP packets with any L3 protocol
- ARP packets
- IPv4 packets with any L4 protocol
- IPv4 packets with TCP/UDP/IGMP/ICMP/SCTP payload
- VxLAN packets
- MPLS packets with up to 3 Labels and meta data
- MPLS packets with IPv4/IPv6 payload
- IPv6 packets with TCP/UDP/IGMP/ICMP/SCTP payload

In a stack environment, you can trace packets across the stack irrespective of the number of stack members and topology. The **show platform hardware fed switch** *switch-number* **forward interface** *interface-type interface-number* command consolidates packet-forwarding information of all the stack members on the ingress switch. To achieve this, ensure that the switch number specified in the *switch_num* and *interface-number* arguments are of the input switch and that the number matches.

To trace any particular packet from the captured packets stored in a PCAP file, use the **show platform hardware fed switch forward interface** *interface-type interface-number pcap pcap-file-name number packet-number* **data** command.

Example

This is an example of output from the **show platform hardware fed switch** {*switch_num* | **active** | **standby** } **forward interface** command.

```
Device#show platform hardware fed switch active forward interface gigabitEthernet 1/0/35
0000.0022.0055 0000.0055.0066 ipv4 44.44.0.2 55.55.0.2 udp 1222 3333
```

Show forward is running in the background. After completion, syslog will be generated.

```
*Sep 24 05:57:36.614: %SHFWD-6-PACKET_TRACE_DONE: Switch 1 R0/0: fed: Packet Trace Complete:
Execute (show platform hardware fed switch <> forward last summary|detail)
*Sep 24 05:57:36.614: %SHFWD-6-PACKET_TRACE_FLOW_ID: Switch 1 R0/0: fed: Packet Trace Flow
id is 150323855361
```

Related Commands

Command	Description
monitor capture interface	Configures monitor capture points specifying an attachment point and the packet flow direction.
monitor capture start	Starts the capture of packet data at a traffic trace point into a buffer.
monitor capture stop	Stops the capture of packet data at a traffic trace point.
monitor capture export	Saves the captured packets in the buffer. Use this command to export the monitor capture buffer to a pcap file in flash: that you can use as an input in the show forward with pcap .

show platform resources

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

show platform resources

This command has no arguments or keywords.

Command Modes	Privileged EXEC (#)
----------------------	---------------------

Command History	<table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>Cisco IOS XE Fuji 16.9.2</td><td>This command was introduced.</td></tr></tbody></table>	Release	Modification	Cisco IOS XE Fuji 16.9.2	This command was introduced.
Release	Modification				
Cisco IOS XE Fuji 16.9.2	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 State	Usage	Max	Warning	Critical
Control Processor H	7.20%	100%	90%	95%
DRAM H	2701MB (69%)	3883MB	90%	95%

show platform software audit

To display the SE Linux Audit logs, use the **show platform software audit** command in privileged EXEC mode.

show platform software audit {**all** | **summary** | [**switch** {*switch-number* | **active** | **standby**}] [**0** | **F0** | **R0** | {**FP** | **RP**} {**active**}]}

Syntax Description

all	Shows the audit log from all the slots.
summary	Shows the audit log summary count from all the slots.
switch	Shows the audit logs for a slot on a specific switch.
<i>switch-number</i>	Selects the switch with the specified switch number.
switch active	Selects the active instance of the switch.
standby	Selects the standby instance of the switch.
0	Shows the audit log for the SPA-Inter-Processor slot 0.
F0	Shows the audit log for the Embedded-Service-Processor slot 0.
R0	Shows the audit log for the Route-Processor slot 0.
FP active	Shows the audit log for the active Embedded-Service-Processor slot.
RP active	Shows the audit log for the active Route-Processor slot.

Command Modes

Privileged EXEC (#)

Command History

Usage Guidelines

This command was introduced in the Cisco IOS XE Gibraltar 16.10.1 as a part of the SELinux Permissive Mode feature. The **show platform software audit** command displays the system logs containing the access violation events.

In Cisco IOS XE Gibraltar 16.10.1, operation in a permissive mode is available - with the intent of confining specific components (process or application) of the IOS-XE platform. In the permissive mode, access violation events are detected and system logs are generated, but the event or operation itself is not blocked. The solution operates mainly in an access violation detection mode.

The following is a sample output of the **show software platform software audit summary** command:

```
Device# show platform software audit summary

=====
AUDIT LOG ON switch 1
-----
```



```
AVC Denial count: 58
```

```
=====
```

The following is a sample output of the **show software platform software audit all** command:

```
Device# show platform software audit all
```

```
=====
```

```
AUDIT LOG ON switch 1
```

```
-----
```

```
===== START =====
```

```
type=AVC msg=audit(1539222292.584:100): avc: denied { read } for pid=14017
comm="mcp_trace_filte" name="crashinfo" dev="rootfs" ino=13667
scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_disk_crashinfo_t:s0 tclass=lnk_file permissive=1
type=AVC msg=audit(1539222292.584:100): avc: denied { getattr } for pid=14017
comm="mcp_trace_filte" path="/mnt/sd1" dev="sdal" ino=2
scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_disk_crashinfo_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1539222292.586:101): avc: denied { getattr } for pid=14028 comm="ls"
path="/tmp/ufs/crashinfo" dev="tmpfs" ino=58407
scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_ncd_tmp_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1539222292.586:102): avc: denied { read } for pid=14028 comm="ls"
name="crashinfo" dev="tmpfs" ino=58407 scountext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_ncd_tmp_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1539438600.896:119): avc: denied { execute } for pid=8300 comm="sh"
name="id" dev="loop0" ino=6982 scountext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:bin_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438600.897:120): avc: denied { execute_no_trans } for pid=8300
comm="sh"
path="/tmp/sw/mount/cat9k-rpbase.2018-10-02_00.13_mhungund.SSA.pkg/nyquist/usr/bin/id"
dev="loop0" ino=6982 scountext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:bin_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438615.535:121): avc: denied { name_connect } for pid=26421
comm="nginx" dest=8098 scountext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
type=AVC msg=audit(1539438624.916:122): avc: denied { execute_no_trans } for pid=8600
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438648.936:123): avc: denied { execute_no_trans } for pid=9307
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438678.649:124): avc: denied { name_connect } for pid=26421
comm="nginx" dest=8098 scountext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
type=AVC msg=audit(1539438696.969:125): avc: denied { execute_no_trans } for pid=10057
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438732.973:126): avc: denied { execute_no_trans } for pid=10858
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438778.008:127): avc: denied { execute_no_trans } for pid=11579
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438800.156:128): avc: denied { name_connect } for pid=26421
comm="nginx" dest=8098 scountext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
type=AVC msg=audit(1539438834.099:129): avc: denied { execute_no_trans } for pid=12451
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
```

show platform software audit

```
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539440246.697:149): avc: denied { name_connect } for pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
type=AVC msg=audit(1539440299.119:150): avc: denied { name_connect } for pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
=====
=====
```

The following is a sample output of the **show software platform software audit switch** command:

Device# **show platform software audit switch active R0**

```
===== START =====
type=AVC msg=audit(1539222292.584:100): avc: denied { read } for pid=14017
comm="mcp_trace_filte" name="crashinfo" dev="rootfs" ino=13667
scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_disk_crashinfo_t:s0 tclass=lnk_file permissive=1
type=AVC msg=audit(1539222292.584:100): avc: denied { getattr } for pid=14017
comm="mcp_trace_filte" path="/mnt/sd1" dev="sdal" ino=2
scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_disk_crashinfo_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1539222292.586:101): avc: denied { getattr } for pid=14028 comm="ls"
path="/tmp/ufs/crashinfo" dev="tmpfs" ino=58407
scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_ncd_tmp_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1539222292.586:102): avc: denied { read } for pid=14028 comm="ls"
name="crashinfo" dev="tmpfs" ino=58407 scontext=system_u:system_r:polaris_trace_filter_t:s0
tcontext=system_u:object_r:polaris_ncd_tmp_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1539438624.916:122): avc: denied { execute_no_trans } for pid=8600
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438648.936:123): avc: denied { execute_no_trans } for pid=9307
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438678.649:124): avc: denied { name_connect } for pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
type=AVC msg=audit(1539438696.969:125): avc: denied { execute_no_trans } for pid=10057
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438732.973:126): avc: denied { execute_no_trans } for pid=10858
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438778.008:127): avc: denied { execute_no_trans } for pid=11579
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438800.156:128): avc: denied { name_connect } for pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
type=AVC msg=audit(1539438834.099:129): avc: denied { execute_no_trans } for pid=12451
comm="auto_upgrade_se" path="/bin/bash" dev="rootfs" ino=7276
scontext=system_u:system_r:polaris_auto_upgrade_server_rp_t:s0
tcontext=system_u:object_r:shell_exec_t:s0 tclass=file permissive=1
type=AVC msg=audit(1539438860.907:130): avc: denied { name_connect } for pid=26421
comm="nginx" dest=8098 scontext=system_u:system_r:polaris_nginx_t:s0
tcontext=system_u:object_r:polaris_caf_api_port_t:s0 tclass=tcp_socket permissive=1
```

```
===== END =====  
=====
```

show platform software fed switch punt cpuq rates

To display the rate at which packets are punted, including the drops in the punted path, use the **show platform software fed switch punt cpuq rates** command in privileged EXEC mode.

show platform software fed switch {*switch-number* | **active** | **standby**} **punt cpuq rates**

Syntax Description	switch{switch-number active standby}	Displays information about the switch. You have the following options: <ul style="list-style-type: none">switch-number.active —Displays information relating to the active switch.standby—Displays information relating to the standby switch, if available. <p>Note This keyword is not supported.</p>
	punt	Specifies the punt informtion.
	cpuq	Specifies information about CPU receive queue.
	rates	Specifies the rate at which the packets are punted.
Command Modes	Privileged EXEC (#)	
Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.
Usage Guidelines	The output of this command displays the rate in packets per second at intervals of 10 seconds, 1 minute and 5 minutes.	

