



## Interface and Hardware Commands

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- [debug ilpower](#), on page 3
- [debug interface](#), on page 4
- [debug lldp packets](#), on page 5
- [debug platform poe](#), on page 6
- [duplex](#), on page 7
- [errdisable detect cause](#), on page 9
- [errdisable recovery cause](#), on page 11
- [errdisable recovery interval](#), on page 13
- [interface](#), on page 14
- [interface range](#), on page 16
- [ip mtu](#), on page 18
- [ipv6 mtu](#), on page 19
- [lldp \(interface configuration\)](#), on page 20
- [logging event power-inline-status](#), on page 22
- [mdix auto](#), on page 23
- [network-policy](#), on page 24
- [network-policy profile \(global configuration\)](#), on page 25
- [power inline](#), on page 26
- [power inline police](#), on page 29
- [power supply](#), on page 31
- [show beacon all](#), on page 33
- [show environment](#), on page 34
- [show errdisable detect](#), on page 36
- [show errdisable recovery](#), on page 37
- [show ip interface](#), on page 38
- [show interfaces](#), on page 43
- [show interfaces counters](#), on page 48
- [show interfaces switchport](#), on page 50
- [show interfaces transceiver](#), on page 52
- [show memory platform](#), on page 54
- [show module](#), on page 57
- [show network-policy profile](#), on page 58
- [show platform resources](#), on page 59

- [show platform software ilpower](#), on page 60
- [show platform software process list](#), on page 62
- [show platform software process slot switch](#), on page 66
- [show platform software status control-processor](#), on page 68
- [show processes cpu platform monitor](#), on page 71
- [show processes memory](#), on page 73
- [show processes memory platform](#), on page 76
- [show system mtu](#), on page 79
- [show tech-support](#) , on page 80
- [speed](#), on page 82
- [switchport block](#), on page 84
- [system mtu](#), on page 85
- [voice-signaling vlan \(network-policy configuration\)](#), on page 86
- [voice vlan \(network-policy configuration\)](#), on page 88

## 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

<b>cdp</b>	Displays PoE Cisco Discovery Protocol (CDP) debug messages.
<b>event</b>	Displays PoE event debug messages.
<b>ha</b>	Displays PoE high-availability messages.
<b>port</b>	Displays PoE port manager debug messages.
<b>powerman</b>	Displays PoE power management debug messages.
<b>registries</b>	Displays PoE registries debug messages.
<b>scp</b>	Displays PoE SCP debug messages.
<b>sense</b>	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 active switch. To enable debugging on a member switch, you can start a session from the active switch by using the **session switch-number EXEC** command. Then enter the **debug** command at the command-line prompt of the member switch. You also can use the **remote command stack-member-number LINE EXEC** command on the active switch to enable debugging on a member switch without first starting a session.

# debug interface

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

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

## Syntax Description

<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.
<b>null</b> <i>interface-number</i>	Displays debug messages for null interfaces. The interface number is always <b>0</b> .
<b>port-channel</b> <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.
<b>vlan</b> <i>vlan-id</i>	Displays debug messages for the specified VLAN. The vlan range is 1 to 4094.
<b>counters</b>	Displays counters debugging information.
<b>exceptions</b>	Displays debug messages when a recoverable exceptional condition occurs during the computation of the interface packet and data rate statistics.
<b>protocol memory</b>	Displays debug messages for memory operations of protocol counters.
<b>states</b>	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 active switch. To enable debugging on a member switch, you can start a session from the active switch by using the **session** *switch-number* EXEC command. Then enter the **debug** command at the command-line prompt of the member switch. You also can use the **remote command** *stack-member-number* *LINE* EXEC command on the active switch to enable debugging on a member switch without first starting a session.

# debug lldp packets

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

**debug lldp packets**  
**no debug lldp packets**

---

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

---

**Command Default** Debugging is disabled.

---

**Command Modes** Privileged EXEC

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

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**Usage Guidelines** The **undebg lldp packets** command is the same as the **no debug lldp packets** command.

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

## debug platform poe

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

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

### Syntax Description

<b>error</b>	(Optional) Displays PoE-related error debug messages.
<b>info</b>	(Optional) Displays PoE-related information debug messages.
<b>switch</b> <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.

# 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**.



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**Caution** Changing the interface speed and duplex mode configuration might shut down and reenables the interface during the reconfiguration.