Example

The following is sample output from the **show platform software fed switch active punt cpuq rates** command.

```
Device#show platform software fed switch active punt cpuq rates
```

```
Punt Rate CPU Q Statistics
```

```
Packets per second averaged over 10 seconds, 1 min and 5 mins
```

Q no	Queue Name	Rx 10s	Rx 1min	Rx 5min	Drop 10s	Drop 1min	Drop 5min
0	CPU_Q_DOT1X_AUTH	0	0	0	0	0	0
1	CPU_Q_L2_CONTROL	0	0	0	0	0	0
2	CPU_Q_FORUS_TRAFFIC	336	266	320	0	0	0

```

3 CPU_Q_ICMP_GEN 0 0 0 0 0 0
4 CPU_Q_ROUTING_CONTROL 0 0 0 0 0 0
5 CPU_Q_FORUS_ADDR_RESOLUTION 0 0 0 0 0 0
6 CPU_Q_ICMP_REDIRECT 0 0 0 0 0 0
7 CPU_Q_INTER_FED_TRAFFIC 0 0 0 0 0 0
8 CPU_Q_L2LVX_CONTROL_PKT 0 0 0 0 0 0
9 CPU_Q_EWLC_CONTROL 0 0 0 0 0 0
10 CPU_Q_EWLC_DATA 0 0 0 0 0 0
11 CPU_Q_L2LVX_DATA_PKT 0 0 0 0 0 0
12 CPU_Q_BROADCAST 0 0 0 0 0 0
13 CPU_Q_LEARNING_CACHE_OVFL 0 0 0 0 0 0
14 CPU_Q_SW_FORWARDING 0 0 0 0 0 0
15 CPU_Q_TOPOLOGY_CONTROL 0 0 0 0 0 0
16 CPU_Q_PROTO_SNOOPING 0 0 0 0 0 0
17 CPU_Q_DHCP_SNOOPING 0 0 0 0 0 0
18 CPU_Q_TRANSIT_TRAFFIC 0 0 0 0 0 0
19 CPU_Q_RPF_FAILED 0 0 0 0 0 0
20 CPU_Q_MCAST_END_STATION_SERVICE 0 0 0 0 0 0
21 CPU_Q_LOGGING 0 0 0 0 0 0
22 CPU_Q_PUNT_WEBAUTH 0 0 0 0 0 0
23 CPU_Q_HIGH_RATE_APP 0 0 0 0 0 0
24 CPU_Q_EXCEPTION 0 0 0 0 0 0
25 CPU_Q_SYSTEM_CRITICAL 0 0 0 0 0 0
26 CPU_Q_NFL_SAMPLED_DATA 0 0 0 0 0 0
27 CPU_Q_LOW_LATENCY 0 0 0 0 0 0
28 CPU_Q_EGR_EXCEPTION 0 0 0 0 0 0
29 CPU_Q_FSS 0 0 0 0 0 0
30 CPU_Q_MCAST_DATA 0 0 0 0 0 0
31 CPU_Q_GOLD_PKT 0 0 0 0 0 0

```

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

Table 4: show platform software fed switch active punt cpuq rates Field Descriptions

Field	Description
Queue Name	Name of the queue.
Rx	The rate at which the packets are received per second in 10s, 1 minute and 5 minutes.
Drop	The rate at which the packets are dropped per second in 10s, 1 minute and 5 minutes.

show platform software fed switch punt packet-capture display

To display packet capture information during high CPU utilization, use the **show platform software fed switch active punt packet-capture display** command in privileged EXEC mode.

show platform software fed switch active punt packet-capture display { detailed | hexdump }

Syntax Description	switch { <i>switch-number</i> active standby }	Displays information about a switch. You have the following options: <ul style="list-style-type: none"> • active—Displays information relating to the active switch. • standby—Displays information relating to the standby switch, if available. <p>Note The standby keyword is not supported.</p>
	punt	Specifies punt information.
	packet-capture display	Specifies information about the captured packet.
	detailed	Specifies detailed information about the captured packet.
	hex-dump	Specifies information about the captured packet, in hex format.

Command Modes Privileged EXEC (#)

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

Usage Guidelines The output of this command displays the periodic and persistent logs of CPU-bound packets, inband CPU traffic rates, and running CPU processes when the CPU passes a high CPU utilization threshold.

Examples The following is a sample output from the **show platform software fed switch active punt packet-capture display detailed** command:

```
Device# show platform software fed switch active punt packet-capture display detailed
Punt packet capturing: disabled. Buffer wrapping: disabled
Total captured so far: 101 packets. Capture capacity : 4096 packets

----- Packet Number: 1, Timestamp: 2018/09/04 23:22:10.179 -----
interface : GigabitEthernet2/0/2 [if-id: 0x00000032] (physical)
ether hdr : dest mac: 0100.0ccc.cccd, src mac: 2c36.f8fc.4884
ether hdr : ethertype: 0x0032

Doppler Frame Descriptor :
```

```
0000000044004E04 C00F402D94510000 0000000000000100 0000400401000000
0000000001000050 0000000006D000100 0000000025836200 0000000000000000
```

Packet Data Dump (length: 68 bytes) :

```
01000CCCCCD2C36 F8FC48840032AAAA 0300000C010B0000 0000080012C36F8
FC48800000000080 012C36F8FC488080 040000140002000F 0071000000020001
244E733E
```

----- Packet Number: 2, Timestamp: 2018/09/04 23:22:10.179 -----

```
interface : GigabitEthernet2/0/2 [if-id: 0x00000032] (physical)
ether hdr : dest mac: 0180.c200.0000, src mac: 2c36.f8fc.4884
ether hdr : ethertype: 0x0026
```

```
!
!
!
```

show platform software fed switch punt rates interfaces

To display the overall statistics of punt rate for all the interfaces, use the **show platform software fed switch punt rates interfaces** command in privileged EXEC mode.

show platform software fed switch {*switch-number* | **active** | **standby**} **punt rates**
interfaces[*interface-id*]

Syntax Description	switch { <i>switch-number</i> active standby }	Displays information about the switch. You have the following options: <ul style="list-style-type: none"> • <i>switch-number</i>. • active—Displays information relating to the active switch. • standby—Displays information relating to the standby switch, if available. <p>Note This keyword is not supported.</p>
	punt	Specifies the punt informtion.
	rates	Specifies the rate at which the packets are punted.
	interfaces [<i>interface-id</i>]	(Optional) Displays the overall statistics for an interface and also the per-queue configuration for the interface at an interval of 10 seconds.
Command Modes	Privileged EXEC (#)	
Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.
Usage Guidelines	The output displays the punt rates in packets per second at intervals of 10 seconds, 1 minute and 5 minutes.	

Example

The following is sample output from the **show platform software fed switch active punt rates interfaces** command for all the interfaces.

```
Device#show plataform software fed switch active punt rates interfaces
```

```
Punt Rate on Interfaces Statistics
```

```
Packets per second averaged over 10 seconds, 1 min and 5 mins
```

```
=====
```

Interface Name	IF_ID	Rx 10s	Rx 1min	Rx 5min	Drop 10s	Drop 1min	Drop 5min
----------------	-------	-----------	------------	------------	-------------	--------------	--------------

Vlan3	0x00000034	1000	1000	520	0	0	0
-------	------------	------	------	-----	---	---	---

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

Table 5: show platform software fed switch active punt rates interfaces Field Descriptions

Field	Description
Interface Name	Name of the physical interface.
IF_ID	ID of the physical interface.
Rx	The per second rate at which the packets are received in 10s, 1 minute and 5 minutes.
Drop	The per second rate at which the packets are dropped in 10s, 1 minute and 5 minutes.