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

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

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

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

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

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

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

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

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

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

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

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

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

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

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

## errdisable recovery cause

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

```
errdisable recovery cause {all | arp-inspection | bpduguard | channel-misconfig | dhcp-rate-limit |
dtp-flap | gbic-invalid | inline-power | link-flap | loopback | mac-limit | pagp-flap | port-mode-failure |
pppoe-ia-rate-limit | psecure-violation | psp | security-violation | sfp-config-mismatch | storm-control |
udld}
```

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

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

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

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	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*

<b>Syntax Description</b>	<i>timer-interval</i> 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.				
<b>Command Default</b>	The default recovery interval is 300 seconds.				
<b>Command Modes</b>	Global configuration				
<b>Command History</b>	<table border="1"> <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 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

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

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



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<b>Vlan</b> <i>interface-number</i>	Enables you to configure a switch VLAN. The range is from 1 to 4094.
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**Command Default** None

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**Command Modes** Global configuration (config)

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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Fuji 16.9.2	This command was introduced.
	Cisco IOS XE Gibraltar 16.11.1	The <b>TwentyFiveGigE</b> keyword was added to the command.

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**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.

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**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
```

<b>Syntax Description</b>	<i>bytes</i> MTU size, in bytes. The range is from 68 up to the system MTU value (in bytes).	
<b>Command Default</b>	The default IP MTU size for frames received and sent on all switch interfaces is 1500 bytes.	
<b>Command Modes</b>	Interface configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	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** *interface-id* or **show interfaces** *interface-id* privileged EXEC command.

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

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

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

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

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

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

<output truncated>

# ipv6 mtu

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

**ipv6 mtu** *bytes*  
**no ipv6 mtu** *bytes*

<b>Syntax Description</b>	<i>bytes</i> MTU size, in bytes. The range is from 1280 up to the system MTU value (in bytes).				
<b>Command Default</b>	The default IPv6 MTU size for frames received and sent on all switch interfaces is 1500 bytes.				
<b>Command Modes</b>	Interface configuration				
<b>Command History</b>	<table border="1"> <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 upper limit of the IPv6 MTU value is based on the switch or switch stack configuration and refers to the currently applied system MTU value. For more information about setting the MTU sizes, see the **system mtu** global configuration command.

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

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

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

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

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

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

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

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

<output truncated>

## lldp (interface configuration)

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

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

### Syntax Description

<b>med-tlv-select</b>	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"> <li>• <b>inventory-management</b>— LLDP MED Inventory Management TLV.</li> <li>• <b>location</b>— LLDP MED Location TLV.</li> <li>• <b>network-policy</b>— LLDP MED Network Policy TLV.</li> <li>• <b>power-management</b>— LLDP MED Power Management TLV.</li> </ul>
<b>receive</b>	Enables the interface to receive LLDP transmissions.
<b>tlv-select</b>	Selects the LLDP TLVs to send.
<b>power-management</b>	Sends the LLDP Power Management TLV.
<b>transmit</b>	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** When auto-MDIX is enabled, the interface automatically detects the required cable connection type (straight-through or crossover) and configures the connection appropriately.

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

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

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

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*

<b>Syntax Description</b>	<i>profile-number</i> Network-policy profile number. The range is 1 to 4294967295.	
<b>Command Default</b>	No network-policy profiles are defined.	
<b>Command Modes</b>	Global configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Fuji 16.9.2	This command was introduced.
<b>Usage Guidelines</b>	<p>Use the <b>network-policy profile</b> global configuration command to create a profile and to enter network-policy profile configuration mode.</p> <p>To return to privileged EXEC mode from the network-policy profile configuration mode, enter the <b>exit</b> command.</p> <p>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.</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> <p>This example shows how to create network-policy profile 60:</p> <pre>Device(config)# <b>network-policy profile 60</b> Device(config-network-policy)#</pre>	

# 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		
<b>auto</b>		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.
<b>max</b> <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.
<b>never</b>		Disables device detection, and disables power to the port.
<b>port</b>		Configures the power priority of the port. The default priority is low.
<b>priority</b> { <b>high</b>   <b>low</b> }		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.
<b>static</b>		Enables powered-device detection. Pre-allocates (reserves) power for a port before the switch discovers the powered device. This action guarantees that the device connected to the interface receives enough power.

**Command Default** The default is **auto** (enabled).  
The maximum wattage is 30,000 mW.  
The default port priority is low.

**Command Default** Interface configuration

Command History	Release	Modification
	Cisco IOS XE 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

<b>action errdisable</b>	(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.
<b>action log</b>	(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 *power monitoring* or *power sensing*. The device also polices the power usage with the *power policing* feature.

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

1. The user-defined power level that limits the power allowed on the port when you enter the **power inline auto max** *max-wattage* or the **power inline static max** *max-wattage* interface configuration command
2. The device automatically sets the power usage of the device by using CDP power negotiation or by the IEEE classification and 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<sub>max</sub>* 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.
<b>slot</b>		Selects the switch power supply to set.
<b>A</b>		Selects the power supply in slot A.
<b>B</b>		Selects the power supply in slot B.  <b>Note</b> Power supply slot B is the closest slot to the outer edge of the switch.
<b>off</b>		Sets the switch power supply to off.
<b>on</b>		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		
<b>rp { active   standby }</b>		Specifies the active or the standby Switch whose beacon LED status is to be displayed.
<b>slot slot-num</b>		Specifies the slot whose beacon LED status is to be displayed.
<b>all</b>		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		
<b>all</b>		Displays the fan and temperature environmental status and the status of the internal power supplies.
<b>fan</b>		Displays the switch fan status.
<b>power</b>		Displays the internal power status of the active switch.
<b>stack</b>		Displays all environmental status for each switch in the stack or for the specified switch.  This keyword is available only on stacking-capable switches.
<b>temperature</b>		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*.

## Examples

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

```
Device> show environment all

Switch 1 FAN 1 is OK
Switch 1 FAN 2 is OK
Switch 1 FAN 3 is OK
FAN PS-1 is NOT PRESENT
FAN PS-2 is OK
Switch 1: SYSTEM TEMPERATURE is OK
Inlet Temperature Value: 25 Degree Celsius
Temperature State: GREEN
Yellow Threshold : 46 Degree Celsius
```

```

Red Threshold      : 56 Degree Celsius

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

```

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

```
Device> show environment power
```

```

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

```

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

```
Device# show environment stack
```

```

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

```

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

```
Device> show environment temperature
```

```

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

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

```

**Table 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	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

**Usage Guidelines** A gbic-invalid error reason refers to an invalid small form-factor pluggable (SFP) module. The error-disable reasons in the command output are listed in alphabetical order. The mode column shows how error-disable is configured for each feature.

You can configure error-disabled detection in these modes:

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

# show errdisable recovery

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

## show errdisable recovery

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

**Command Default** None

**Command Modes** User EXEC  
Privileged EXEC

Command History	Release	Modification
	Cisco IOS XE 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

*type* (Optional) Interface type.

*number* (Optional) Interface number.

**brief** (Optional) Displays a summary of the usability status information for each interface.

**Note** The output of the **show ip interface brief** command displays information of all the available interfaces whether or not the corresponding network module for these interfaces are connected. These interfaces can be configured if the network module is connected. Run the **show interface status** command to see which network modules are connected.

## Command Default

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

## Command Modes

Privileged EXEC (#)

## Command History

### Release

Cisco IOS XE Fuji 16.9.2

### Modification

This command was introduced.

## Usage Guidelines

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

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

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

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

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

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

## Examples

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

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

```
GigabitEthernet1/0/1 is up, line protocol is up
  Internet address is 10.1.1.1/16
  Broadcast address is 255.255.255.255
  Address determined by setup command
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound access list is not set
  Proxy ARP is enabled
  Local Proxy ARP is disabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP 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 <b>ip flow ingress</b> command. Shows "Flow" to specify that NetFlow is enabled on a main interface using the <b>ip route-cache flow</b> 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"> <li>• RARP or SLARP: Reverse Address Resolution Protocol (RARP) or Serial Line Address Resolution Protocol (SLARP) request.</li> <li>• BOOTP: Bootstrap protocol.</li> <li>• TFTP: Configuration file obtained from the TFTP server.</li> <li>• manual: Manually changed by the command-line interface.</li> <li>• NVRAM: Configuration file in NVRAM.</li> <li>• IPCP: <b>ip address negotiated</b> command.</li> <li>• DHCP: <b>ip address dhcp</b> command.</li> <li>• unset: Unset.</li> <li>• other: Unknown.</li> </ul>
Status	<p>Shows the status of the interface. Valid values and their meanings are:</p> <ul style="list-style-type: none"> <li>• up: Interface is up.</li> <li>• down: Interface is down.</li> <li>• administratively down: Interface is administratively down.</li> </ul>
Protocol	Shows the operational status of the routing protocol on this interface.

**Related Commands**

Command	Description
<b>ip interface</b>	Configures a virtual gateway IP interface on a Secure Socket Layer Virtual Private Network (SSL VPN) gateway
<b>show interface status</b>	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.
<b>vlan</b> <i>vlan-id</i>	(Optional) VLAN identification. The range is 1 to 4094.
<b>accounting</b>	(Optional) Displays accounting information on the interface, including active protocols and input and output packets and octets.  <b>Note</b> The display shows only packets processed in software; hardware-switched packets do not appear.
<b>capabilities</b>	(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.
<b>module</b> <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.
<b>description</b>	(Optional) Displays the administrative status and description set for interfaces.  <b>Note</b> The output of the <b>show interfaces description</b> 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 <b>show interface status</b> command to see which network modules are connected.
<b>etherchannel</b>	(Optional) Displays interface EtherChannel information.
<b>flowcontrol</b>	(Optional) Displays interface flow control information.
<b>private-vlan mapping</b>	(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.