The following is sample output from the **show platform software fed switch active punt rates interfaces interface-id** command for a specific interface.

```
Device#show platform software fed switch active punt rates interfaces 0x31
Punt Rate on Single Interfaces Statistics
```

```
Interface : Port-channel1 [if_id: 0x31]
```

Received	Dropped
-----	-----
Total : 29617	Total : 0
10 sec average : 0	10 sec average : 0
1 min average : 0	1 min average : 0
5 min average : 0	5 min average : 0

```
Per CPUQ punt stats on the interface (rate averaged over 10s interval)
```

Q no	Queue Name	Recv Total	Recv Rate	Drop Total	Drop Rate
0	CPU_Q_DOT1X_AUTH	0	0	0	0
1	CPU_Q_L2_CONTROL	29519	0	0	0
2	CPU_Q_FORUS_TRAFFIC	0	0	0	0
3	CPU_Q_ICMP_GEN	0	0	0	0
4	CPU_Q_ROUTING_CONTROL	0	0	0	0
5	CPU_Q_FORUS_ADDR_RESOLUTION	0	0	0	0
6	CPU_Q_ICMP_REDIRECT	0	0	0	0
7	CPU_Q_INTER_FED_TRAFFIC	0	0	0	0
8	CPU_Q_L2LVX_CONTROL_PKT	0	0	0	0
9	CPU_Q_EWLC_CONTROL	0	0	0	0
10	CPU_Q_EWLC_DATA	0	0	0	0
11	CPU_Q_L2LVX_DATA_PKT	0	0	0	0
12	CPU_Q_BROADCAST	0	0	0	0
13	CPU_Q_LEARNING_CACHE_OVFL	0	0	0	0
14	CPU_Q_SW_FORWARDING	0	0	0	0
15	CPU_Q_TOPOLOGY_CONTROL	98	0	0	0
16	CPU_Q_PROTO_SNOOPING	0	0	0	0
17	CPU_Q_DHCP_SNOOPING	0	0	0	0
18	CPU_Q_TRANSIT_TRAFFIC	0	0	0	0
19	CPU_Q_RPF_FAILED	0	0	0	0

```

20 CPU_Q_MCAST_END_STATION_SERVICE      0      0      0      0
21 CPU_Q_LOGGING                        0      0      0      0
22 CPU_Q_PUNT_WEBAUTH                   0      0      0      0
23 CPU_Q_HIGH_RATE_APP                   0      0      0      0
24 CPU_Q_EXCEPTION                       0      0      0      0
25 CPU_Q_SYSTEM_CRITICAL                  0      0      0      0
26 CPU_Q_NFL_SAMPLED_DATA                0      0      0      0
27 CPU_Q_LOW_LATENCY                     0      0      0      0
28 CPU_Q_EGR_EXCEPTION                   0      0      0      0
29 CPU_Q_FSS                             0      0      0      0
30 CPU_Q_MCAST_DATA                      0      0      0      0
31 CPU_Q_GOLD_PKT                        0      0      0      0

```

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

Table 6: show platform software fed switch punt rates interfaces interface-id Field Descriptions

Field	Description
Queue Name	Name of the queue.
Recv Total	Total number of packets received.
Recv Rate	Per second rate at which the packets are received.
Drop Total	Total number of packets dropped.
Drop Rate	Per second rate at which the packets are dropped.

show platform software ilpower

To display the inline power details of all the PoE ports on the device, use the **show platform software ilpower** command in privileged EXEC mode.

show platform software ilpower { **details** | **port** { **GigabitEthernet** *interface-number* } | **system** *slot-number* }

Syntax Description	details	Displays inline power details for all the interfaces.
	port	Displays inline power port configuration.
	GigabitEthernet <i>interface-number</i>	The GigabitEthernet interface number. Values range from 0 to 9.
	system <i>slot-number</i>	Displays inline power system configuration.
Command Modes	Privileged EXEC (#)	
Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	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:
```

```
show platform software ilpower
```

```
Power Good:          Stopped
Power Denied:        Stopped
Cisco Powered Device Detect:  Stopped
```

show platform software memory

To display memory information for a specified switch, use the **show platform software memory** command in privileged EXEC mode.

show platform software memory [{**chunk** | **database** | **messaging**}] *process slot*

Syntax Description		
Syntax Description	chunk	(Optional) Displays chunk memory information for the specified process.
	database	(Optional) Displays database memory information for the specified process.
	messaging	(Optional) Displays messaging memory information for the specified process. The information displayed is for internal debugging purposes only.

show platform software memory

process

Level that is being set. Options include:

- **bt-logger**—The Binary-Tracing Logger process.
- **btrace-manager**—The Btrace Manager process.
- **chassis-manager**—The Chassis Manager process.
- **cli-agent**—The CLI Agent process.
- **cmm**—The CMM process.
- **dbm**—The Database Manager process.
- **dmiauthd**—The DMI Authentication Daemon process.
- **emd**—The Environmental Monitoring process.
- **fed**—The Forwarding Engine Driver process.
- **forwarding-manager**—The Forwarding Manager process.
- **geo**—The Geo Manager process.
- **gnmi**—The GNMI process.
- **host-manager**—The Host Manager process.
- **interface-manager**—The Interface Manager process.
- **iomd**—The Input/Output Module daemon (IOMd) process.
- **ios**—The IOS process.
- **iox-manager**—The IOx Manager process.
- **license-manager**—The License Manager process.
- **logger**—The Logging Manager process.
- **mdt-pubd**—The Model Defined Telemetry Publisher process.
- **ndbman**—The Netconf DataBase Manager process.
- **nesd**—The Network Element Synchronizer Daemon process.
- **nginx**—The Nginx Webserver process.
- **nif_mgr**—The NIF Manager process.
- **platform-mgr**—The Platform Manager process.
- **pluggable-services**—The Pluggable Services process.
- **replication-mgr**—The Replication Manager process.
- **shell-manager**—The Shell Manager process.
- **sif**—The Stack Interface (SIF) Manager process.
- **smd**—The Session Manager process.
- **stack-mgr**—The Stack Manager process.

- **syncfd**—The SyncmDaemon process.
- **table-manager**—The Table Manager Server.
- **thread-test**—The Multithread Manager process.
- **virt-manager**—The Virtualization Manager process.

slot

Hardware slot where the process for which the level is set, is running. Options include:

- **number**—Number of the SIP slot of the hardware module where the level is set. For instance, if you want to specify the SIP in SIP slot 2 of the switch, enter 2.
 - **SIP-slot / SPA-bay**—Number of the SIP switch slot and the number of the shared port adapter (SPA) bay of that SIP. For instance, if you want to specify the SPA in bay 2 of the SIP in switch slot 3, enter 3/2.
 - **F0**—The Embedded Service Processor slot 0.
 - **FP active**—The active Embedded Service Processor.
 - **R0**—The route processor in slot 0.
 - **RP active**—The active route processor.
 - **RP standby**—The standby route processor.
 - **switch <number>** —The switch, with its number specified.
 - **switch active**—The active switch.
 - **switch standby**—The standby switch.
 - **number**—Number of the SIP slot of the hardware module where the level is set. For instance, if you want to specify the SIP in SIP slot 2 of the switch, enter 2.
 - **SIP-slot / SPA-bay**—Number of the SIP switch slot and the number of the shared port adapter (SPA) bay of that SIP. For instance, if you want to specify the SPA in bay 2 of the SIP in switch slot 3, enter 3/2.
 - **F0**—The Embedded Service Processor in slot 0.
 - **FP active**—The active Embedded Service Processor.
 - **R0**—The route processor in slot 0.
 - **RP active**—The active route processor.
-

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Command History

Release

Modification

Cisco IOS XE Fuji 16.9.2

This comm

The following is a sample output displaying the abbreviated (brief keyword) memory information for the Forwarding Manager process for Cisco Catalyst 9000 Series ESP slot 0:

Device# **show platform software memory forwarding-manager switch 1 fp active brief**

module	allocated	requested	allocs	frees
-----	-----	-----	-----	-----
Summary	5702540	5619788	121888	116716
AOM object	1920374	1920310	4	0
AOM links array	880379	880315	4	0
smc_message	819575	819511	4	0
AOM update state	640380	640316	4	0
dpidb-config	208776	203544	351	24
fman-infra-avl	178016	153680	1521	0
AOM batch	152373	152309	4	0
AOM asynchronous conte	128388	128324	4	0
AOM basic data	124824	124760	5	1
eventutil	118939	118299	50	10
AOM tree node	96465	96385	5	0
AOM tree root	72377	72313	4	0
acl	36090	31914	504	243
fman-infra-ipc	35326	24366	115097	114412
AOM uplink update node	32386	32322	4	0
unknown	30528	23808	424	4
uipeer	27232	27152	5	0
fman-infra-qos	26872	24712	164	29
cce-class	19427	15411	251	0
l2 control protocol	15472	12896	325	164
fman-infra-cce	15272	13576	106	0
smc_channel	15223	15159	4	0
unknown	14208	8736	447	105
chunk	12513	12033	33	3
cce-bind	8496	7552	82	23
MATM mac entry	8040	5928	544	412
adj	7064	6312	157	110
route-pfx	6116	5412	157	113
Filter_rules	4912	4896	1	0
fman-infra-dpidb	4130	2338	112	0
SMC Buffer	3794	3202	43	6
urpf-list	3028	2100	85	27
lookup	2480	2160	30	10
MATM mac table	2432	1600	148	96
cdllib	1688	1672	1	0
route-tbl	1600	1264	21	0
FNF Flowdef	1492	1460	3	1
acl-ref	1120	1024	8	2
cgm-lib	1120	880	410	395
pbr_if_cfg	1088	976	205	198
FNF Monitor	1048	1032	1	0
pbr_routemap	960	864	18	12
!				
!				
!				

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

Table 7: show platform software memory brief Field Descriptions

Field	Description
module	Name of submodule.
allocated	Memory, allocated in bytes.
requested	Number of bytes requested by application.
allocs	Number of discrete allocation event attempts.
frees	Number of free events.

show platform software process list

To display the list of running processes on a platform, use the **show platform software process list** command in privileged EXEC mode.

show platform software process list switch {*switch-number* | **active** | **standby**} {**0** | **F0** | **R0**} [**{name process-name | process-id process-ID | sort memory | summary}**]

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

Command Modes Privileged EXE (#)

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	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
```