<b>pruning</b>	(Optional) Displays trunk VTP pruning information for the interface.
<b>stats</b>	(Optional) Displays the input and output packets by switching the path for the interface.
<b>status</b>	(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.
<b>err-disabled</b>	(Optional) Displays interfaces in an error-disabled state.
<b>inactive</b>	(Optional) Displays interfaces in an inactive state.
<b>trunk</b>	(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 (#)

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	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 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 watchdog, 0 multicast, 0 pause input
    0 input packets with dribble condition detected
  0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 unknown protocol drops
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier, 0 pause output
    0 output buffer failures, 0 output buffers swapped out
```

```
Device# show interfaces accounting

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

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

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

<output truncated>
```

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

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

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

```
Device# show interfaces etherchannel
```

```
----
```

```
Port-channel34:
```

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

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

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

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

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

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

```
Device# show interfaces vlan 1 stats
```

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

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

```
Device# show interfaces status err-disabled
```

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

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

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

```
Port Vlans pruned for lack of request by neighbor
```

```
Device# show interfaces gigabitethernet1/0/1 trunk
```

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

```
Port      Vlans allowed on trunk
Gi1/0/1   none
```

```
Port      Vlans allowed and active in management domain
```

```
Gi1/0/1    none

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

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

```
Device# show interfaces description
```

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

```
<output truncated>
```

# 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.
<b>errors</b>	(Optional) Displays error counters.
<b>etherchannel</b>	(Optional) Displays EtherChannel counters, including octets, broadcast packets, multicast packets, and unicast packets received and sent.
<b>module</b> <i>stack-member-number</i>	(Optional) Displays counters for the specified stack member. <b>Note</b> In this command, the <b>module</b> keyword refers to the stack member number. The module number that is part of the interface ID is always zero.
<b>protocol status</b>	(Optional) Displays the status of protocols enabled on interfaces.
<b>trunk</b>	(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**}]

<b>Syntax Description</b>	<p><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.</p> <hr/> <p><b>module number</b> (Optional) Displays switchport configuration of all interfaces on the switch or specified stack member.</p> <p>This option is not available if you entered a specific interface ID.</p>				
<b>Command Default</b>	None				
<b>Command Modes</b>	Privileged EXEC				
<b>Command History</b>	<table border="1"> <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.				
<b>Usage Guidelines</b>	<p>Use the <b>show interface switchport module number</b> 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.</p> <p>This is an example of output from the <b>show interfaces switchport</b> command for a port. The table that follows describes the fields in the display.</p>				



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

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

```

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

```

```

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

```

Field	Description
Name	Displays the port name.
Switchport	Displays the administrative and operational status of the port. In this display, the port is in switchport mode.
Administrative Mode Operational Mode	Displays the administrative and operational modes.
Administrative Trunking Encapsulation Operational Trunking Encapsulation Negotiation of Trunking	Displays the administrative and operational encapsulation method and whether trunking negotiation is enabled.
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.
<b>detail</b>	(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.
<b>module number</b>	(Optional) Limits display to interfaces on module on the switch. This option is not available if you entered a specific interface ID.
<b>properties</b>	(Optional) Displays speed, duplex, and inline power settings on an interface.
<b>supported-list</b>	(Optional) Lists all supported transceivers.
<b>threshold-table</b>	(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.
```

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

  

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

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

  

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

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

```
Device# show interfaces transceiver threshold-table
          Optical Tx      Optical Rx      Temp      Laser Bias      Voltage
          -----      -
          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	
<b>compressed-swap</b>	(Optional) Displays platform memory compressed-swap information.
<b>information</b>	(Optional) Displays general information about the platform.
<b>page-merging</b>	(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
```

```

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

```

## show memory platform

```
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}]
```

<b>Syntax Description</b>	<i>switch-num</i>	(Optional) Number of the switch.
<b>Command Default</b>	None	
<b>Command Modes</b>	User EXEC (>) Privileged EXEC (#)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Fuji 16.9.2	This command was introduced.
<b>Usage Guidelines</b>	Entering the <b>show module</b> 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**]

<b>Syntax Description</b>	<i>profile-number</i> (Optional) Displays the network-policy profile number. If no profile is entered, all network-policy profiles appear.				
	<b>detail</b> (Optional) Displays detailed status and statistics information.				
<b>Command Default</b>	None				
<b>Command Modes</b>	Privileged EXEC				
<b>Command History</b>	<table border="1"> <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.				

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 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**

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 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		
<b>details</b>		Displays inline power details for all the interfaces.
<b>port</b>		Displays inline power port configuration.
<b>GigabitEthernet</b> <i>interface-number</i>		The GigabitEthernet interface number. Values range from 0 to 9.
<b>system</b> <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:
```