show platform software process list

```

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 8: 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
Status	Displays the process status in human readable form.

Field	Description
Priority	Displays the negated scheduling priority.
Size	<p>Prior to Cisco IOS XE Gibraltar 16.10.1: Displays Virtual Memory size.</p> <p>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.</p>

show platform software process memory

To display the amount of memory used by each system process, use the **show platform software process memory** command in privileged EXEC mode.

show platform process memory

switch { *switch-number* | **active** | **standby** } { **0** | **F0** | **FP** | **R0** } { **all** [**sorted** | **virtual** [**sorted**]] | **name** *process-name* { **maps** | **smaps** [**summary**] } } | **process-id** *process-id* { **maps** | **smaps** [**summary**] } }

Syntax Description		
switch <i>switch-number</i>		Displays information about the switch. Enter the switch number.
active		Specifies the active instance of the device.
standby		Specifies the standby instance of the device.
0		Specifies the Shared Port Adapter (SPA) Interface Processor slot 0.
F0		Specifies the Embedded Service Processor (ESP) slot 0.
FP		Specifies the Embedded Service Processor (ESP).
R0		Specifies the Route Processor (RP) slot 0.
all		Lists all processes.
sorted		(Optional) Sorts the output based on Resident Set Size (RSS).
virtual		(Optional) Specifies virtual memory.
name <i>process-name</i>		Specifies a process name.
maps		Specifies the memory maps of a process.
smaps summary		Specifies the smaps summary of a process.
process-id <i>process-id</i>		Specifies a process identifier.
Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.

Command Modes Privileged EXEC(#)

Examples:

The following is a sample output from the **show platform software process memory active R0 all** command:

show platform software process memory

Device# show platform software process memory switch active R0 all

Pid	RSS	PSS	Heap	Shared	Private	Name
1	4876	3229	1064	1808	3068	systemd
118	3184	1327	132	2352	832	systemd-journal
159	3008	1191	396	1996	1012	systemd-udev
407	3192	1262	132	2196	996	dbus-daemon
3406	4772	3064	264	1940	2832	virtlogd
3411	5712	3474	2964	2344	3368	droputil.sh
3416	2588	358	132	2336	252	libvirtd.sh
3420	5708	3484	2976	2308	3400	reflector.sh
3424	1804	263	132	1632	172	xinetd
3425	964	118	132	872	92	sleep
3434	3060	844	528	2304	756	oom.sh
3442	2068	606	132	1604	464	rpcbind
3485	2380	845	132	1636	744	rpc.statd
3486	1632	338	132	1348	284	boothelper_evt.
3493	1136	156	132	1004	132	inotifywait
3504	2048	753	132	1372	676	rpc.mountd
3584	2868	620	36	2384	484	rotee
3649	1032	116	132	944	88	sleep
3705	2784	613	36	2296	488	rotee
3718	2856	610	36	2376	480	rotee
3759	1292	184	132	1136	156	inotifywait
3787	4256	2040	1640	2300	1956	iptbl.sh
3894	2948	637	36	2460	488	rotee
4017	1380	175	132	1236	144	inotifywait
4866	1820	287	132	1624	196	xinetd
5887	1692	257	132	1508	184	xinetd
5891	7248	4984	4584	2348	4900	rollback_timer.
5893	1764	257	132	1588	176	xinetd
6031	2804	601	36	2332	472	rotee
6037	1228	163	132	1092	136	inotifywait
6077	4736	3389	2992	1368	3368	psvp.sh
6115	1620	476	36	1152	468	rotee
6122	624	149	132	480	144	inotifywait
6127	5440	4077	3680	1384	4056	pvp.sh
6165	1736	592	36	1152	584	rotee
6245	624	149	132	480	144	inotifywait
6353	2592	1260	924	1352	1240	pman.sh
6470	1632	488	36	1152	480	rotee
6499	2588	1262	924	1348	1240	pman.sh
6666	1640	496	36	1152	488	rotee
6718	2584	1258	800	1348	1236	pman.sh
6736	8360	7020	6640	1360	7000	auto_upgrade_cl
6909	1636	492	36	1152	484	rotee
6955	2588	1262	928	1348	1240	pman.sh
7029	2196	679	40	1552	644	auto_upgrade_se
7149	1636	492	36	1152	484	rotee
7224	13200	4595	48	9368	3832	bt_logger
7295	2588	1262	800	1348	1240	pman.sh
.						
.						
.						

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

Table 9: show platform software process memory Field Descriptions

Field	Description
PID	Displays the process ID that is used by the operating system to identify and keep track of the processes.
RSS	Displays the Resident Set Size (in kilobytes (KB)) that shows how much memory is allocated to that process in the RAM.
PSS	Displays the Proportional Set Size of a process. This is the count of pages it has in memory, where each page is divided by the number of processes sharing it.
Heap	Displays where all user-allocated memory is located.
Shared	Shared clean + Shared dirty
Private	Private clean + Private dirty
Name	Displays the command name associated with the process. Different threads in the same process may have different command values.

show platform software process slot switch

To display platform software process switch information, use the **show platform software process slot switch** command in privileged EXEC mode.

show platform software process slot switch {*switch-number* | **active** | **standby**} {**0** | **F0** | **R0**} **monitor** [{*cycles no-of-times* [{*interval delay* [{*lines number*}]}]]

Syntax Description

<i>switch-number</i>	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.
<i>cycles no-of-times</i>	(Optional) Sets the number of times to run monitor command. Valid values are from 1 to 4294967295. The default is 5.
<i>interval delay</i>	(Optional) Sets a delay after each . Valid values are from 0 to 300. The default is 3.
<i>lines number</i>	(Optional) Sets the number of lines of output displayed. Valid values are from 0 to 512. The default is 0.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	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	smamd
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	<table> <tr> <th>Release</th><th>Modification</th></tr> <tr> <td>Cisco IOS XE Fuji 16.9.2</td><td>This command was introduced.</td></tr> </table>	Release	Modification	Cisco IOS XE Fuji 16.9.2	This command was introduced.
Release	Modification				
Cisco IOS XE Fuji 16.9.2	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:

show platform software status control-processorSwitch# **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
4-RP0	3	5.80	1.20	0.00	93.00	0.00	0.00	0.00
	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
9-RP0	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
	0	3.99	0.69	0.00	95.30	0.00	0.00	0.00
	1	2.60	0.70	0.00	96.70	0.00	0.00	0.00
	2	4.49	0.89	0.00	94.60	0.00	0.00	0.00
	3	2.60	0.20	0.00	97.20	0.00	0.00	0.00

show platform software thread list

To display the list of threads on a platform, use the **show platform software thread list** command in privileged EXEC mode.

show platform software thread list switch { *switch-number* | **active** | **standby** } { **0** | **F0** | **FP** | **active** | **R0** } **pname** { **cdman** | **vidman** | **all** } **tname** { **main** | **pktio** | **rt** | **all** }

Syntax Description

switch <i>switch-number</i>	Displays information about the switch. Enter the switch number.
active	Specifies the active instance of the device.
standby	Specifies standby instance of the device.
0	Specifies the Shared Port Adapter (SPA) Interface Processor slot 0.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
FP active	Specifies the active instance of Embedded Service Processor (ESP).
R0	Specifies the Route Processor (RP) slot 0.
pname	Specifies a process name. The possible values are cdman , vidman , and all .
tname	Specifies a thread name. The possible values are main , pktio , rt , and all .

Command History

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

Command Modes

Privileged EXEC(#)

Examples

The following is sample output from the **show platform software thread list switch active R0 pname cdman tname all** command:

```
Device# show platform software thread list switch active R0 pname cdman tname all
```

Name	Tid	PPid	Group	Id	Core	Vcswch	Nvcswch	Status	Priority
cdman	8407	7295	8407	1	0	0	S		20
12309	36976								

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

Table 10: show platform software thread list Field Descriptions

Field	Description
Name	Displays the command name associated with the process. Different threads in the same process may have different command values.
Tid	Displays the process ID.
PPid	Displays the process ID of the parent process.
Group Id	Displays the group ID.
Core	Displays processor information.
Vcswch	Displays the number of voluntary context switches.
Nvcswch	Displays the number of non-voluntary context switches.
Status	Displays the process status in human readable form.
Priority	Displays the negated scheduling priority.
TIME+	Displays the time since the start of the process.
Size	Displays the Resident Set Size (in kilobytes (KB)) that shows how much memory is allocated to that process in the RAM.

show processes cpu platform

To display information about the CPU utilization of the IOS-XE processes, use the **show processes cpu platform** command in privileged EXEC mode.

show processes cpu platform [[**sorted** [**1min** | **5min** | **5sec**]] **location**
switch { *switch-number* | **active** | **standby** } { **F0** | **FP active** | **R0** | **RP active** }

Syntax Description	sorted	(Optional) Displays output sorted based on percentage of CPU usage on a platform.
	1min	(Optional) Sorts based on 1 minute intervals.
	5min	(Optional) Sorts based on 5 minute intervals.
	5sec	(Optional) Sorts based on 5 second intervals.
	location	Specifies the Field Replaceable Unit (FRU) location.
	switch <i>switch-number</i>	Displays information about the switch. Enter the switch number.
	active	Specifies the active instance of the device.
	standby	Specifies the standby instance of the device.
	F0	Specifies the Embedded Service Processor (ESP) slot 0.
	FP active	Specifies active instances on the Embedded Service Processor (ESP).
	R0	Specifies the Route Processor (RP) slot 0.
	RP active	Specifies active instances on the Route Processor (RP).
Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.10.1	This command was introduced.
Command Modes	Privileged EXEC (#)	

Examples:

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

Device# **show processes cpu platform**