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

# show platform software process list

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

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

## Syntax Description

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

## 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 process list switch active R0** command:

```
Switch# show platform software process list switch active R0 summary
```

```
Total number of processes: 278
Running           : 2
Sleeping          : 276
Disk sleeping     : 0
Zombies           : 0
Stopped           : 0
Paging            : 0

Up time           : 8318
```

```

Idle time      : 0
User time     : 216809
Kernel time   : 78931

Virtual memory : 12933324800
Pages resident : 634061
Major page faults: 2228
Minor page faults: 3491744

Architecture   : mips64
Memory (kB)
  Physical     : 3976852
  Total        : 3976852
  Used         : 2766952
  Free         : 1209900
  Active       : 2141344
  Inactive     : 1589672
  Inact-dirty  : 0
  Inact-clean  : 0
  Dirty        : 4
  AnonPages    : 1306800
  Bounce       : 0
  Cached       : 1984688
  Commit Limit : 1988424
  Committed As : 3358528
  High Total   : 0
  High Free    : 0
  Low Total    : 3976852
  Low Free     : 1209900
  Mapped       : 520528
  NFS Unstable : 0
  Page Tables  : 17328
  Slab         : 0
  VMmalloc Chunk : 1069542588
  VMmalloc Total : 1069547512
  VMmalloc Used : 2588
  Writeback    : 0
  HugePages Total: 0
  HugePages Free : 0
  HugePages Rsvd : 0
  HugePage Size : 2048

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

Buffers (kB)   : 439528

Load Average
  1-Min        : 1.13
  5-Min        : 1.18
  15-Min       : 0.92

```

The following is sample output from the **show platform software process list switch active R0** command:

```

Device# show platform software process list switch active R0
Name          Pid    PPid  Group Id  Status  Priority  Size
-----

```

## show platform software process list

```

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 4: 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	Prior to Cisco IOS XE Gibraltar 16.10.1: Displays Virtual Memory size. From Cisco IOS XE Gibraltar 16.10.1 onwards: Displays the Resident Set Size (RSS) that shows how much memory is allocated to that process in the RAM.

# show platform software process slot switch

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

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

Syntax Description		
	<i>switch-number</i>	Switch number.
	<b>active</b>	Specifies the active instance.
	<b>standby</b>	Specifies the standby instance.
	<b>0</b>	Specifies the shared port adapter (SPA) interface processor slot 0.
	<b>F0</b>	Specifies the Embedded Service Processor (ESP) slot 0.
	<b>R0</b>	Specifies the Route Processor (RP) slot 0.
	<b>monitor</b>	Monitors the running processes.
	<b>cycles</b> <i>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.
	<b>interval</b> <i>delay</i>	(Optional) Sets a delay after each . Valid values are from 0 to 300. The default is 3.
	<b>lines</b> <i>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_iods-imag
30276 root       20   0  171m  42m  33m  S   5   1.1 125:06.77 repm
17835 root       20   0  935m  74m  63m  S   4   1.9  82:28.31 sif_mgr
18534 root       20   0  182m 150m  10m  S   2   3.9   8:12.08 smand
   1 root       20   0  8440 4740 2184  S   0   0.1   0:09.52 systemd
   2 root       20   0    0    0    0  S   0   0.0   0:00.00 kthreadd
   3 root       20   0    0    0    0  S   0   0.0   0:02.86 ksoftirqd/0
   5 root        0 -20    0    0    0  S   0   0.0   0:00.00 kworker/0:0H
   7 root       RT   0    0    0    0  S   0   0.0   0:01.44 migration/0
   8 root       20   0    0    0    0  S   0   0.0   0:00.00 rcu_bh
   9 root       20   0    0    0    0  S   0   0.0   0:23.08 rcu_sched
  10 root       20   0    0    0    0  S   0   0.0   0:58.04 rcuc/0
  11 root       20   0    0    0    0  S   0   0.0 21:35.60 rcuc/1
  12 root       RT   0    0    0    0  S   0   0.0   0:01.33 migration/1

```

#### Related Commands

Command	Description
<b>show processes cpu platform monitor location</b>	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**}]

<b>Syntax Description</b>	<b>brief</b> (Optional) Displays a summary of the platform control-processor status.
---------------------------	--

<b>Command Modes</b>	Privileged EXEC (#)
----------------------	---------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	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-processor

Switch# show platform software status control-processor brief

## Load Average

Slot	Status	1-Min	5-Min	15-Min
2-RP0	Healthy	1.10	1.21	0.91
3-RP0	Healthy	0.23	0.27	0.31
4-RP0	Healthy	0.11	0.21	0.22
9-RP0	Healthy	0.10	0.30	0.34

## Memory (kB)

Slot	Status	Total	Used (Pct)	Free (Pct)	Committed (Pct)
2-RP0	Healthy	3976852	2766956 (70%)	1209896 (30%)	3358352 (84%)
3-RP0	Healthy	3976852	2706824 (68%)	1270028 (32%)	3299276 (83%)
4-RP0	Healthy	3976852	1451888 (37%)	2524964 (63%)	1675076 (42%)
9-RP0	Healthy	3976852	1451580 (37%)	2525272 (63%)	1675952 (42%)