```

CPU utilization for five seconds: 1%, one minute: 3%, five minutes: 2%
Core 0: CPU utilization for five seconds: 2%, one minute: 2%, five minutes: 2%
Core 1: CPU utilization for five seconds: 2%, one minute: 1%, five minutes: 1%
Core 2: CPU utilization for five seconds: 3%, one minute: 1%, five minutes: 1%
Core 3: CPU utilization for five seconds: 2%, one minute: 5%, five minutes: 2%
  Pid   PPid   5Sec   1Min   5Min  Status      Size  Name
-----
    1      0    0%    0%    0%   S           4876  systemd

```

show processes cpu platform

```

 2      0      0%      0%      0% S      0 kthreadd
 3      2      0%      0%      0% S      0 ksoftirqd/0
 5      2      0%      0%      0% S      0 kworker/0:0H
 7      2      0%      0%      0% S      0 rcu_sched
 8      2      0%      0%      0% S      0 rcu_bh
 9      2      0%      0%      0% S      0 migration/0
10      2      0%      0%      0% S      0 watchdog/0
11      2      0%      0%      0% S      0 watchdog/1
12      2      0%      0%      0% S      0 migration/1
13      2      0%      0%      0% S      0 ksoftirqd/1
15      2      0%      0%      0% S      0 kworker/1:0H
16      2      0%      0%      0% S      0 watchdog/2
17      2      0%      0%      0% S      0 migration/2
18      2      0%      0%      0% S      0 ksoftirqd/2
20      2      0%      0%      0% S      0 kworker/2:0H
21      2      0%      0%      0% S      0 watchdog/3
22      2      0%      0%      0% S      0 migration/3
23      2      0%      0%      0% S      0 ksoftirqd/3
24      2      0%      0%      0% S      0 kworker/3:0
25      2      0%      0%      0% S      0 kworker/3:0H
26      2      0%      0%      0% S      0 kdevtmpfs
27      2      0%      0%      0% S      0 netns
28      2      0%      0%      0% S      0 perf
29      2      0%      0%      0% S      0 khungtaskd
30      2      0%      0%      0% S      0 writeback
31      2      7%      8%      8% S      0 ksmd
32      2      0%      0%      0% S      0 khugepaged
33      2      0%      0%      0% S      0 crypto
34      2      0%      0%      0% S      0 bioset
35      2      0%      0%      0% S      0 kblockd
36      2      0%      0%      0% S      0 ata_sff
37      2      0%      0%      0% S      0 rpciod
63      2      0%      0%      0% S      0 kswapd0
64      2      0%      0%      0% S      0 vmstat
65      2      0%      0%      0% S      0 fsnotify_mark
.
.
.

```

The following is sample output from the **show processes cpu platform sorted 5min location switch 5 R0**

Device# **show processes cpu platform sorted 5min location switch 5 R0**

```

CPU utilization for five seconds: 0%, one minute: 0%, five minutes: 0%
Core 0: CPU utilization for five seconds: 1%, one minute: 1%, five minutes: 1%
Core 1: CPU utilization for five seconds: 1%, one minute: 1%, five minutes: 1%
Core 2: CPU utilization for five seconds: 1%, one minute: 1%, five minutes: 1%
Core 3: CPU utilization for five seconds: 2%, one minute: 2%, five minutes: 1%
Core 4: CPU utilization for five seconds: 0%, one minute: 0%, five minutes: 0%
Core 5: CPU utilization for five seconds: 0%, one minute: 0%, five minutes: 0%
Core 6: CPU utilization for five seconds: 0%, one minute: 0%, five minutes: 0%
Core 7: CPU utilization for five seconds: 0%, one minute: 0%, five minutes: 0%
  Pid   PPid   5Sec   1Min   5Min  Status      Size  Name
-----
16358  15516    4%    4%    4%  S          221376  fed main event
14062  12756    1%    1%    1%  S           52140  sif_mgr
32105   8618    0%    0%    0%  S            260  inotifywait
31396  31393    0%    0%    0%  S          36516  python2.7
31393  31271    0%    0%    0%  S           2744  rdope.sh
31319    1    0%    0%    0%  S           2648  rotee
31271    1    0%    0%    0%  S           3852  pman.sh
29671    2    0%    0%    0%  S            0  kworker/u16:0
29341  29329    0%    0%    0%  S           1780  sntp
29329    1    0%    0%    0%  S           2788  stack_sntp.sh
.

```

.

.

The following is sample output from the **show processes cpu platform location switch 7 R0** command:

Device# **show processes cpu platform location switch 7 R0**

CPU utilization for five seconds: 3%, one minute: 3%, five minutes: 3%

Core 0: CPU utilization for five seconds: 1%, one minute: 5%, five minutes: 5%

Core 1: CPU utilization for five seconds: 1%, one minute: 11%, five minutes: 5%

Core 2: CPU utilization for five seconds: 22%, one minute: 7%, five minutes: 6%

Core 3: CPU utilization for five seconds: 5%, one minute: 6%, five minutes: 6%

Core 4: CPU utilization for five seconds: 0%, one minute: 0%, five minutes: 0%

Core 5: CPU utilization for five seconds: 0%, one minute: 0%, five minutes: 0%

Core 6: CPU utilization for five seconds: 0%, one minute: 0%, five minutes: 0%

Core 7: CPU utilization for five seconds: 0%, one minute: 0%, five minutes: 6%

Pid	PPid	5Sec	1Min	5Min	Status	Size	Name
1	0	0%	0%	0%	S	8044	systemd
2	0	0%	0%	0%	S	0	kthreadd

.

.

.

show processes cpu platform history

To display information about the CPU usage history of a system, use the **show processes cpu platform history** command.

show processes cpu platform history [**1min** | **5min** | **5sec** | **60min**] **location**
switch { *switch-number* | **active** | **standby** } { **0** | **F0** | **FP active** | **R0** }

1min	(Optional) Displays CPU utilization history with 1 minute intervals.
5min	(Optional) Displays CPU utilization history with 5 minute intervals.
5sec	(Optional) Displays CPU utilization history with 5 second intervals.
60min	(Optional) Displays CPU utilization history with 60 minute intervals.
location	Specifies the Field Replaceable Unit (FRU) location.
switch <i>switch-number</i>	Displays information about the switch. Enter the switch number.
active	Specifies the active instance of the device.
standby	Specifies the standby instance of the device.
0	Specifies the Shared Port Adapter (SPA) Interface Processor slot 0.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
FP active	Specifies active instances on the Embedded Service Processor (ESP).
R0	Specifies the Route Processor (RP) slot 0.

Command History

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

Command Modes

Privileged EXEC (#)

Examples:

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

```
Device# show processes cpu platform
```

```

CPU utilization for five seconds: 1%, one minute: 3%, five minutes: 2%
Core 0: CPU utilization for five seconds: 2%, one minute: 2%, five minutes: 2%
Core 1: CPU utilization for five seconds: 2%, one minute: 1%, five minutes: 1%
Core 2: CPU utilization for five seconds: 3%, one minute: 1%, five minutes: 1%
Core 3: CPU utilization for five seconds: 2%, one minute: 5%, five minutes: 2%

```

Pid	PPid	5Sec	1Min	5Min	Status	Size	Name
1	0	0%	0%	0%	S	4876	systemd
2	0	0%	0%	0%	S	0	kthreadd
3	2	0%	0%	0%	S	0	ksoftirqd/0
5	2	0%	0%	0%	S	0	kworker/0:0H
7	2	0%	0%	0%	S	0	rcu_sched
8	2	0%	0%	0%	S	0	rcu_bh
9	2	0%	0%	0%	S	0	migration/0
10	2	0%	0%	0%	S	0	watchdog/0
11	2	0%	0%	0%	S	0	watchdog/1
12	2	0%	0%	0%	S	0	migration/1
13	2	0%	0%	0%	S	0	ksoftirqd/1
15	2	0%	0%	0%	S	0	kworker/1:0H
16	2	0%	0%	0%	S	0	watchdog/2
17	2	0%	0%	0%	S	0	migration/2
18	2	0%	0%	0%	S	0	ksoftirqd/2
20	2	0%	0%	0%	S	0	kworker/2:0H
21	2	0%	0%	0%	S	0	watchdog/3
22	2	0%	0%	0%	S	0	migration/3
23	2	0%	0%	0%	S	0	ksoftirqd/3
24	2	0%	0%	0%	S	0	kworker/3:0
25	2	0%	0%	0%	S	0	kworker/3:0H
26	2	0%	0%	0%	S	0	kdevtmpfs
27	2	0%	0%	0%	S	0	netns
28	2	0%	0%	0%	S	0	perf
29	2	0%	0%	0%	S	0	khungtaskd
30	2	0%	0%	0%	S	0	writeback
31	2	7%	8%	8%	S	0	ksmd
32	2	0%	0%	0%	S	0	khugepaged
33	2	0%	0%	0%	S	0	crypto
34	2	0%	0%	0%	S	0	bioset
35	2	0%	0%	0%	S	0	kblockd
36	2	0%	0%	0%	S	0	ata_sff
37	2	0%	0%	0%	S	0	rpciod
63	2	0%	0%	0%	S	0	kswapd0
64	2	0%	0%	0%	S	0	vmstat
65	2	0%	0%	0%	S	0	fsnotify_mark
.							
.							
.							

The following is sample output from the **show processes cpu platform history 5sec** command:

```
Device# show processes cpu platform history 5sec
```

```

5 seconds ago, CPU utilization: 0%
10 seconds ago, CPU utilization: 0%
15 seconds ago, CPU utilization: 0%
20 seconds ago, CPU utilization: 0%
25 seconds ago, CPU utilization: 0%
30 seconds ago, CPU utilization: 0%
35 seconds ago, CPU utilization: 0%
40 seconds ago, CPU utilization: 0%
45 seconds ago, CPU utilization: 0%
50 seconds ago, CPU utilization: 0%
55 seconds ago, CPU utilization: 0%
60 seconds ago, CPU utilization: 0%
65 seconds ago, CPU utilization: 0%
70 seconds ago, CPU utilization: 0%

```

show processes cpu platform history

```
75 seconds ago, CPU utilization: 0%
80 seconds ago, CPU utilization: 0%
85 seconds ago, CPU utilization: 0%
90 seconds ago, CPU utilization: 0%
95 seconds ago, CPU utilization: 0%
100 seconds ago, CPU utilization: 0%
105 seconds ago, CPU utilization: 0%
110 seconds ago, CPU utilization: 0%
115 seconds ago, CPU utilization: 0%
120 seconds ago, CPU utilization: 0%
125 seconds ago, CPU utilization: 0%
130 seconds ago, CPU utilization: 0%
135 seconds ago, CPU utilization: 0%
140 seconds ago, CPU utilization: 0%
145 seconds ago, CPU utilization: 1%
150 seconds ago, CPU utilization: 0%
155 seconds ago, CPU utilization: 0%
160 seconds ago, CPU utilization: 0%
165 seconds ago, CPU utilization: 0%
170 seconds ago, CPU utilization: 0%
175 seconds ago, CPU utilization: 0%
180 seconds ago, CPU utilization: 0%
185 seconds ago, CPU utilization: 0%
190 seconds ago, CPU utilization: 0%
195 seconds ago, CPU utilization: 0%
200 seconds ago, CPU utilization: 0%
205 seconds ago, CPU utilization: 0%
210 seconds ago, CPU utilization: 0%
215 seconds ago, CPU utilization: 0%
220 seconds ago, CPU utilization: 0%
225 seconds ago, CPU utilization: 0%
230 seconds ago, CPU utilization: 0%
235 seconds ago, CPU utilization: 0%
240 seconds ago, CPU utilization: 0%
245 seconds ago, CPU utilization: 0%
250 seconds ago, CPU utilization: 0%
.
.
.
```

show processes cpu platform monitor

To displays information about the CPU utilization of the IOS-XE processes, use the **show processes cpu platform monitor** command in privileged EXEC mode.

show processes cpu platform monitor location switch {*switch-number* | **active** | **standby**} {**0** | **F0** | **R0**}

Syntax Description	location	Displays information about the Field Replaceable Unit (FRU) location.
	switch	Specifies the switch.
	<i>switch-number</i>	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 Fuji 16.9.2	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	<p>The following is sample output from the show processes cpu monitor location switch active R0 command:</p> <pre>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</pre>	

show processes cpu platform monitor

```

18662 root      20    0 1806m 678m 263m R    5 17.5 215:47.59 linux_iods-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	<i>process-id</i> (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 Fuji 16.9.2	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

```

show processes memory

```

      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 11: show processes memory Field Descriptions

Field	Description
Processor Pool Total	Total amount of memory, in kilobytes (KB), held for the Processor memory pool.
Used	Total amount of used memory, in KB, in the Processor memory pool.
Free	Total amount of free memory, in KB, in the Processor memory pool.
PID	Process ID.
TTY	Terminal that controls the process.
Allocated	Bytes of memory allocated by the process.
Freed	Bytes of memory freed by the process, regardless of who originally allocated it.
Holding	Amount of memory, in KB, currently allocated to the process. This includes memory allocated by the process and assigned to the process.
Getbufs	Number of times the process has requested a packet buffer.
Retbufs	Number of times the process has relinquished a packet buffer.
Process	Process name.
Init	System initialization process.
Sched	The scheduler process.
Dead	Processes as a group that are now dead.
<value> Total	Total amount of memory, in KB, held by all processes (sum of the “Holding” column).

The following is sample output from the **show processes memory** command when the **sorted** keyword is used. In this case, the output is sorted by the Holding column, from largest to smallest.

Device# **show processes memory sorted**

```

Processor Pool Total:  25954228  Used:    8371280  Free:    17582948
  PID  TTY  Allocated    Freed    Holding    Getbufs    Retbufs  Process
    0    0    8629528    689900    6751716         0         0  *Init*

```

```

 3  0  217304  304  229928  0  0 Exec
53  0  109248  192  96064  0  0 DHCPD Receive
56  0  0  0  32928  0  0 COPS
19  0  39048  0  25192  0  0 Net Background
42  0  0  0  24960  0  0 L2X Data Daemon
58  0  192  192  24928  0  0 X.25 Background
43  0  192  192  24928  0  0 PPP IP Route
49  0  0  0  24928  0  0 TCP Protocols
48  0  0  0  24928  0  0 TCP Timer
17  0  192  192  24928  0  0 XML Proxy Client
 9  0  0  0  24928  0  0 Policy Manager
40  0  0  0  24928  0  0 L2X SSS manager
29  0  0  0  24928  0  0 IP Input
44  0  192  192  24928  0  0 PPP IPCP
32  0  192  192  24928  0  0 PPP Hooks
34  0  0  0  24928  0  0 SSS Manager
41  0  192  192  24928  0  0 L2TP mgmt daemon
16  0  192  192  24928  0  0 Dialer event
35  0  0  0  24928  0  0 SSS Test Client
--More--

```

The following is sample output from the **show processes memory** command when a process ID (*process-id*) is specified:

Device# **show processes memory 1**

```

Process ID: 1
Process Name: Chunk Manager
Total Memory Held: 8428 bytes
Processor memory holding = 8428 bytes
pc = 0x60790654, size = 6044, count = 1
pc = 0x607A5084, size = 1544, count = 1
pc = 0x6076DBC4, size = 652, count = 1
pc = 0x6076FF18, size = 188, count = 1
I/O memory holding = 0 bytes

```

Device# **show processes memory 2**

```

Process ID: 2
Process Name: Load Meter
Total Memory Held: 3884 bytes
Processor memory holding = 3884 bytes
pc = 0x60790654, size = 3044, count = 1
pc = 0x6076DBC4, size = 652, count = 1
pc = 0x6076FF18, size = 188, count = 1
I/O memory holding = 0 bytes

```

Related Commands

Command	Description
show memory	Displays statistics about memory, including memory-free pool statistics.
show processes	Displays information about the active processes.

show processes memory platform

To display memory usage for each Cisco IOS XE process, use the **show processes memory platform** command in privileged EXEC mode.

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

Syntax Description

accounting	(Optional) Displays the top memory allocators for each Cisco IOS XE process.
detailed	(Optional) Displays detailed memory information for a specified Cisco IOS XE process.
name <i>process-name</i>	(Optional) Displays the Cisco IOS XE process name. Enter the process name.
process-id <i>process-ID</i>	(Optional) Displays the Cisco IOS XE process ID. Enter the process ID.
location	(Optional) Displays information about the Field Replaceable Unit (FRU) location.
maps	(Optional) Displays memory maps of a process.
smaps	(Optional) Displays static memory maps of a process.
sorted	(Optional) Displays the sorted output based on the Resident Set Size (RSS) memory used by Cisco IOS XE process.
switch <i>switch-number</i>	Displays information about the device.
active	Displays information about the active instance of the device.
standby	Displays information about the standby instance of the device.
0	Displays information about Shared Port Adapter (SPA)-Inter-Processor slot 0.
F0	Displays information about Embedded Service Processor (ESP) slot 0.
R0	Displays information about Route Processor (RP) slot 0.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.
Cisco IOS XE Gibraltar 16.10.1	This command was modified. The keyword accounting was added. The Total column was deleted from the output.