## CPU Utilization

Slot	CPU	User	System	Nice	Idle	IRQ	SIRQ	IOWait
2-RP0	0	4.10	2.00	0.00	93.80	0.00	0.10	0.00
	1	4.60	1.00	0.00	94.30	0.00	0.10	0.00
	2	6.50	1.10	0.00	92.40	0.00	0.00	0.00
	3	5.59	1.19	0.00	93.20	0.00	0.00	0.00
3-RP0	0	2.80	1.20	0.00	95.90	0.00	0.10	0.00
	1	4.49	1.29	0.00	94.20	0.00	0.00	0.00
	2	5.30	1.60	0.00	93.10	0.00	0.00	0.00
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
9-RP0	2	4.49	0.89	0.00	94.60	0.00	0.00	0.00
	3	2.60	0.20	0.00	97.20	0.00	0.00	0.00

# show processes cpu platform monitor

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

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

Syntax Description	Parameter	Description
	<b>location</b>	Displays information about the Field Replaceable Unit (FRU) location.
	<b>switch</b>	Specifies the switch.
	<i>switch-number</i>	Switch number.
	<b>active</b>	Specifies the active instance.
	<b>standby</b>	Specifies the standby instance.
	<b>0</b>	Specifies the shared port adapter (SPA) interface processor slot 0.
	<b>F0</b>	Specifies the Embedded Service Processor (ESP) slot 0.
	<b>R0</b>	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

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

```
Switch# show processes cpu platform monitor location switch active R0

top - 00:04:21 up 1 day, 11:22, 0 users, load average: 0.42, 0.60, 0.78
Tasks: 312 total, 4 running, 308 sleeping, 0 stopped, 0 zombie
Cpu(s): 7.4%us, 3.3%sy, 0.0%ni, 89.2%id, 0.0%wa, 0.0%hi, 0.1%si, 0.0%st
Mem: 3976844k total, 3956928k used, 19916k free, 419312k buffers
Swap: 0k total, 0k used, 0k free, 1947036k cached

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM    TIME+  COMMAND
  6294 root        20   0  3448  1368  912  R   9.0   0.0   0:00.07 top
 17546 root        20   0 2044m 244m  79m  S   6.3 187:02.07 fed main event
30276 root        20   0  171m  42m  33m  S   7.1  1.1 125:15.54 repm
   16 root        20   0     0     0     0  S   5.0   0.0  22:07.92 rcuc/2
   21 root        20   0     0     0     0  R   5.0   0.0  22:13.24 rcuc/3
```

## show processes cpu platform monitor

```

18662 root      20    0 1806m 678m 263m R    5 17.5 215:47.59 linux_iosd-imag
   11 root      20    0     0    0    0 S    4  0.0 21:37.41 rcuc/1
10333 root      20    0 6420 3916 1492 S    4  0.1  4:47.03 btrace_rotate.s
   10 root      20    0     0    0    0 S    2  0.0  0:58.13 rcuc/0
 6304 root      20    0   776   12    0 R    2  0.0  0:00.01 ls
17835 root      20    0 935m  74m  63m S    2  1.9 82:34.07 sif_mgr
   1 root      20    0 8440 4740 2184 S    0  0.1  0:09.52 systemd
   2 root      20    0     0    0    0 S    0  0.0  0:00.00 kthreadd
   3 root      20    0     0    0    0 S    0  0.0  0:02.86 ksoftirqd/0
   5 root        0 -20     0    0    0 S    0  0.0  0:00.00 kworker/0:0H
   7 root      RT    0     0    0    0 S    0  0.0  0:01.44 migration/0

```

## Related Commands

Command	Description
<b>show platform software process slot switch</b>	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.
<b>sorted</b>	(Optional) Displays memory data sorted by the Allocated, Get Buffers, or Holding column. If the <b>sorted</b> keyword is used by itself, data is sorted by the Holding column by default.
<b>allocated</b>	(Optional) Displays memory data sorted by the Allocated column.
<b>getbufs</b>	(Optional) Displays memory data sorted by the Getbufs (Get Buffers) column.
<b>holding</b>	(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 5: 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
<b>show memory</b>	Displays statistics about memory, including memory-free pool statistics.
<b>show processes</b>	Displays information about the active processes.

# show processes memory platform

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

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

Syntax Description		
<b>detailed</b> <i>process-name</i>		(Optional) Displays detailed memory information for a specified Cisco IOS XE process.
<b>name</b> <i>process-name</i>		(Optional) Matches the Cisco IOS XE process name.
<b>process-id</b> <i>process-ID</i>		(Optional) Matches the Cisco IOS XE process ID.
<b>location</b>		(Optional) Displays information about the FRU location.
<b>maps</b>		(Optional) Displays memory maps of a process.
<b>smaps</b>		(Optional) Displays smaps of a process.
<b>sorted</b>		(Optional) Displays the sorted output based on the total memory used by Cisco IOS XE processes.
<b>switch</b> <i>switch-number</i>		Displays information about the device.
<b>active</b>		Displays information about the active instance of the switch.
<b>standby</b>		Displays information about the standby instance of the switch.
<b>0</b>		Displays information about the SPA-Inter-Processor slot 0.
<b>F0</b>		Displays information about the Embedded Service Processor (ESP) slot 0.
<b>R0</b>		Displays information about the Route Processor (RP) slot 0.

**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 processes memory platform** command:

```
Switch# show processes memory platform

System memory: 3976852K total, 2761580K used, 1215272K free,
Lowest: 1215272K
  Pid   Text      Data   Stack  Dynamic   RSS     Total      Name
-----
    1   1246     4400    132    1308     4400     8328      systemd
   96   233     2796    132     132     2796    12436    systemd-journal
  105   284     1796    132     176     1796     5208    systemd-udev
  707    52     2660    132     172     2660    11688    in.telnetd
  744   968     3264    132    1700     3264     5800     brelay.sh
  835    52     2660    132     172     2660    11688    in.telnetd
  863   968     3264    132    1700     3264     5800     brelay.sh
  928   968     3996    132    2312     3996     6412    reflector.sh
  933   968     3976    132    2312     3976     6412    droputil.sh
  934   968     2140    132     528     2140     4628     oom.sh
  936   173      936    132     132      936     3068     xinetd
  945   968     1472    132     132     1472     4168    libvirtd.sh
  947   592    43164    132    3096    43164    154716    repm
  954    45      932    132     132      932     3132     rpcbind
  986   482     3476    132     132     3476    169288    libvirtd
  988    66      940    132     132      940     2724     rpc.statd
  993   968     928    132     132      928     4232    boothelper_evt.
 1017   21      640    132     132      640     2500     inotifywait
 1089  102     1200    132     132     1200     3328     rpc.mountd
 1328    9     2940    132     148     2940    13844     rotee
 1353   39      532    132     132      532     2336     sleep
!
!
!
```

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

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

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

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

```
Switch# show processes memory platform sorted

System memory: 3976852K total, 2762884K used, 1213968K free,
Lowest: 1213968K
  Pid   Text      Data   Stack  Dynamic   RSS     Total      Name
-----
  9655   3787    264964    136    18004    264964    2675968    wcm
 17261   324    248588    132    103908    248588    2093076    fed main event
```

## show processes memory platform

```

7885 149848 684864 136      80 684864 1853548 linux_iosd-imag
17891 398 75772 136 1888 75772 958240   sif_mgr
17067 1087 77912 136 1796 77912 702184   platform_mgr
4268 391 102084 136 5596 102084 482656   cli_agent
4856 357 93388 132 3680 93388 340052   dbm
29842 8722 64428 132 8056 64428 297068   fman_fp_image
5960 9509 76088 136 3200 76088 287156   fman_rp
!
!
!
```

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

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

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

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

```

!
!
!
```

# show system mtu

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

```
show system mtu
```

---

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

---

**Command Default** None

---

**Command Modes** Privileged EXEC

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	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

<b>cef</b>	(Optional) Displays CEF related information.
<b>cft</b>	(Optional) Displays CFT related information.
<b>eigrp</b>	(Optional) Displays EIGRP related information.
<b>evc</b>	(Optional) Displays EVC related information.
<b>fnf</b>	(Optional) Displays flexible netflow related information.
<b>ipc</b>	(Optional) Displays IPC related information.
<b>ipmulticast</b>	(Optional) Displays IP multicast related information.
<b>ipsec</b>	(Optional) Displays IPSEC related information.
<b>isis</b>	(Optional) Displays CLNS and ISIS related information.
<b>license</b>	(Optional) Displays license related information.
<b>lisp</b>	(Optional) Displays Locator/ID Separation Protocol related information.
<b>memory</b>	(Optional) Displays Memory related information.
<b>mfib</b>	(Optional) Displays MFIB related information.
<b>msrp</b>	(Optional) Displays MSRP related information.
<b>mvrp</b>	(Optional) Displays MVRP related information.
<b>nat</b>	(Optional) Displays NAT related information.
<b>onep</b>	(Optional) Displays ONEP related information.
<b>ospf</b>	(Optional) Displays OSPF related information.
<b>page</b>	(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 <b>Ctrl-C</b> keys to stop the command output.
<b>password</b>	(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.
<b>poe</b>	(Optional) Displays PoE related information.
qos	(Optional) Displays QoS related information.
<b>subscriber</b>	(Optional) Displays subscriber related information.
switch-report	(Optional) Archives switch report.
<b>vrp</b>	(Optional) Displays VRRP related information.
<b>wccp</b>	(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 <b>show logging onboard uptime</b> 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.