Examples

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

```
device# show processes memory platform
```

```
System memory: 3976852K total, 2761580K used, 1215272K free,
Lowest: 1215272K
```

Pid	Text	Data	Stack	Dynamic	RSS	Name
1	1246	4400	132	1308	4400	systemd
96	233	2796	132	132	2796	systemd-journal
105	284	1796	132	176	1796	systemd-udev
707	52	2660	132	172	2660	in.telnetd
744	968	3264	132	1700	3264	breelay.sh
835	52	2660	132	172	2660	in.telnetd
863	968	3264	132	1700	3264	breelay.sh
928	968	3996	132	2312	3996	reflector.sh
933	968	3976	132	2312	3976	droputil.sh
934	968	2140	132	528	2140	oom.sh
936	173	936	132	132	936	xinetd
945	968	1472	132	132	1472	libvirtd.sh
947	592	43164	132	3096	43164	repm
954	45	932	132	132	932	rpcbind
986	482	3476	132	132	3476	libvirtd
988	66	940	132	132	940	rpc.statd
993	968	928	132	132	928	boothelper_evt.
1017	21	640	132	132	640	inotifywait
1089	102	1200	132	132	1200	rpc.mountd
1328	9	2940	132	148	2940	rotee
1353	39	532	132	132	532	sleep
!						
!						
!						

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

```
device# show processes memory platform accounting
```

```
Hourly Stats
```

process	callsite_ID(bytes)	max_diff_bytes	callsite_ID(calls)	
max_diff_calls	tracekey		timestamp(UTC)	
<hr/>				
smand_rp_0	3624155137	172389	3624155138	50
1#a3e0e4361082c702e5bflafbd90e6313		2018-09-04	14:23	
linux_iosd-imag_rp_0	3626295305	49188	3624155138	12
1#545420bd869d25eb5ab826182ee5d9ce		2018-09-04	12:03	
btman_rp_0	3624737792	17080	2953915394	64
1#d6888bd9564a3c4fcf049c31ba07a036		2018-09-04	22:29	

show processes memory platform

```

fman_fp_image_fp_0      3624059905      16960      4027402242      298
    1#921ba4d9df5b0a6e946a3b270bd6592d      2018-09-04 22:55
fed_main_event_fp_0     3626295305      16396      4027402242      32
    1#27083f7bf3985d892505806cae2bfb0d      2018-09-04 12:03
dbm_rp_0                3626295305      16396      4027402242      3
    1#2b878f802bd7703c5298d37e7a4e8ac3      2018-09-04 12:02
tamd_proc_rp_0          3895208962      12632      3624667171      7
    1#5b0ed8f88ef5f873abcaf8a744037a44      2018-09-04 18:47
btman_fp_0              3624233985      12288      3624737792      9
    1#d6888bd9564a3c4fcf049c31ba07a036      2018-09-04 15:23
sif_mgr_rp_0            3624059907      8216      4027402242      4
    1#de2a951a8a7bae83ca2c04c56810eb72      2018-09-04 14:21
python2.7_fp_0          2954560513      8000      2954560513      1
    2018-09-04 12:16
nginx_rp_0              3357041665      4608      4027402242      4
    1#32e56bb09e0509c5fa5ac32093631206      2018-09-04 16:18
rotee_FRU_SLOT_NUM     3624667169      4097      3624667169      1
    1#ff68e5150a698cd59fa259828614995b      2018-09-04 10:43
hman_rp_0               3893617664      1488      3893617664      1
    1#1c4aadada30083c5d6f66dc8ca8cd4cb      2018-09-04 10:42
tams_proc_rp_0          3895096320      1024      3895096320      1
    1#a36a3afa9884c8dc4d40af1e80cacd26      2018-09-04 10:42
stack_mgr_rp_0          4027402242      904      4027402242      4
    1#ca902eab11a18ab056b16554f49871e8      2018-09-04 14:21
sessmgrd_rp_0           3491618816      848      3624155138      8
    1#720239fc8bddcab059768c55a1640ed      2018-09-04 14:32
psd_rp_0                4027402242      696      4027402242      4
    1#98cf04e0ddd78c2400b3ca3b5f298594      2018-09-04 14:21
lman_rp_0               4027402242      592      4027402242      4
    1#dc8ed9e428d36477a617d56c51d5caf2      2018-09-04 14:21
bt_logger_rp_0          4027402242      592      4027402242      4
    1#ba882beled783e72575e97cc0908e0e8      2018-09-04 14:21
repm_rp_0               4027402242      592      4027402242      4
    1#ae461a05430efa767427f2ab40aba372      2018-09-04 14:21
fman_rp_0               4027402242      592      4027402242      3
    1#09def9cc1390911be9e3a7a9c89f4cf7      2018-09-04 12:16
epc_ws_liaison_fp_0     4027402242      592      4027402242      4
    1#41451626dcce9d1478b22e2ebbbdcf54      2018-09-04 14:21
cli_agent_rp_0          4027402242      592      4027402242      4
    1#92d3882919daf3a9e210807c61de0552      2018-09-04 14:21
cmm_rp_0                4027402242      592      4027402242      4
    1#15ed1d79e96874b1e0621c42c3de6166      2018-09-04 14:21
tms_rp_0                4027402242      352      4027402242      4
    1#5c6efe2e21f15aa16318576d3ec9153c      2018-09-04 12:03
plogd_rp_0              4027402242      48      4027402242      1
    1#2d7f2ef57206f4fa763d7f2f5400bf1b      2018-09-04 10:43
cmand_rp_0              3624155137      17      3624155137      1
    1#f1f41f61c44d73014023db5d8a46ecf5      2018-09-04 10:42
!
!
!

```

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

```
device# show processes memory platform sorted
```

```
System memory: 3976852K total, 2762884K used, 1213968K free,
Lowest: 1213968K
```

Pid	Text	Data	Stack	Dynamic	RSS	Name
7885	149848	684864	136	80	684864	linux_iods-imag
9655	3787	264964	136	18004	264964	wcm

```

17261    324    248588    132    103908    248588    fed main event
4268     391    102084    136      5596    102084      cli_agent
4856     357     93388    132     3680    93388      dbm
17067    1087    77912    136     1796    77912    platform_mgr
!
!
!
```

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

```

device# show processes memory platform sorted location switch active R0
System memory: 3976852K total, 2762884K used, 1213968K free,
Lowest: 1213968K
```

Pid	Text	Data	Stack	Dynamic	RSS	Name
7885	149848	684864	136	80	684864	linux_iosd-imag
9655	3787	264964	136	18004	264964	wcm
17261	324	248588	132	103908	248588	fed main event
4268	391	102084	136	5596	102084	cli_agent
4856	357	93388	132	3680	93388	dbm
17067	1087	77912	136	1796	77912	platform_mgr

```

!
!
!
```

show processes platform

To display information about the IOS-XE processes running on a platform, use the **show processes platform** command in privileged EXEC mode.

show processes platform [**detailed name** *process-name*] [**location** **switch** { *switch-number* | **active** | **standby** } { **0** | **F0** | **FP active** | **R0** }]

detailed	(Optional) Displays detailed information of the specified IOS-XE process.
name <i>process-name</i>	(Optional) Specifies the process name.
location	(Optional) Specifies the Field Replaceable Unit (FRU) location.
switch <i>switch-number</i>	(Optional) Displays information about the switch.
active	(Optional) Specifies the active instance of the device.
standby	(Optional) Specifies standby instance of the device.
0	Specifies the Shared Port Adapter (SPA) Interface Processor slot 0.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
FP active	Specifies the active instance in the Embedded Service Processor (ESP).
R0	Specifies the Route Processor (RP) slot 0.

Command History

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

Command Modes

Privileged EXEC(#)

Examples:

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

Device# **show processes platform**

CPU utilization for five seconds: 1%, one minute: 2%, five minutes: 1%

Pid	PPid	Status	Size	Name
1	0	S	4876	systemd
2	0	S	0	kthreadd
3	2	S	0	ksoftirqd/0
5	2	S	0	kworker/0:0H
7	2	S	0	rcu_sched
8	2	S	0	rcu_bh
9	2	S	0	migration/0
10	2	S	0	watchdog/0
11	2	S	0	watchdog/1
12	2	S	0	migration/1


```

13      2  S      0  ksoftirqd/1
15      2  S      0  kworker/1:0H
16      2  S      0  watchdog/2
17      2  S      0  migration/2
18      2  S      0  ksoftirqd/2
20      2  S      0  kworker/2:0H
21      2  S      0  watchdog/3
22      2  S      0  migration/3
23      2  S      0  ksoftirqd/3
24      2  S      0  kworker/3:0
25      2  S      0  kworker/3:0H
26      2  S      0  kdevtmpfs
27      2  S      0  netns
28      2  S      0  perf
29      2  S      0  khungtaskd
30      2  S      0  writeback
31      2  S      0  ksm
32      2  S      0  khugepaged
33      2  S      0  crypto
34      2  S      0  bioset
35      2  S      0  kblockd
36      2  S      0  ata_sff
37      2  S      0  rpciod
63      2  S      0  kswapd0
64      2  S      0  vmstat
65      2  S      0  fsnotify_mark
66      2  S      0  nfsiod
74      2  S      0  bioset
75      2  S      0  bioset
76      2  S      0  bioset
77      2  S      0  bioset
78      2  S      0  bioset
79      2  S      0  bioset
80      2  S      0  bioset
81      2  S      0  bioset
82      2  S      0  bioset
83      2  S      0  bioset
84      2  S      0  bioset
85      2  S      0  bioset
86      2  S      0  bioset
87      2  S      0  bioset
88      2  S      0  bioset
89      2  S      0  bioset
90      2  S      0  bioset
91      2  S      0  bioset
92      2  S      0  bioset
93      2  S      0  bioset
94      2  S      0  bioset
95      2  S      0  bioset
96      2  S      0  bioset
97      2  S      0  bioset
100     2  S      0  ipv6_addrconf
102     2  S      0  deferwq

```

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

Table 12: show processes platform Field Descriptions

Field	Description
Pid	Displays the process ID.