# 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		
	<b>10</b>	Specifies that the port runs at 10 Mbps.
	<b>100</b>	Specifies that the port runs at 100 Mbps.
	<b>1000</b>	Specifies that the port runs at 1000 Mbps. This option is valid and visible only on 10/100/1000 Mb/s ports.
	<b>2500</b>	Specifies that the port runs at 2500 Mbps. This option is valid and visible only on multi-Gigabit-supported Ethernet ports.
	<b>5000</b>	Specifies that the port runs at 5000 Mbps. This option is valid and visible only on multi-Gigabit-supported Ethernet ports.
	<b>auto</b>	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 <b>10</b> , <b>100</b> , <b>1000</b> , <b>1000</b> , <b>2500</b> , or <b>5000</b> keyword with the <b>auto</b> keyword, the port autonegotiates only at the specified speeds.
	<b>nonegotiate</b>	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.

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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}
```

<b>Syntax Description</b>	<b>multicast</b>	Specifies that unknown multicast traffic should be blocked.
	<b>Note</b>	Only pure Layer 2 multicast traffic is blocked. Multicast packets that contain IPv4 or IPv6 information in the header are not blocked.
	<b>unicast</b>	Specifies that unknown unicast traffic should be blocked.
<b>Command Default</b>	Unknown multicast and unicast traffic is not blocked.	
<b>Command Modes</b>	Interface configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Fuji 16.9.2	This command was introduced.
<b>Usage Guidelines</b>	By default, all traffic with unknown MAC addresses is sent to all ports. You can block unknown multicast or unicast traffic on protected or nonprotected ports. If unknown multicast or unicast traffic is not blocked on a protected port, there could be security issues.	
	With multicast traffic, the port blocking feature blocks only pure Layer 2 packets. Multicast packets that contain IPv4 or IPv6 information in the header are not blocked.	
	Blocking unknown multicast or unicast traffic is not automatically enabled on protected ports; you must explicitly configure it.	
	For more information about blocking packets, see the software configuration guide for this release.	
	This example shows how to block unknown unicast traffic on an interface:	

```
Device(config-if)# switchport block unicast
```

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

# system mtu

---

**Syntax Description**     *bytes*

---

---

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

---

---

**Command Modes**     Global configuration

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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

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**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	
<b>vlan-id</b>	(Optional) The VLAN for voice traffic. The range is 1 to 4094.
<b>cos</b> <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.
<b>dscp</b> <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.
<b>dot1p</b>	(Optional) Configures the phone to use IEEE 802.1p priority tagging and to use VLAN 0 (the native VLAN).
<b>none</b>	(Optional) Does not instruct the Cisco IP phone about the voice VLAN. The phone uses the configuration from the phone key pad.
<b>untagged</b>	(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** Use the **network-policy profile** global configuration command to create a profile and to enter network-policy profile configuration mode.

The voice-signaling application type is for network topologies that require a different policy for voice signaling than for voice media. This application type should not be advertised if all of the same network policies apply as those advertised in the voice policy TLV.

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

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

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

This example shows how to configure voice-signaling for VLAN 200 with a priority 2 CoS:

```
Device(config)# network-policy profile 1  
Device(config-network-policy)# voice-signaling vlan 200 cos 2
```

This example shows how to configure voice-signaling for VLAN 400 with a DSCP value of 45:

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

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

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

## voice vlan (network-policy configuration)

To create a network-policy profile for the voice application type, use the **voice vlan** command in network-policy configuration mode. To delete the policy, use the **no** form of this command.

```
voice vlan {vlan-id [{cos cos-value | dscp dscp-value}] | dot1p [{cos l2-priority | dscp dscp}] | none | untagged}
```

### Syntax Description

<b>vlan-id</b>	(Optional) The VLAN for voice traffic. The range is 1 to 4094.
<b>cos</b> <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.
<b>dscp</b> <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.
<b>dot1p</b>	(Optional) Configures the phone to use IEEE 802.1p priority tagging and to use VLAN 0 (the native VLAN).
<b>none</b>	(Optional) Does not instruct the Cisco IP phone about the voice VLAN. The phone uses the configuration from the phone key pad.
<b>untagged</b>	(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

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

The voice application type is for dedicated IP telephones and similar devices that support interactive voice services. These devices are typically deployed on a separate VLAN for ease of deployment and enhanced security through isolation from data applications.

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

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



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

This example shows how to configure the voice application type for VLAN 100 with a priority 4 CoS:

```
Device(config)# network-policy profile 1
Device(config-network-policy)# voice vlan 100 cos 4
```

This example shows how to configure the voice application type for VLAN 100 with a DSCP value of 34:

```
Device(config)# network-policy profile 1
Device(config-network-policy)# voice vlan 100 dscp 34
```

This example shows how to configure the voice application type for the native VLAN with priority tagging:

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