Field	Description
PPid	Displays the process ID of the parent process.
Status	Displays the process status in human readable form.
Size	Displays the Resident Set Size (in kilobytes (KB)) that shows how much memory is allocated to that process in the RAM.
Name	Displays the command name associated with the process. Different threads in the same process may have different command values.

show system mtu

To display the global maximum transmission unit (MTU) or maximum packet size set for the switch, use the **show system mtu** command in privileged EXEC mode.

show system mtu

Syntax Description	This command has no arguments or keywords.	
Command Default	None	
Command Modes	Privileged EXEC	
Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	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.
isis	(Optional) Displays CLNS and ISIS related information.
license	(Optional) Displays license related information.
lisp	(Optional) Displays Locator/ID Separation Protocol related information.
memory	(Optional) Displays Memory related information.
mfib	(Optional) Displays MFIB related information.
msrp	(Optional) Displays MSRP related information.
mvrp	(Optional) Displays MVRP related information.
nat	(Optional) Displays NAT 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>".

performance-monitor	(Optional) Displays Performance Monitor related information.
---------------------	--

pki	(Optional) Displays PKI related information.
-----	--

platform	(Optional) Displays Platform related information.
----------	---

poe	(Optional) Displays PoE related information.
-----	--

qos	(Optional) Displays QoS related information.
-----	--

subscriber	(Optional) Displays subscriber related information.
------------	---

switch-report	(Optional) Archives switch report.
---------------	------------------------------------

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 Fuji 16.9.2	This command was implemented on the Cisco Catalyst 9200 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.

show tech-support bgp

To automatically run show commands that display BGP related system information, use the **show tech-support bgp** command in the privileged EXEC mode.

```
show tech-support bgp [address-family {all | ipv4 [flowspec | multicast | unicast | [mdt
| mvpn] {all | vrf vrf-instance-name} ] | ipv6 [flowspec | multicast | mvpn {all | vrf
vrf-instance-name} | unicast] | l2vpn [evpn | vpls] | link-state [link-state] | [nsap |
rtfilter] [unicast] | [vpn4 | vpn6] [flowspec | multicast | unicast] {all | vrf
vrf-instance-name} } ] [detail]
```

Syntax Description

address-family	(Optional) Displays the output for a specified address family.
address-family all	(Optional) Displays the output for all address families.
ipv4	(Optional) Displays the output for IPv4 address family.
ipv6	(Optional) Displays the output for IPv6 address family.
l2vpn	(Optional) Displays the output for L2VPN address family.
link-state	(Optional) Displays the output for Link State address family.
nsap	(Optional) Displays the output for NSAP address family.
rtfilter	(Optional) Displays the output for RT Filter address family.
vpn4	(Optional) Displays the output for VPNv4 address family.
vpn6	(Optional) Displays the output for VPNv6 address family.
flowspec	(Optional) Displays the flowspec related information for an address family.
multicast	(Optional) Displays the multicast related information for an address family.
unicast	(Optional) Displays the unicast related information for an address family.
mdt	(Optional) Displays the Multicast Distribution Tree (MDT) related information for an address family.

mvpn	(Optional) Displays the Multicast VPN (MVPN) related information for an address family.
vrf	Displays the information for a VPN Routing/Forwarding instance.
evpn	(Optional) Displays the Ethernet VPN (EVPN) related information for an address family.
vpls	(Optional) Displays the Virtual Private LAN Services (VPLS) related information for an address family.
<i>vrf-instance-name</i>	Specifies the name of the VPN Routing/Forwarding instance.
all	Displays the information about all VPN NLRIs.
detail	(Optional) Displays the detailed routes information.

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
	This command was introduced.

Usage Guidelines

The **show tech-support bgp** command is used to display the outputs of various BGP show commands and log them to the show-tech file. The output from the **show tech-support bgp** command is very long. To better manage this output, you can redirect the output to a file (for example, **show tech-support > filename**) in the local writable storage file system or the remote file system. Redirecting the output to a file also makes sending the output to your Cisco Technical Assistance Center (TAC) representative easier.

You can use one of the following redirection methods:

- > filename - Redirects the output to a file.
- >> filename - Redirects the output to a file in append mode.

The following **show** commands run automatically when the **show tech-support bgp** command is used:

- **show clock**
- **show version**
- **show running-config**
- **show process cpu sorted**
- **show process cpu history**
- **show process memory sorted**

The following **show** commands for a specific address family run automatically when the **show tech-support bgp address-family address-family-name address-family-modifier** command is used:

- **show bgp** *address-family-name address-family-modifier* **summary**
- **show bgp** *address-family-name address-family-modifier* **detail**
- **show bgp** *address-family-name address-family-modifier* **internal**
- **show bgp** *address-family-name address-family-modifier* **neighbors**
- **show bgp** *address-family-name address-family-modifier* **update-group**
- **show bgp** *address-family-name address-family-modifier* **replication**
- **show bgp** *address-family-name address-family-modifier* **community**
- **show bgp** *address-family-name address-family-modifier* **dampening dampened-paths**
- **show bgp** *address-family-name address-family-modifier* **dampening flap-statistics**
- **show bgp** *address-family-name address-family-modifier* **dampening parameters**
- **show bgp** *address-family-name address-family-modifier* **injected-paths**
- **show bgp** *address-family-name address-family-modifier* **cluster-ids**
- **show bgp** *address-family-name address-family-modifier* **cluster-ids internal**
- **show bgp** *address-family-name address-family-modifier* **peer-group**
- **show bgp** *address-family-name address-family-modifier* **pending-prefixes**
- **show bgp** *address-family-name address-family-modifier* **rib-failure**

In addition to the above commands, the following segment routing specific **show** commands also run when the **show tech-support bgp** command is used:

- **show bgp all binding-sid**
- **show segment-routing client**
- **show segment-routing mpls state**
- **show segment-routing mpls gb**
- **show segment-routing mpls connected-prefix-sid-map protocol ipv4**
- **show segment-routing mpls connected-prefix-sid-map protocol backup ipv4**
- **show mpls traffic-eng tunnel auto-tunnel client bgp**

show tech-support diagnostic

To display diagnostic information for technical support, use the **show tech-support diagnostic** command in privileged EXEC mode.

show tech-support diagnostic

Syntax Description	This command has no arguments or keywords.
---------------------------	--

Command Modes	Privileged EXEC (#)
----------------------	---------------------

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

Usage Guidelines	The output of this command is very long. To better manage this output, you can redirect the output to a file (for example, show tech-support diagnostic > flash:filename) in the local writable storage file system or remote file system.
-------------------------	---



Note	For devices that support stacking, this command is executed on every switch that is up. For devices that do not support stacking, this command is executed only on the active switch.
-------------	---

The output of this command displays the output of the following commands:

- **show clock**
- **show version**
- **show running-config**
- **show inventory**
- **show diagnostic bootstrap level**
- **show diagnostic status**
- **show diagnostic content switch all**
- **show diagnostic result switch all detail**
- **show diagnostic schedule switch all**
- **show diagnostic post**
- **show diagnostic description switch [switch number] test all**
- **show logging onboard switch [switch number] clilog detail**
- **show logging onboard switch [switch number] counter detail**
- **show logging onboard switch [switch number] environment detail**
- **show logging onboard switch [switch number] message detail**

- **show logging onboard switch [switch number] poe detail**
- **show logging onboard switch [switch number] status**
- **show logging onboard switch [switch number] temperature detail**
- **show logging onboard switch [switch number] uptime detail**
- **show logging onboard switch [switch number] voltage detail**

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 Fuji 16.9.2	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 Fuji 16.9.2	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	<i>bytes</i>
---------------------------	--------------

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

Command Modes	Global configuration
----------------------	----------------------

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	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	
<i>vlan-id</i>	(Optional) The VLAN for voice traffic. The range is 1 to 4094.
cos <i>cos-value</i>	(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 <i>dscp-value</i>	(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 Fuji 16.9.2	This command was introduced.

Usage Guidelines	<p>Use the network-policy profile global configuration command to create a profile and to enter network-policy profile configuration mode.</p> <p>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.</p> <p>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.</p> <p>These profile attributes are contained in the Link Layer Discovery Protocol for Media Endpoint Devices (LLDP-MED) network-policy time-length-value (TLV).</p>
------------------	---

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	
<i>vlan-id</i>	(Optional) The VLAN for voice traffic. The range is 1 to 4094.
cos <i>cos-value</i>	(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 <i>dscp-value</i>	(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 Fuji 16.9.2	This command was introduced.

Usage Guidelines	<p>Use the network-policy profile global configuration command to create a profile and to enter network-policy profile configuration mode.</p> <p>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.</p> <p>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.</p> <p>These profile attributes are contained in the Link Layer Discovery Protocol for Media Endpoint Devices (LLDP-MED) network-policy time-length-value (TLV).</p>
------------------	--

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
```